

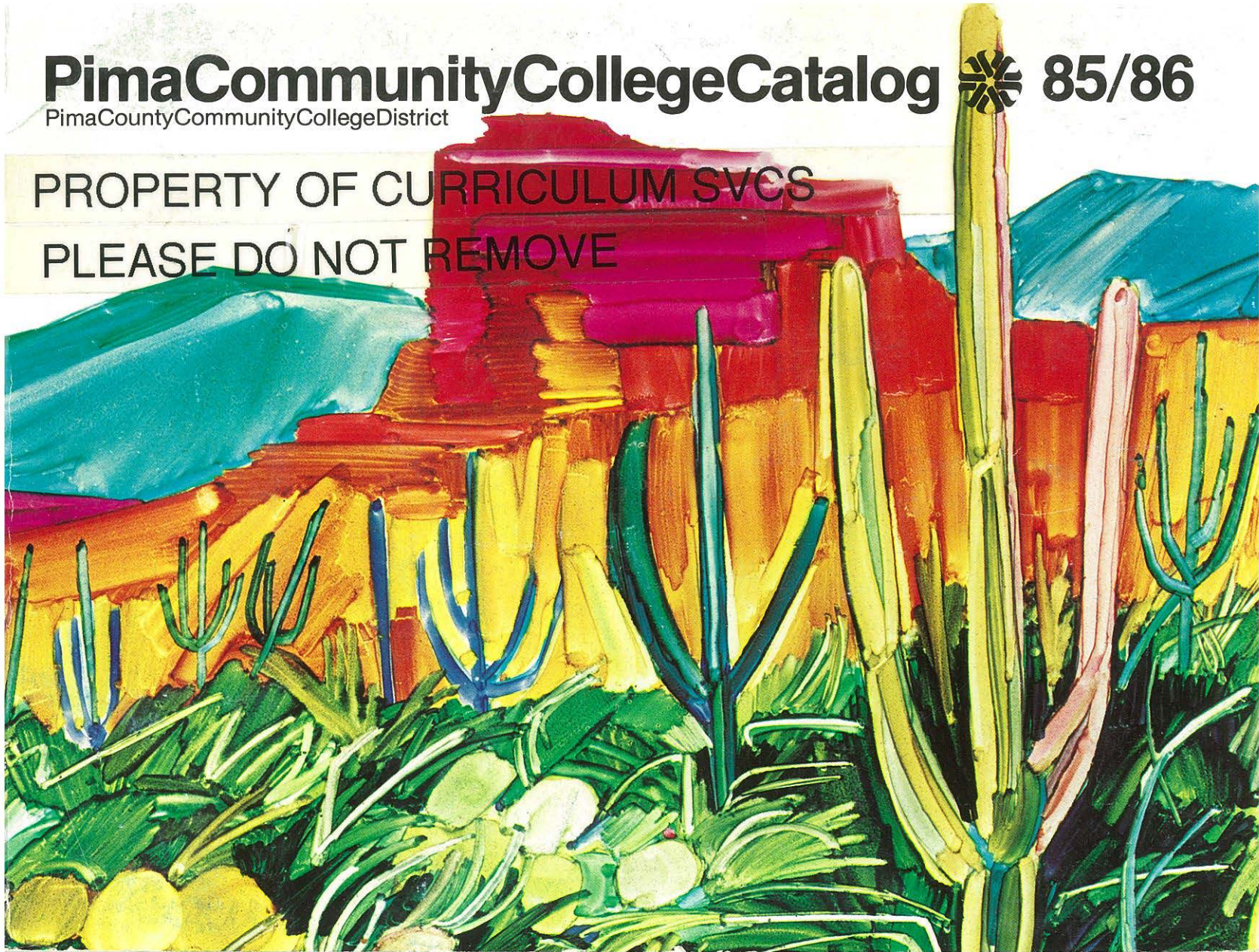
# PimaCommunityCollegeCatalog

PimaCountyCommunityCollegeDistrict



85/86

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# Pima County Community College District

1985/86

## COLLEGE AND DISTRICT OFFICES

200 N. Stone Avenue

P.O. Box 3010

Tucson, Arizona 85702-3010

(602) 884-6666

### COMMUNITY CAMPUS (Office)

1225 N. 10th Avenue

Tucson, Arizona 85705

(602) 884-6940

### COMMUNITY SERVICES

220 E. Speedway Boulevard

Tucson, Arizona 85705

(602) 884-6720

### DOWNTOWN CAMPUS

50 W. Speedway Boulevard

Tucson, Arizona 85705

(602) 884-6788

### EAST CAMPUS

8202 E. Poinciana Drive

Tucson, Arizona 85730

(602) 886-3331

### SKILL CENTER

1859 W. Grant Road, #101

Tucson, Arizona 85705

(602) 623-8456

### WEST CAMPUS

2202 W. Anklam Road

Tucson, Arizona 85709

(602) 884-6965

While this catalog was prepared on the basis of the best information available at the time, all information—including statements on tuition, fees, course offerings, admission and graduation requirements—is subject to change without notice, obligation, or liability.

Pima County Community College District complies with all applicable state, federal and local regulations. The College does not discriminate against qualified individuals on the basis of sex, race, creed, color, national origin, or handicap in the educational programs or other activities.

The Personnel/Human Resources (EEO) Office for Pima Community College is at the District Service Center, 200 N. Stone Ave. The telephone number is 884-6623.

Students are expected to act reasonably and to observe all federal, state and local laws and all Governing Board policies and regulations.

Published: May 1985

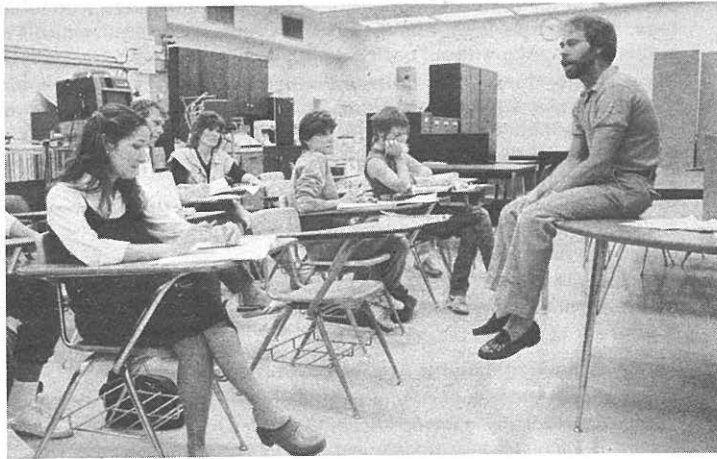
### Family Educational Rights and Privacy Act

Pima Community College informs its students annually of the Family Educational Rights and Privacy Act of 1974. This Act, with which the institution intends to fully comply, was designated to protect the privacy of educational records, to establish the right of students to inspect and review their education records, and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Educational Rights and Privacy Act office concerning alleged failures by the institution to comply with the Act.

Local regulation explains, in detail, the procedures to be used by the institution for compliance with the provisions of the Act. Copies of the regulations can be obtained at the Office of Registrations and Admissions or the Office of Student Services at any campus.

Questions concerning the Family Educational Rights and Privacy Act may be referred to one of the Registrations and Admissions offices.





### **Student Information Excluded from Coverage by the Act**

Pima Community College hereby designates the following categories of student information as public or directory information. Such information may be disclosed by Pima Community College for any purpose at its discretion.

Public or directory information includes the student's name, address, telephone number, date and place of birth, major field of study, classification status (freshman, sophomore, full-time, part-time), participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees, honors, awards received and most recent previous educational agency or institution attended by the student.

Currently enrolled students may withhold disclosure of public or directory information under the Family Educational Rights and Privacy Act of 1974. To withhold disclosure, written notification must be received by the West Campus Office of Admission and Records prior to the end of drop/add for each semester concerned.

Pima Community College assumes that failure on the part of any student to specifically request the withholding of "public or directory information" indicates individual approval for disclosure.





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## To Serve the Community





# **Pima County Community College District**

Pima Community College, which officially opened in the fall of 1970, is a two-year institution supported primarily by county taxes and state aid.

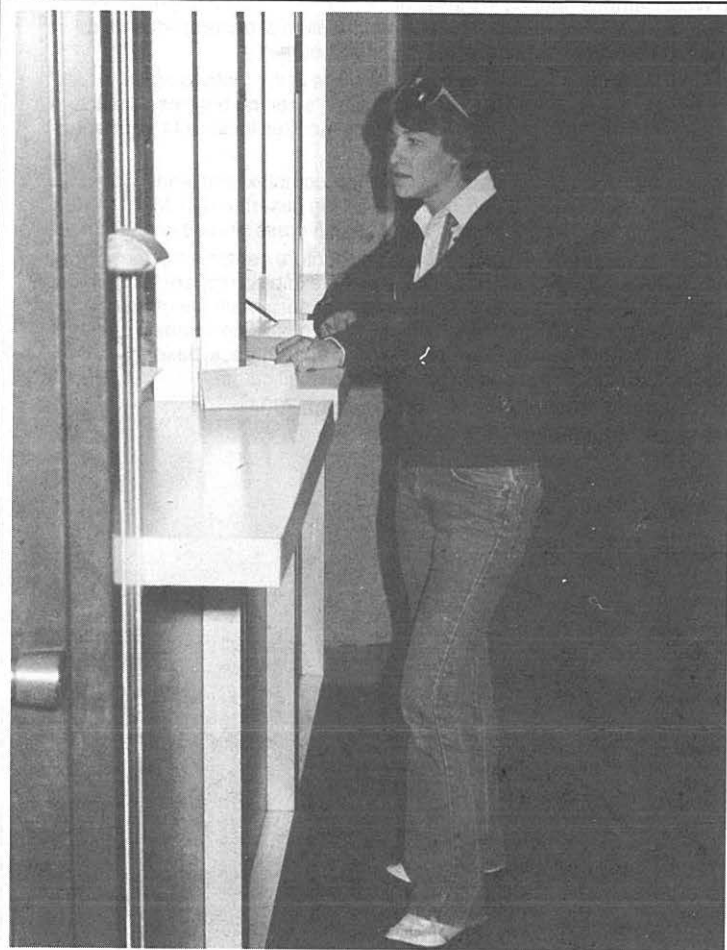
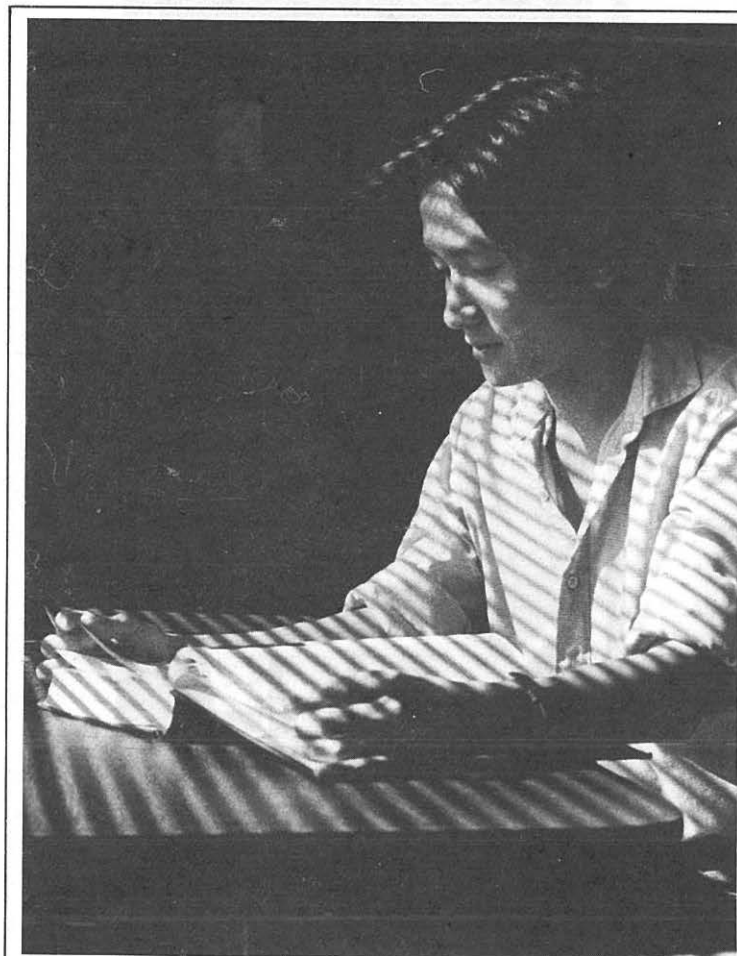
The multi-campus college district serves a population of 580,000 people residing within the 9,240 square miles of Pima County through three campuses and approximately 70 off-campus locations. A community services program offers additional non-credit courses at over 50 locations. Pima is also responsible for the Pima Community College Skill Center. In addition, Pima College offers classes in neighboring Santa Cruz County which currently does not have a community college.

College credit programs include university parallel or transfer studies representing the freshman and sophomore levels and job-oriented technical-occupational studies of various lengths.

Many credit and non-credit courses are open to students on a general interest or self-improvement basis. There are also a limited number of courses taught via radio and television each semester which can be taken on a general interest basis or as part of a program of study.

Most of the two-year study programs lead to an associate degree. Certificate programs can run from one semester up to two years depending on the area of study.

The College has an enrollment of approximately 21,500 students in credit course programs and another 20,000 in non-credit courses.





# West Campus

The West Campus opened in the fall of 1970 and is a fully comprehensive community college campus providing a curriculum of general education, college transfer, and occupational education courses.

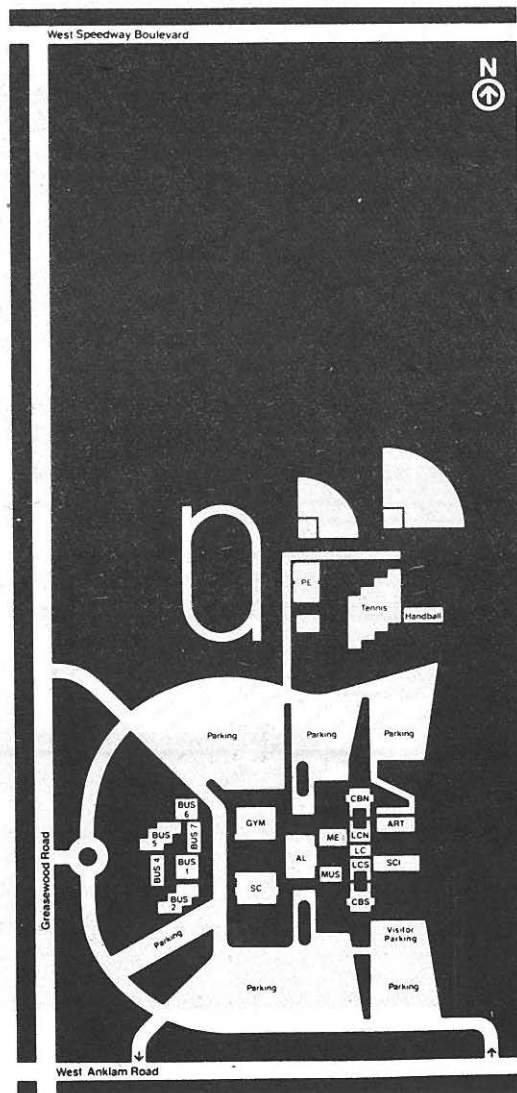
The West Campus is located on a 273-acre site in the foothills of the Tucson Mountains, three miles west of Tucson's central business district. Completed in the early part of 1971, campus facilities include 11 permanent buildings and six relocatable buildings.

Buildings, designed in the form of a close-knit complex, and landscaping surrounding the campus blend in with the rolling desert terrain. Malls hidden within the complex, however sport areas of lush grass, shrubs and tall trees.

Facilities include two classroom buildings; a lecture center; a student center housing various student service offices, an art exhibition gallery, a cafeteria, and lounges; a music building; a sciences building; a math/electronics building; an arts building; a library/administration building; learning centers; a gymnasium, and a physical education annex plus a track, baseball and softball diamonds, tennis and handball/racquetball courts.

The West Campus enrollment is approximately 9,700.

- SC** Student Center
- GYM** Gymnasium
- PE** Physical Education Annex
- AL** Administration/Library
- MUS** Music
- ME** Math/Electronics
- LCN** Lecture Center—North
- LCS** Lecture Center—South
- LC** Lecture Center
- CBN** Classroom Building—North
- CBS** Classroom Building—South
- SCI** Sciences
- ART** Arts
- Area R** Relocatable Buildings
  - 1—Relocatable
  - 2—Relocatable
  - 4—Relocatable
  - 5—Relocatable
  - 6—Relocatable
  - 7—Relocatable



# Downtown Campus

The Downtown Campus, which opened in the fall of 1974, is located on a 13-acre site in the vicinity of Stone Avenue and Speedway Boulevard in Tucson. The 13 buildings house classrooms, laboratories, and support services designed to meet the needs of students.

The campus site is easily accessible to public transportation from most sections of the city.

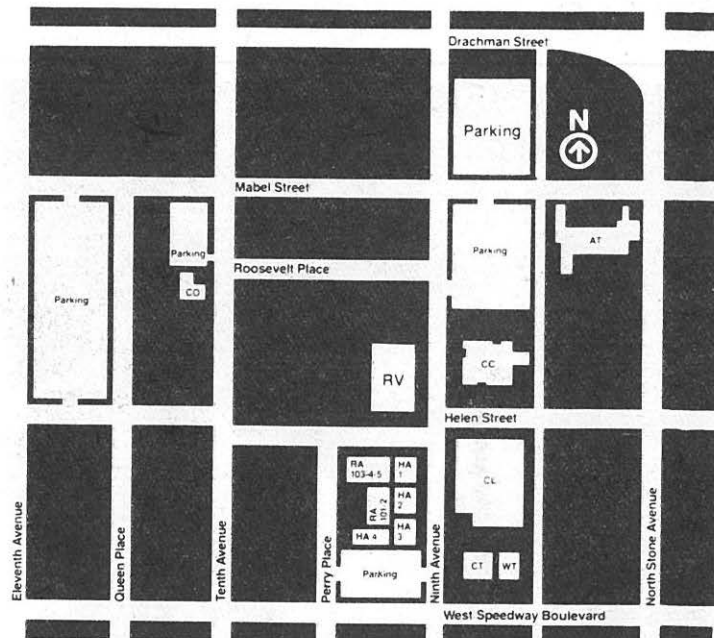
In addition to offering a fully comprehensive study program, the campus also houses some of the specialized industrial technologies programs such as automotive, air conditioning and sheet metal, machine tool, and welding.

Students can take all their studies at the Downtown Campus or a portion at that campus and the remainder at any of the other College locations. Bus service is available linking the Downtown and West Campuses.

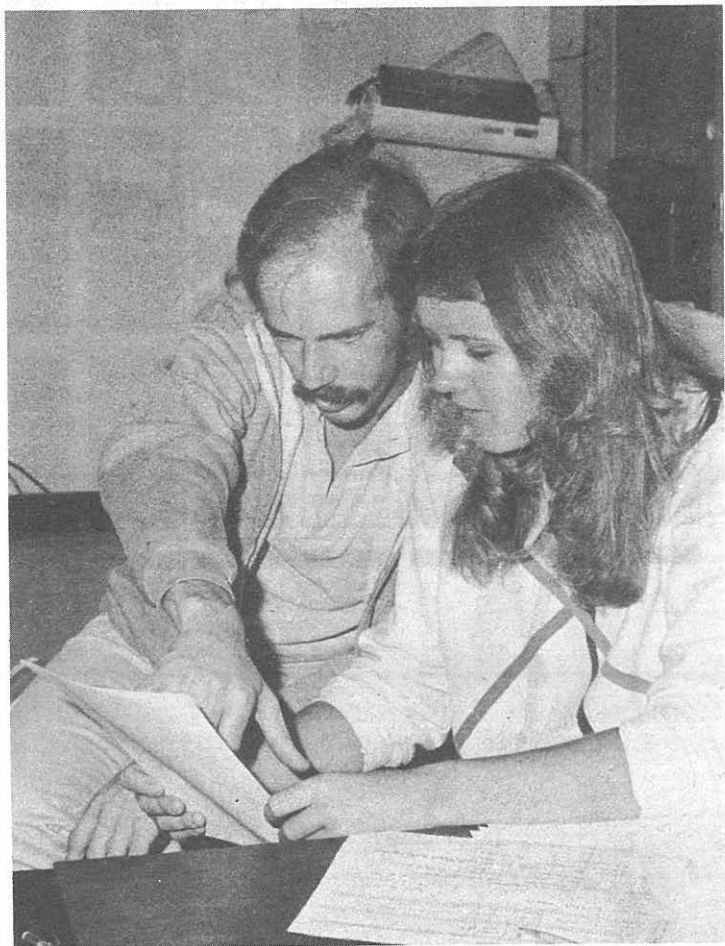
Facilities at the Downtown Campus include an automotive technology building; a main classroom and several small classroom buildings; a classroom technology building; a welding technology building; and a campus center housing various student services offices, a library, a bookstore, an alternative learning center, lounges and a food services area.

The Downtown Campus enrollment is approximately 6,900.

- AT** Automotive Technology
- CC** Campus Center
- CL** Classroom Building
- CO** Community Campus Office
- CT** Classroom Technology Building
- HA-1** Extended Day Programs
- HA-2** Restrooms
- HA-3** Physical Plant
- HA-4** Faculty Offices
- RA** Classrooms
- RV** Roosevelt Classroom Building
- WT** Welding Technology







## East Campus

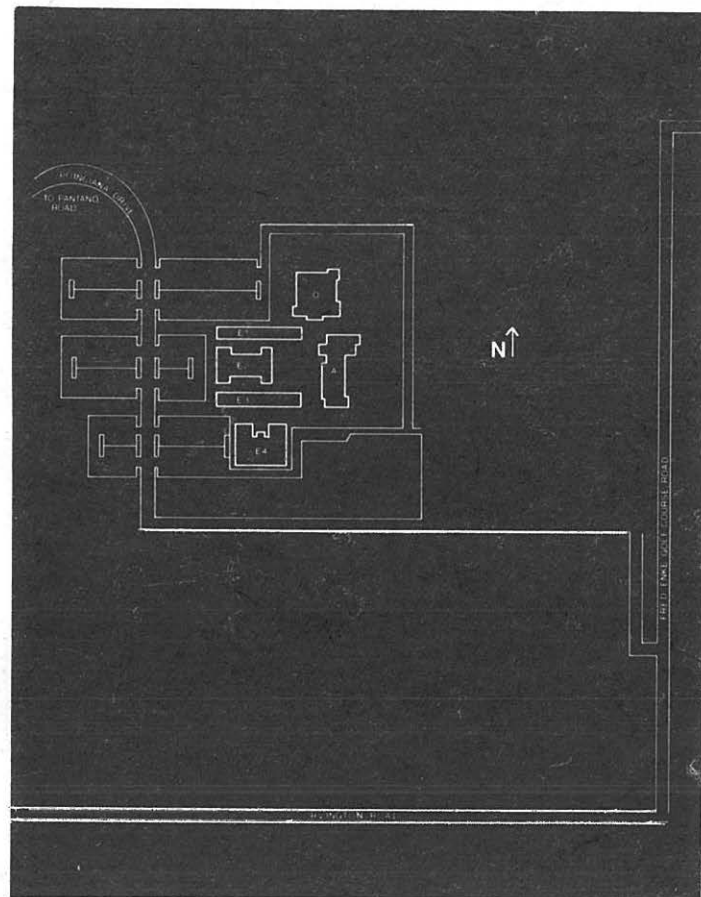
The East Campus, which opened in the fall of 1976, offers introductory courses in a wide range of subject areas, some advanced general education courses, and selected courses in occupational programs.

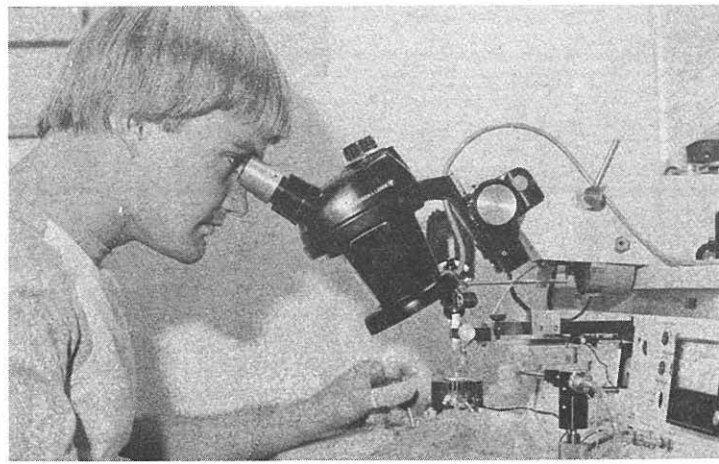
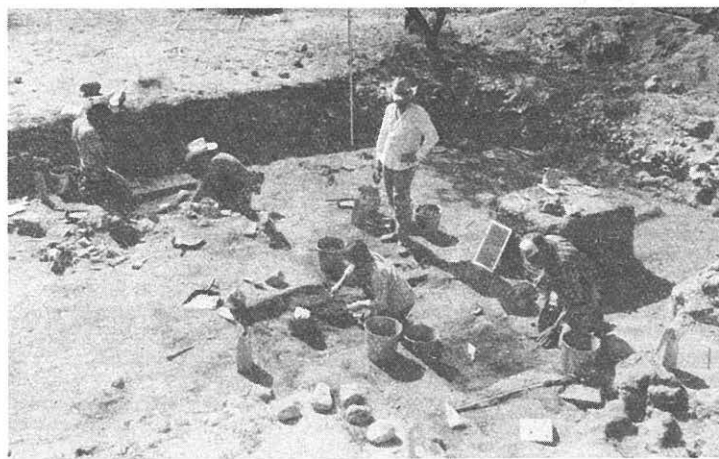
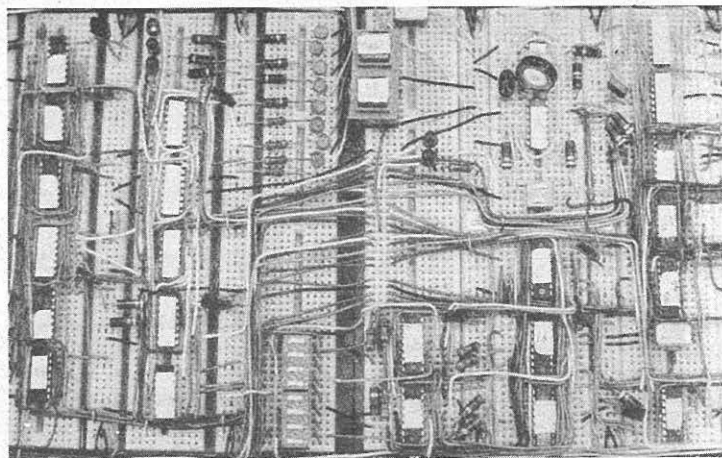
The Campus is located close to Irvington and Pantano Road (8202 E. Poinciana Dr.) in a peaceful desert setting on Tucson's east side. The new facilities opened for fall semester classes in 1981. The campus originally was established as an education center which was located at the corner of Broadway and Pantano Road.

Opening of the campus was aimed to relieve high enrollment pressures at the West and Downtown Campuses and also to bring classes closer to people on the east side. It had been found that nearly half of Pima's annual student body lives east of Alvernon Way.

Housed at the campus are classrooms, laboratories and support services including advising and counseling, a supplemental learning center, a library, financial aid services, student activities, veterans advising, and a bookstore. Adjacent to the East Campus is the Fred Enke Golf Course, where the College offers beginning and advanced courses in golf.

The East Campus enrollment is approximately 4,200.







## Community Campus

The Community Campus—a campus without walls—utilizes the facilities of the community including the public school system, various businesses, agencies, and neighborhood centers in the Tucson vicinity and in Ajo, Marana, Sells and Nogales. College credit classes are taught at approximately 70 locations, mainly during evening hours.

Offered are a wide variety of general education, college transfer, and general interest courses.

The concept of the Community Campus, established in 1975, was to bring college classes to where people live and work.

The Community Campus office is located at 1225 N. 10th Ave.

The Community Campus enrollment is about 4,900 with classes held at: Ajo High School, Amphitheater High School, Araneta's Mexican Inn, Aztec Inn, Burr Brown Plant, Canyon del Oro High School, Catalina High School, Cross Junior High School, Davis-Monthan Air Force Base, Doubletree Inn, Drexel Fire Station, El Pueblo Community Center, El Rio Center, Tucson Fire Training Center, First National Bank of Arizona, Flowing Wells Fire Station, Flowing Wells High School, Ganoung School, Green Valley, Hilton Inn, Hughes Aircraft Company, Kino Hospital, Main Tucson Post Office, Marana High School, Palo Verde High School, Plaza International Hotel, Pueblo High School, Ramada Inn, Rincon High School, Sahuarita High School, Sahuaro High School, Sells High School, Skill Center, Smuggler's Inn, Sunnyside High School, Tucson General Hospital, Tucson High School, Tucson Marriott Hotel, Tucson Medical Center, University of Arizona, Valley National Bank locations, Western Savings and Loan Association, and several other locations.

## Community Services

Community Services offers non-credit programs and classes in over 50 locations. Major program areas are General Interest Education, Senior Education, Business and Industry Training, Personal and Professional Development, Special Projects, Seminars and Workshops. In addition, Educational Study Tours are conducted throughout the Southwest and Mexico. Educational programs are offered in Green Valley and Nogales.

It is the goal of Community Services to meet the self-defined non-credit educational needs of the community and its citizens in an effective and efficient manner. To this end, flexibility and innovation characterize Community Services programs. Nearly 20,000 persons yearly are involved in Community Services programs and classes and approximately 4,000 of these are seniors. Participants in these programs do not receive College credit. If there is sufficient demand, classes can be developed at any time in various locations.

The Community Services office is located at 220 E. Speedway Blvd., three blocks east of the Downtown Campus.

## Skill Center

The Skill Center is a non-profit adult vocational training facility that cooperates with community-based organizations and agencies to provide training to the educationally, economically, and handicapped disadvantaged. From 250 to 300 persons are involved in Center programs at peak times.

The Skill Center's major funding sources are the Job Training Partnership Act, the Arizona Department of Education's Division of Career and Vocational Education, the Work Incentive Program, the Papago Tribe, and the Department of Economic Security.

Pima Community College became the local educational agency for the Skill Center in 1973 and on August 9, 1979, officially recognized the Center as part of the college organization.

All training is provided utilizing an open entry/open exit, individualized competency-based instructional mode.

All training is provided utilizing an open entry/open exit, individualized competency-based instructional mode.

The Skill Center is located at 1859 W. Grant Road, # 101, on Tucson's west side.



# Academic Calendar

## 1985/86

### Fall Semester (1985)

Registration / Advising / Drop-Add	Aug 12-22
Late registration	Aug 26-30
Fall Classes Start	Aug 26
Labor Day Holiday	Sept 2
Graduation Applications Due	Nov 1
Veterans Day Holiday	Nov 11
Thanksgiving Day Holiday	Nov 28-Dec 1
Evaluation / Assessment / Exam Week	Dec 16-20
Final Grades Due	Dec 20
Fall Semester Ends	Dec 20
Christmas & New Year's Holidays	Dec 21-Jan 17

### Spring Semester (1986)

Registration / Advising / Drop-Add	Jan 6-16
Late registration	Jan 20-24
Spring Classes Start	Jan 20
Graduation Applications Due	Mar 1
Rodeo Days Holiday	Feb 27-Mar 1
Spring Vacation	Mar 17-23
Evaluation / Assessment / Exam Week	May 12-16
Final Grades Due	May 16
Spring Semester Ends	May 16
Graduation	May 15

### Extended Spring Session (1986)

Registration / Advising / Drop-Add	May 5-16
Late registration	May 19-22
5-week session begins	May 19
Memorial Day	May 26
Session ends	June 19

### Summer Session (1986)

Summer Advising / Registration Period	May 5-29
Memorial Day	May 26

#### Session A (5 weeks)

Classes Begin	June 2
Late Registration / Drop Add	June 2-5
Classes End	July 2

#### Session B (5 weeks)

Advising / Registration Continues	June 30-July 2
Independence Day	July 3
Classes Begin	July 7
Late Registration / Drop Add	July 7-10
Classes End	Aug 7

#### Session C (8 weeks)

Classes Begin	June 2
Late Registration / Drop Add	June 2-5
Independence Day	July 3
Classes End	July 24



# The College

## Philosophy

The proper functioning of a democratic society and the well-being of individuals depend on the opportunity for individuals to develop their human potential in accordance with their chosen goals. To achieve this end, Pima Community College believes education should be designed as a lifelong process, developing an awareness in individuals, both of themselves and their environment, and thus preparing them to function more effectively in a highly complex society.

The College encourages all individuals to take pride in their own heritage and, at the same time, to develop an awareness and appreciation of differences which come from diverse backgrounds.

The College supports the continuous evaluation of all activities to improve its services to the community and to increase awareness of accountability in all its participants.

## Mission

Pima Community College is a comprehensive, multi-campus, two-year institution located in southern Arizona. The College serves a heterogeneous student population representative of the composition of Pima County citizens. The College provides an atmosphere which is responsive to the individual differences in its student population by providing a multiplicity of subject matter, materials, and instructional approaches. Through the transfer, occupational, and general interest programs, Pima Community College strives to prepare its students to function effectively in a highly complex and technological society; assists all students in reaching their highest potential; and contributes to the educational, social, and cultural development of Pima County.

## Goals

The goals derived from the mission statement build upon the concepts of the college transfer and general education function, the occupational function, the developmental support function, the special interest function, the community services function, and the overall function to promote quality in all programs. They are:

- Include general education in all programs to enhance the capacity for personal enrichment, and for intelligent and responsible participation in society.
- Prepare students to progress smoothly into upper division work at colleges and universities.
- Assist all students in the exploration of alternatives and the establishment of career and educational goals.
- Prepare students for employment and advancement within their chosen careers.

- Provide special opportunities for students who need to bring their academic skills up to an adequate level.
- Offer continuing education to serve both occupational and avocational interests.
- Provide community services related to specific community needs, including cultural, recreational, and general interest offerings.
- Provide educational opportunities to assist all students in developing their highest academic potential.

## Accreditation

Pima Community College is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools. This means the College, its programs, faculty and facilities have full recognition, and that transferable credits are accepted by four-year institutions throughout the country as well as those within the state.

In addition, special accreditation has been received in the following programs: Dental Assisting Technology, Dental Laboratory Technology, Nursing Associate Degree, Ophthalmic Dispensing Technology, Radiologic Technology and Respiratory Therapy.

College membership includes the American Association of Community and Junior Colleges and the Council of North Central Community Colleges.

## Notification of Occupational Education Opportunities

Occupational Education programs offered by Pima County Community College District provide students with training in a variety of career fields. These programs are designed to allow students to prepare for entry level employment, upgrading in their current occupation or training for a career change. Each occupational program has modern instructional equipment and the College has employed qualified instructors certified by the State. Occupational programs currently approved by the State to be offered at Pima Community College include:

Program areas planned for the 1984 school year include:

**Agriculture**—Landscape Technician; Recreation.

**Distributive Education**—Finance; Banking; Credit Union; Hotel/Motel Management; Fast Food Industry; Restaurant-Culinary Food Management; Advertising; Real Estate; Transportation & Traffic Management; Travel-Tourism; Postal Service Management; International Business Communications; Media Communications; Business Administration Management.

**Health Occupation**—Dental Assisting; Dental Laboratory; Emergency Medical Technology; Associate Degree Nursing; Licensed Practical Nursing; Medical Assistant; Radiologic Technology; Respiratory Therapy.

**Home Economics**—Child Development; Early Childhood Education; Fashion Design & Clothing; Home Economics Professions; Institutional Food Service; Teacher Aides.

**Diversified and Work Education Occupations**—Cooperative Education.

**Office Occupations**—Accounting; Computer Science; Office Education-Secretarial; Medical Secretarial; Bilingual Secretarial; Legal Assistant.

**Technical Education**—Electronics; Microelectronics Technology; Wastewater Technology.

**Trade & Industrial Education**—Advertising Art; Automotive; Air Conditioning & Sheet Metal; Administration of Justice-Law Enforcement-Corrections; Aviation Mechanics; Building Technology; Carpentry; Design; Drafting; Machine Tool; Plumbing & Pipefitting; Sign Language; Social Services; Welding; Solar Technician.

The list provided above is not all inclusive. Please check for other programs. All Occupational Education programs and services are offered without regard to race, color, national origin, sex, or handicapping condition.

**Special Needs Education**—Training for Special Education.

Limited English-speaking skills will not be a barrier to admission or participation in vocational education. The primary requirements for admission are an established desire to pursue a career in the chosen occupational field and the ability to meet the requirements for entry-level employment in that field of work.

The College's Title IX Coordinator is Vice President Diego Navarrette, who can be reached at 884-6986 at the Pima Community College District Service Center, 200 N. Stone Ave., P.O. Box 3010, Tucson, Arizona 85702-3010.

The College's Equal Opportunity Specialist is Ms. Bonnie J. Golden who can be reached at 884-6745 at the Pima Community College District Service Center, 200 N. Stone Ave., P.O. Box 3010, Tucson, Arizona 85702-3010. She is responsible for Title VI and VII of the Civil Rights Acts of 1964 Section 504.

In compliance with Title VI of the Civil Rights of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973 and the Age Discrimination Act of 1975, Pima Community College does not discriminate on the basis of race, color, national origin, sex handicap or age in employment or in any of its educational programs or in the provision of benefits and services to students.

## History

The preliminary work of private citizen planning was started in 1964 and culminated with an election approving the formation of the Pima County Junior College District two years later.

Soon after voters gave their consent to the Collegedistrict, a five-member Governing Board was appointed by the county school superintendent's office to proceed with plans for the College.

Among the actions taken by the original board with the assistance of the citizen committees were the selection of architects, definition of educational objectives, creation of a financial plan and budget, selection of Dr. Oliver H. Laine as the first president and also selection of the 273-acre Anklam Road campus site.

An election was set for the fall of 1967 for a \$5.9 million general obligation bond issue to construct college facilities and to publicly elect a Governing Board.

Construction of the West Campus facilities began in May, 1969. It was also during 1969 that Dr. Kenneth E. Harper succeeded Dr. Laine, first as provost and later as president of the College. Pima College opened to 3,728 students and offered 260 courses in September, 1970, with most facilities housed in temporary quarters and a portion located at a partially completed campus.

All College programs were moved to the completed 11-building campus in January, 1971. The year also saw the philosophy of taking a student from "where he is to where he might want to go" put into effect; the College's transfer courses being accepted by the three Arizona universities; and an introduction of the bilingual program.

In 1971-72, Pima received a Recognized Candidate Status as a step toward full accreditation; several classes were moved off-campus and into the community; the West Campus was completed and dedicated; various campus events were opened to the public; the number of vocational-occupational programs was increased; and the first summer session was offered. A West Campus renovation and construction project, which included the erection of seven portable buildings, also got under way to meet demands of fast growing enrollments.

On July 1, 1972, Dr. Irwin L. Spector became the third president of the Pima County Community College District.

1972-73 was a year in which a move was made to strengthen the College's administration process through reorganization of the administration structure. Fiscal procedures were revised; off-campus programs were expanded three-fold; the number of course offerings increased to 430; enrollments increased to 7,616; a downtown campus site was selected to help ease the overcrowding of facilities; an intercollegiate athletics program was given approval; steps were taken to create closer ties between the College and the community; and the College was re-named Pima Community College.

Major growth and planning occurred in 1973-74; enrollments went over the 12,000 mark; a study of facility needs and enrollment trends resulted in the Board's approving a district plan for the establishment of a campus in downtown Tucson; the number of courses was increased and so were services to students and the community. Pima was one of only 11 community Colleges selected for an \$850,000 federal grant to be used for advanced institutional development toward increasing student success. An intercollegiate athletics program also got under way.

Tense economic conditions in the fall of 1974 brought the defeat of a proposed \$9.5 million bond issue, but remodeling work continued at the West Campus in an attempt to gain some needed space for still growing enrollments. The Downtown Campus was opened and immediately filled to near capacity. The total enrollment for both campuses and in the off-campus program reached 17,773 by the spring of 1975. The number of courses was increased to about 900.

Pima Community College was awarded full accreditation by the North Central Association of Colleges and Secondary Schools in 1975. In 1975-76, enrollment at the West Campus reached 11,000 day and evening students. Additional land was acquired around the Downtown Campus, enlarging it to a 13-acre site while enrollment reached 5,500 students. The development of an East Education Center was begun to help better serve students on Tucson's east side. Pima Community College also was designated a National Bicentennial College by the American Revolution Bicentennial Administration in Washington, D.C.

By 1976, the multi-campus district included the West Campus, the Downtown Campus, the Community Campus (off-campus credit programs) with more than 50 classroom locations throughout Pima County, the East Education Center, the Community Services credit-free program, and the Tucson Career Skill Center.

A two-year, \$5 million construction project was begun during 1976-77 with the construction of a classroom technologies building and a student center/library at the Downtown Campus and installation of additional indoor and outdoor physical education facilities at the West Campus.

In May, 1977, the Pima Community College Foundation was established to support the College.

Highlights of the 1977/78 academic year included a report by a Citizens' Advisory Committee on future facility needs of the College in response to the institution's steady enrollment increases.

On July 15, 1978, Dr. Irwin L. Spector resigned his position as president after six years of leadership in developing the College. Donald F. Klaasen, then Dean of Business Services and chief fiscal officer, began his year-long service as acting president. Raymond J. Stith was appointed Executive Dean of the West Campus.

Also during the year, the College was chosen as one of the top five community colleges in the nation to host a National AACJC Conference in Career Education.

After an intensive presidential search, Dr. S. James Manilla was appointed President of the College. He joined the College on July 16, 1979.

A major undertaking during the 1979/80 academic year was the acquisition of a 60-acre site for a permanent educational facility on the east side of Tucson. The deed for the land at Irvington and Pantano Road was signed on April 16, 1980.

The College established an Office of Minority Affairs in its continuing efforts to aid minority students.

The College's first five-year Master Plan was approved by the Board of Governors in September, 1980. The document provided the framework for annual operating plans which are part of the planning-management-evaluation system begun in 1979/80.

The Tenth Anniversary of the College was celebrated in October at the Tucson Community Center.

For the first time, students in the fall of 1980 paid a general tuition in addition to regular student fees. The tuition was necessary because of new state legislation which limited the College's ability to increase revenue from other sources.

The East Campus was completed in July, 1981, at a cost of \$2.9 million. The 35,000-square-foot facility quickly filled to capacity when 3,900 students enrolled in fall semester classes. The three campus buildings had roughly the same area as the former East Education Center but were designed for increased instructional facilities.

Two other branches of the College moved to new leased facilities in 1981. The Skill Center's scattered classrooms were consolidated into a single complex at the Grant Road Industrial Park. Community Services moved its headquarters from a small house to a building at 21 E. Speedway.

In October, 1981, the North Central Association of Colleges and Secondary Schools granted the College accreditation for a six-year period. The associate degree nursing program was awarded accreditation for eight years by the National League for Nursing.

Many of the major developments during the 1981/82 fiscal year involved instructional programs. Changes in state aid funding allowed the College to expand vocational offerings in a short-term format and to offer open-entry, open-exit classes and concentrated "block program" formats. The PCC Institute began as a collaborative effort with industry to offer short-term training.

A pilot honors program for exceptional students was begun and a developmental education program addressed the needs of the academically disadvantaged. General education requirements for associate degree and advanced certificate programs were established for the first time.

In January, 1982, Robert Agrella, Downtown Campus Dean, was appointed Vice President for Educational Services, and Dr. Judith Leslie, formerly Executive Assistant to the President, was made Vice President for Planning and Development.

Two buildings were purchased during the 1982/83 year. Roosevelt School, adjacent to the Downtown Campus, was purchased from Tucson Unified School District on August 11, 1982. The school allows for expanded classroom space at the campus.

On Nov. 15, 1982, the College acquired the 24,000-square-foot District Service Center at 200 N. Stone. The administrative center was purchased to alleviate a shortage of instructional space on the West Campus where district administrative staff had been headquartered.

The 1983/84 year was marked by a number of changes. The College grading policy was changed to include both a "D" and an "F" grade. A program to assess the basic skill levels of students enrolling in reading, writing, or mathematics courses was fully implemented.

At the East Campus, a writing improvement project was incorporated into classes ranging from computer science to political science. The Downtown Campus implemented a new program for solar installation and maintenance technicians. The College Skill Center opened its kitchen for the Food Service Training Program, and Community Services moved to 220 East Speedway Blvd.

The number of students seeking computer literacy and computer-related instruction continued to grow. The non-credit senior education program offered computer classes for the first time, and Community Services expanded its regular computer offerings. The drafting department acquired a computer graphics terminal and began to teach computer-aided drafting. The archaeology department developed a unique system that allows site data to be entered into a computer at the moment an artifact is found, simplifying and accelerating data collection and analysis.

Electronics was also a high-demand area. The Skill Center, at the request of local employers, developed a continuous training program for structural assemblers and other positions. The Community Campus offered a new, accelerated 13-week General Electronics Certificate Program.

Engineering construction technology courses were offered for the civil engineering squadron at Davis-Monthan Air Force Base, and a landscape technology program was implemented at the suggestion of the Arizona Landscape Contractors' Association.

Although a College bond issue to construct a high technology/business management building was defeated in February, 1984, additional funds were received from a variety of external sources. The College was notified that it will receive \$75,000 over a ten-year period as one of the beneficiaries of the Pizzini Charitable Lead Trust for the estate of Mrs. Irene Pizzini, daughter of Tucson pioneer Albert Steinfeld. The grant provides for faculty development in specified areas and awards and loans to outstanding students. A grant from the Flinn Foundation was awarded to the College to survey the continuing education needs of Southern Arizona's rural clinics and hospitals. The College received three grants from Cox Cable Co. to develop a two-way communication link between campuses, produce two video news magazines, and tape ten programs to help students build confidence in their ability to learn.

In October, 1983, the College was awarded a federal grant to build a technical center for training sewage treatment plant operators and maintenance workers. In early 1984, I.B.M. invited the College to participate in its national model school computer literacy program to train teachers in three Tucson school systems to use computers. As part of that program, I.B.M. donated fifteen personal computer systems, plus \$10,000, to the College. Later, I.B.M. announced a further donation of computer-aided drafting systems and \$60,000.

Computer equipment was also donated to the college by Control Data Corporation and Digital Electronics Corporation.

The College received a \$94,577 federal grant in August, 1984, to develop an integrated curriculum in speech and writing within Pima County. The program includes testing student skills in writing and speaking at the high school, community college, and university levels, setting proficiency standards for each level, and integrating instruction in writing and speaking into other subject areas. Funds were provided by the U.S. Department of Education's Fund for the Improvement of Postsecondary Education.



## Foundation

A community college and the community it serves are synonymous. As partners in service, interested citizens of the community established a Foundation to assist Pima Community College in the continual expansion of educational opportunities and services to the community at large and to provide a means for active citizen participation in the future growth and development of their community college.

Public funds derived from taxes provide the basic needs for higher education, but private support is often needed to provide those components necessary for true academic excellence.

Prime objectives of the Foundation are to help bring about recognition by local and regional business and industry and securing adequate financial support of Pima Community College.

The Pima Community College Foundation is an incorporated non-profit organization established in 1977 to support exclusively the educational activities of Pima Community College. The Foundation is governed by a board of directors. Membership in the Foundation is dependent upon a donation to the Foundation.

Meetings and special functions held each year allow members to meet and hear from students and faculty about the programs of the College.

Gifts to the Foundation are tax deductible and go toward student scholarships, faculty creative teaching grants and special needs of the college as determined by the Foundation Board of Directors.

The Foundation will assist prospective donors in making bequests, and planning trust and will arrangements for the Foundation.

### OFFICERS

Dewey F. Barich, President  
Edward C. Hagen, Vice President  
Rubin Salter, Jr., Secretary  
Mary Foster, Treasurer  
Philip J. Silvers, Executive Director

### DIRECTORS OF PIMA COMMUNITY COLLEGE FOUNDATION

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## Información del colegio en español

Pima Community College es una institución dedicada a la educación superior. Se reconoce la necesidad que hay en toda comunidad de que exista una institución donde todos los miembros tengan la posibilidad de educarse, de buscar nuevas metas personales, y que todo individuo pueda contribuir al desarrollo cultural de la comunidad. Esto significa que Pima Community College reconoce, y trata de fomentar el conocimiento común de esos hechos culturales e históricos de los múltiples grupos étnicos de nuestro Suroeste. La multiplicidad cultural que representa nuestra comunidad se presta a la creación de un proceso educativo rico en sus raíces, diverso en materia, y amplio en sus métodos.

Los programas educativos que se imparten en Pima Community College en general no tendrán una duración mayor de 2 años. El currículum incluye cursos en las diversas materias que se imparten tanto en español como en inglés, presentando materias en ambos idiomas. Pima Community College proporciona a la comunidad de habla hispana la posibilidad de aprovechar más el proceso educativo sin perder el tiempo mientras se aprende inglés, o simplemente, significa que una persona que desea practicar ambos idiomas tiene la posibilidad de hacerlo.

La legislación del Estado de Arizona define el "community college" diciendo que será institución educativa donde se proporcionarán programas en las artes, ciencias y humanidades, y se incluirán cursos vocacionales y técnicos. Al llevar a cabo esta definición, Pima Community College se compromete a prestar los siguientes servicios a la comunidad:

Educación de tipo general que fomente interés en el conocimiento así como interés en la capacidad del hombre para formar una parte inteligente y responsable de su comunidad.

Programas educativos de duración variable que prepara a los estudiantes en carreras útiles y satisfactorias. Dos años de estudios preparatorios que permitan al estudiante ingresar en cursos universitarios superiores. Cursos educativos de toda índole que tiene como fin satisfacer las aspiraciones vocacionales o académicas de la población.

Un personal profesional que trata de servir a la comunidad en forma académica y vocacional. Servicios en cuanto a las necesidades culturales, recreativas y de interés general. No es necesario el certificado de secundaria para ingresar en Pima Community College. Si usted desea más informes, comuníquese con la Oficina de Admisión.

# Admission to the College

## Admission

The Pima County Community College District is open to students if they fall within one of the following categories:

1. A graduate from an accredited high school;
2. A recipient of a G.E.D. Certificate of high school equivalency;
3. A transfer student from an accredited college;
4. A non-high school graduate who is 18 years of age or older, who can benefit from instruction;
5. A non-high school graduate between the ages of 16 and 18 who has officially withdrawn from high school and who can benefit from instruction;
6. A student currently enrolled in high school who presents written approval from the student's principal and parents or legal guardian;
7. An international student planning to enroll for 12 credit hours or more who has completed an academic program equivalent to an American secondary school and have a score of 500 or better on the Test of English as a Foreign Language; or whose native language is English;
8. An international student planning to enroll for less than 12 credit hours, who must demonstrate English proficiency if enrolling in courses other than English as a Second Language or courses offered bilingually.

For all programs, preference in admissions shall be given to Pima and Santa Cruz county residents.

No person shall be denied admission to the college on the basis of sex, race, creed, color, national origin, age, or handicap. Although Pima Community College is open to students who fall within the above categories, the scope of program accessibility may be limited due to certain curriculum requirements, fiscal constraints, and/or facility limitations.

**Transfer Students Under Suspension:** It is important that transfer students from other academic institutions admitted while under suspension of any type be aware that credits earned during their period of suspension may not be accepted for transfer by most colleges and universities.

Admissions offices are open year-round at each of the college campuses to receive applications and to provide information on curriculum programs, class schedules, and registration procedures.

## Student Residency Requirements

Each student applicant shall have the question of one year durational domicile requirement determined by the appropriate campus registrar prior to the time of registration and payment of fees. It is the responsibility of the applicant to apply for admission and to register under the correct domicile determination. Domicile is determined as of the first day of the session in which enrolling.

## Definitions:

- A. "Adult" means a person who has attained the age of 18 years.
- B. "County Resident" means an individual who is domiciled in the State of Arizona for not less than one year and who has been physically present in the county for at least fifty (50) days prior to the first day of classes of the semester or session in which enrolling.
- C. "Domicile" means a person's true, fixed and permanent home and place of habitation. It is the place where he intends to remain and to which he expects to return when he leaves without intending to establish a new domicile elsewhere.
- D. "Emancipated Person" means a person who is neither under a legal duty of service to his parent nor entitled to the support of such parent under the laws of this state.
- E. "Full-time Student" is one who registers for at least twelve (12) semester hours per semester.
- F. "Guardian" means a legal guardian appointed by a court order.
- G. "Parent" means a person's father, mother, or if one parent has custody, that parent, or if there is no surviving parent or the whereabouts of the parents are unknown, then a guardian of an unemancipated person if there are not circumstances indicating that such guardianship was created primarily for the purpose of conferring the status of an in-state student on such unemancipated person.
- H. "Session" is a semester term, or otherwise officially defined period of study as shown in the college schedule of classes.
- I. "Continuous Attendance" means enrollment at an educational institution in this state as a full-time student, as such term is defined by the governing body of the educational institution, for a normal academic year since the beginning of the period for which continuous attendance is claimed. Such person need not attend summer sessions or other such intersession beyond the normal academic year in order to maintain continuous attendance.

## Emancipated Persons

- A. A person is not entitled to classification as an in-state student until domiciled in this state for one year. No person with domicile elsewhere than in this state is eligible for classification as an in-state student for tuition purposes.
- B. A person domiciled in the state as a ward of the court shall be considered as an in-state student, subject to the one year requirement.
- C. An alien is entitled to classification as an in-state refugee student if such person has been granted refugee status in accordance with all applicable laws of the United States and has met all other requirements for domicile.

- D. A person cannot establish a domicile in this state while attending any educational institution in this state as a full-time student, in the absence of a clear demonstration to the contrary.
- E. Domicile is not lost by mere absence unaccompanied by intention to establish a new domicile.
- F. A person who is a member of the Armed Forces of the United States stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student, while in continuous attendance toward the degree for which currently enrolled, does not lose in-state student classification.
- G. The spouse of a person who is a member of the Armed Forces of the United States stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student, while in continuous attendance toward the degree for which currently enrolled, does not lose in-state student classification.
- H. Employees of the U.S. Public Health Service under commission are granted equivalent status to other military for purposes of being classified as Arizona residents for tuition purposes at community colleges.

#### **Unemancipated Persons:**

- A. A person is not entitled to classification as an in-state student until he is domiciled in this state for one year, except that a person whose domicile is in this state is entitled to classification as an in-state student if: (1) His parent's domicile is in this state, and (2) His parent is allowed to claim him as an exemption for state and federal tax purposes.
- B. Any unemancipated person who remains in this state when such person's parent, who had been domiciled in this state, removes from this state, is entitled to classification as an in-state student until attainment of the degree for which currently enrolled, so long as such person maintains continuous attendance.
- C. An unemancipated person who has been in continuous direct care and control of, and has lived with an adult domiciled for one year in a college district other than a parent, shall be classified as an in-state student.
- D. A person, who is a dependent, whose parent is a member of the Armed Forces of the United States stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student, while in continuous attendance toward the degree for which currently enrolled, does not lose in-state student classification.
- E. The date of the parent's establishing a domicile in this state shall be considered the date of determining the domicile of the person upon emancipation.

- F. A person who has been domiciled in the state immediately prior to becoming a member of the Armed Forces of the United States shall not lose in-state status by reason of such person's presence in any other state or country while a member of the Armed Forces of the United States.

#### **Proof of Domicile:**

- A. A notarized affidavit must be filed with the appropriate registrar's office for verifying domicile to prove continuous domicile in the state for twelve (12) months. (1) At least three of the following items shall be necessary to establish proof of one year domicile: (a) Filing of state income tax return; (b) Registration as a voter in the state; (c) State in which car is licensed; (d) Date of Arizona's driver's license; (e) Place of graduation from high school; (f) Source of support; (g) Dependency as indicated on federal income tax return; (h) Statement of work record of husband or wife.
- B. A notarized affidavit must be filed with the person responsible in the appropriate registrar's office to prove continuous residence in a county for fifty (50) days. (1) At least two of the following items shall be used to establish proof of county residency: (a) Notarized statement of landlord and/or employer; (b) Registration of the voter in the county; (c) Source of support; (d) Place of graduation from high school; (e) Dependency as indicated on federal income tax return; (f) Statement of work record of husband or wife.

#### **Concurrent Enrollment; Nonresident Tuition:**

- A. It is unlawful for any nonresident student to register concurrently in two or more public institutions of higher education in this state including any university or community college for a combined student credit hour enrollment of more than six semester hours without payment of nonresident tuition at one of such institutions.
- B. Any nonresident student desiring to enroll concurrently in two or more public institutions of higher education in this state including any university or community college for a combined total of more than six semester hours who is not subject to nonresident tuition at any of such institutions shall pay the nonresident tuition at the institution of his choice in an amount equivalent to nonresident tuition at such institution for the combined total of semester hours for which the nonresident student is concurrently enrolled.

### **International Student Admission**

International students are welcome at Pima Community College. Their presence adds to the multi-cultural diversity which is a part of all aspects of the College.

Any non-citizen of the United States who has not received immigrant status is considered an international student and must meet the admission requirements listed below. These students pay the same tuition and fees as out-of-state students.

**FULL-TIME STUDENTS**—All international students seeking admission to Pima Community College as full-time students, i.e., enrolling for 12 credit hours or more, must complete and return to the International Students Admissions Office at the West Campus an application for admission along with a \$10 fee which is non-refundable. In addition, the student must have completed an academic program equivalent to an American secondary school, and also must demonstrate proficiency in the English language by submitting a score of 500 or better on the Test of English as a Foreign Language (TOEFL). Further information concerning examination dates and places for the TOEFL can be obtained by writing to: Test of English as a Foreign Language, Box 899, Princeton, New Jersey, U.S.A. 08540. Finally, upon admission to the College, the international student must take IBC 120 during the first semester of enrollment.

International students planning to be admitted on an F-1 visa may only enroll full-time. In addition to the preceding requirements, they must also do the following:

- Submit a bank statement which guarantees financial support.
- Submit official transcripts in English of all work done at previous educational institutions.

The application for admission and other required information should be filed with the Admissions Office at least 90 days prior to the semester for which the student wishes to enroll.

International students already in this country and seeking full-time admission must also submit the above-listed information at least two weeks prior to the beginning of the semester of enrollment.

**PART-TIME STUDENTS**—International students who wish to attend Pima on a part-time basis must submit an application for admission. Students in the United States who are on a different visa than F-1 may attend part-time, i.e., enrolled for less than 12 credit hours. Graduation from the equivalent of an American secondary school is not of primary importance. However, part-time international students must demonstrate English proficiency if they plan to enroll in courses other than English as a Second Language or courses offered bilingually. All international students, regardless of full-time or part-time status, must meet all appropriate immigration standards and requirements.

### **Transfer of Credits**

Appropriate credit may be accepted for all course work completed at other accredited institutions with a grade of C, its equivalent, or better. This credit must be considered applicable toward the student's program objective at Pima Community College. The Registrar's Office must receive an official transcript for transferring students. Upon a student's written request, the Registrar's Office will evaluate all requests for transfer of credit.

### **Arizona Higher Education Course Equivalency Guide**

This guidebook has been developed in order to smooth the transfer of students from Arizona community colleges to four-year colleges and universities. The guide offers information on which courses will transfer for equal credit. It is included on page .



# Registration/Advisement Information

## Registration

Students can register for classes after going through early or summer advising as well as during the regular registration periods. A schedule or list of classes with information on registering and getting advice is given to each student before each semester. Registration is not complete until all fees have been paid. Students who do not have their fees paid or deferred on the day they register will have all their courses dropped, requiring them to re-register. Students with awards for aid in paying their fees should first report to the financial aid office.

## Registration/Advisement for International Students

International students must contact the three staff members responsible for guiding their educational experience at Pima Community College. These are the International Student Admission Specialist, the International Student Counselor, and a program advisor. Since two of these staff members are currently available only at the West Campus, full-time international students must be admitted and complete registration and schedule changes at that location.

International students may be required to take placement examinations for the purpose of determining proper academic placement. An international student registering for a course must meet the prerequisites or otherwise satisfy the instructor of his or her preparation to take the course. Prerequisites can be waived only at the direction of the instructor or department involved. An instructor may withdraw a student who does not have the proper prerequisites for his or her class.

## Maximum Credit Hours Per Semester

The maximum number of credit hours for which a student may enroll in any one semester is eighteen (maximum for summer is twelve). This limitation includes residence work as well as concurrent registration with the University of Arizona and in extension, correspondence, or high school courses.

Students who wish to exceed this maximum credit hour load must obtain appropriate approval.

## Prerequisites

A student registering for a course must meet the prerequisites or otherwise satisfy the teacher of his/her preparation to take the course. After notification, a teacher may withdraw a student who does not have the proper prerequisites for the class as stated in the catalog.

## Attendance

Students are expected to attend regularly and punctually all classes in which they are enrolled.

All students shall be provided in writing the attendance requirements established by each instructor or department. Absences exceeding these requirements may result in the student being withdrawn from a class by the instructor.

Students participating in official College activities are responsible for notifying their instructors in advance of an absence for official College activities and for completing all class assignments as required.

## Repeat of Course for Credit

State Board regulations prohibit the College from receiving state aid for students taking the same course more than twice except in certain courses as specified in the College catalog. Students who enroll more than the permitted number of times in a course will be charged an extra fee to replace the lost state aid.

When a course is repeated with the intent of improving the Grade Point Average (GPA), the highest grade earned will be used for computation of the GPA. All courses will remain on the student's transcript but only one successful completion will be counted toward degree and certificate requirements, except for certain courses as specified in the College catalog.

## Advisement

Assistance is given each student to help select a program of study for the student's needs and goals. The advising program is offered each semester during registration. At this time, students have a chance to talk with teachers and counselors about program choices and course selection.

# Student Costs

## Fees and Tuition

Credit Hours	In-State Resident	Out of State/Country*
1	\$ 17.00	\$ 19.00
2	34.00	38.00
3	51.00	57.00
4	68.00	76.00
5	85.00	95.00
6	102.00	114.00
7	119.00	609.00
8	136.00	696.00
9	153.00	783.00
10	170.00	870.00
11	187.00	957.00
12-18**	204.00	1,044.00

\*Subject to change.

\*\*To calculate fees and tuition above 18 credit hours, add \$17.00 per credit hour for in-state residents and \$87.00 per credit hour for non-residents.

## Other Costs

Withdrawal Fee	\$15.00
Course Repeat	19.00/cr. hr.
Music Lesson (Private)	
½ hour per week	105.00
1 hour per week	210.00
Health Science Liability Fee	7.00
Out-of-State Application Fee	10.00
Transcript (per copy)	1.00
Graduation Application	12.00
GED Test	15.00
GED Test (repeat)	3.00
Non-Sufficient Funds (NSF) Check	10.00
Laboratory--Nominal non-refundable fees may be assessed	
Excessive Loss or Breakage	Replacement cost
Lost Books	Replacement cost

Faculty/Staff/Dependent Fee Waiver  
Parking and Traffic Fine  
I.D. Card

TBA  
3-7.00  
2.00

Note: All fees are subject to change.

## Refund Regulation (Credit Courses—Fall and Spring Semesters)

**CANCELLED CLASSES**—In the event class(es) is cancelled by the college, a 100% refund will be made for all tuition and fees attributable to the cancelled class(es).

**TOTAL "DROP" FROM CLASSES**—If a student processes a total "drop" from the college within the guidelines below, a 100% refund, less a \$15.00 processing fee, will be made:

### Length of Class (Calendar Days)

### Official "Drop" Must Occur On Or Before

Regular Semester  
Special Program

13 calendar days after start of the semester

2 days or less

Class starts

3 to 7 days

1 calendar day after start of class

8 to 14 days

6 calendar days after start of class

15+ days

13 calendar days after start of class

No refunds for withdrawals will be made after the 13th calendar day after the start of the class or semester as appropriate.

**SCHEDULE CHANGES (PARTIAL "DROP")**—If a student remains enrolled for at least one class but decreases his/her schedule of classes by processing a "drop" within the above guidelines, a 100% refund of student fees and tuition applicable to that class(es) will be made.

See Class Schedule for Refund Regulation for summer sessions.

## Refund Regulation (Non-Credit Courses)

The Community Services office handles requests for questions concerning refunds for special interest community service / non-credit courses.

Refund requests must be made in writing and received five working days prior to the first class. A \$5.00 service fee will be charged.

Refunds are made in full for cancelled classes.

Questions should be directed to the Community Services office at 884-6720.

# Graduation

## General Education Requirements

Subject Area	Number of Hours					
	AA*	AS*	AAA*	AAS*	AGS*	ATC*
Humanities & Fine Arts	8	6-9	3	3	--	0
Social & Behavioral Sciences	9	6-9	3	3	--	0
Science and/or Mathematics	8	10	6	6	3	3
Communication	6	6	6	6	3	3
Reading**	4	4	4	4	4	00
Total Hours	35	35	22	22	10	6

\*AA - Associate Arts

AS - Associate Science

AAA - Associate Applied Arts

AAS - Associate Applied Science

AGS - Associate General Studies

ATC - Advanced/ Technical Certificate

\*\*Minimum College Reading Requirement

Minimum College-defined competency in Reading is a minimum score of at least 12th grade in each of the vocabulary and comprehension sections as measured by College assessment.

Students applying for graduation in an associate degree program must demonstrate reading competency as defined. Students who demonstrate this competency level on assessment or students who successfully complete REA 112 or higher will have met this requirement.

### General Education Course List

#### 1. Humanities & Fine Arts Courses

ART 130\*, 131\*, 132, 135, DRA 240\*, 241\*, ECE 108, 112, HUM 110\*, 111\*, Foreign Language\*, LIT 265, 272, MUS 151\*, 201, 202, PHI 101\*, 102, 120

#### 2. Social & Behavioral Science

ANT 100\*, 110\*, 200\*, 210\*, 215\*, 225\*, ECE 107, 117, ECO 100\*, 101\*, ESC 103\*, HIS 101\*, 102\*, 141\*, 142\*, 147\*, MAN 110, POL 100\* 110\*, 111\*, 112\* 130\*, PSY 100\*, 101\*, 103, SOC 100\*, 101\*

#### 3. Science & Mathematics

ACC 050, 101\*, 102\*, AST 101\*, 102\*, 111\*, 112, BUS 051, CHM 101\*, 102\*, 110\*, 111\*, 120\*, 121\*, ECE 124, ESC 101\*, 102\*, 115\*, 120\*, 121\*, LSC 102, 103\*, 104\*, 106, 120\*, 121\*, 205\*, 206\*, 207\*, 220\*  
MTH 060, 065, 070, 090, 101, 102, 103, 110, 115, 120, 125, 130\*, 134, 135, 140\*, 145\*, 150\*, 155\*, 160\*, 170\*, 175\*, 180\*, 185\*, 210\*, 215\*, 219\*, 220\*, PHY 101, 102, 105, 121\*, 122\*, 131\*, 132\*, 210\*, 216\* 221\*, 230\*, WWT 203

#### 4. Communication

OED 151, 251, SLG 101, 102, 201, 202, 203, SPE 120\*, WRT 100, 101\*, 102\*, 150, 154

\*Transfers as general education courses to most universities.

### Degrees and Certificates

Pima Community College establishes certain requirements which must be met before a degree, certificate, or course credit is granted. These requirements involve curriculum and course specifications.

Faculty and staff are available to help students understand and arrange to meet these requirements, but students are responsible for fulfilling them. If the requirements have not been satisfied at the end of the student's course of study, the degree, certificate, or course credit will not be granted. For this reason it is important that each student throughout his or her college career be knowledgeable of all regulations, keep currently informed, and be responsible for completing these requirements.

Students are required to make application for the receipt of certificates and/or degrees by the dates specified in the College academic calendar. Failure to do so may result in a delay in processing until the following semester.

This catalog does not establish a contractual relationship. It does, however, summarize the requirements students must meet to qualify for degree or certificate recommendation to the Governing Board of the Pima County Community College District.

Students may choose to fulfill degree or certificate requirements as outlined in any one catalog which was in effect during their dates of attendance at Pima Community College with the following exception: students who withdraw from Pima for two or more consecutive semesters must meet degree requirements as outlined in the catalog at their date of re-enrollment or any subsequent catalog during their dates of attendance.

DEGREES—Pima Community College offers Associate of Arts, Associate of Science, and Associate of General Studies degrees in a variety of subject areas. Certain occupational programs, in addition, offer students a choice of an Associate of Applied Science or Associate of Applied Arts degree. The degree is specified in the program curriculum.

These degrees generally are granted upon the successful completion of a program, usually two years in length, which has been outlined by the College faculty and approved by the Arizona Community College Board. Details of programs offered are listed in a separate section of this catalog.

While a minimum of 60 credit hours is required to earn an associate degree at Pima, it should be noted that the completion of some programs extends beyond the 60-credit hour minimum.

At least 15 semester hours of the total required to qualify for an associate degree must be earned at Pima Community College.

**CERTIFICATES**—Basic, advanced, and technical certificates are awarded in many short-term study program areas. Generally, these programs do not carry the two-year (60-credit hour) minimum for the associate degrees.

Certificates are granted upon the completion of a prescribed program of study as described in the respective program curriculums of this catalog.

At least six semester hours of the total required to qualify for a certificate must be earned at Pima Community College.

### **Credit by Examination**

**ADVANCED PLACEMENT CREDIT**—It is recognized that a student may have already fulfilled expected knowledge and/or competency levels for certain course and program requirements; therefore, a student shall have the opportunity to officially earn and record advanced placement in the College.

Advanced placement credit shall include:

1. Advanced placement examinations from high school.
2. College Level Examination Program (CLEP).
3. Defense Activity for Non-Traditional Educational Support (DANTES), formerly United States Armed Forces Institute (USAFI).
4. Special examinations for credit.

Students cannot receive credit by examination for a course that is lower than that in which they are currently enrolled or for which they already have received credit.

Students currently or previously enrolled at Pima Community College may earn up to a maximum of 30 hours credit by examination.

**ADVANCED PLACEMENT FROM HIGH SCHOOL**—These exams are administered in various high schools each year during the month of May and are designed to test competence in specific subject areas at the lower division college level. High school seniors may request the opportunity, through their counselor's office, to pursue college credit by examination in one or more areas of proficiency. A fee is charged for each exam. Pima Community College credit will be awarded in appropriate subject areas to students who receive a score of 3, 4 or 5 on these exams.

**COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)**—Two types of exams are available under this program for those who wish to earn college credit by examination. 1) General Examination: A maximum of six (6) credit hours may be obtained for each general exam in which a standard score of 500 or better is achieved. Five general exams are offered—English composition, humanities, mathematics, natural sciences and social sciences (history). 2) Subject Examinations: These are more specific and intended to cover material typical of college level courses in each student area. More than 40 of these exams are available, and credit may be earned for one or more Pima Community College courses upon completing an appropriate subject examination with a standard score of 50 or better.

**DEFENSE ACTIVITY FOR NON-TRADITIONAL EDUCATIONAL SUPPORT (DANTES)**—Students who successfully complete DANTES subject standardized tests while on active military duty may be eligible to receive credit by examination for appropriate Pima Community College courses. An official transcript of test results can be obtained by writing to DANTES, Box 2819, Princeton, N.J. 08540.

**SPECIAL EXAMINATIONS FOR CREDIT OR GRADE**—Credit by examination may be awarded for selected courses currently taught at Pima Community College. The student should consult with the appropriate departmental chairperson or faculty member for further information. Only students currently enrolled at Pima Community College may earn credit by examination. A student may not receive credit by examination for a course that is equivalent to or of a lower level than that in which he/she is currently enrolled or has already received credit. Credit by examination may not necessarily be transferable to other institutions of higher education. (Credit by exam does not satisfy the 15 hour residency requirement nor can it be used in qualifying a student for veterans benefits.)

### **Honors**

Graduating degree students who complete 30 credits at Pima Community College and qualify will be granted the following designations:

Graduation with Honors—3.500 to 3.799 grade point average.

Graduation with High Honors—3.800 to 4.000 grade point average.

These designations will be shown on diplomas and listed on students' official transcripts.

## Honors Program

The Honors Program of Pima Community College offers challenging educational opportunities for students with excellent academic records. Under this program, students may engage in advanced studies in areas of their interest, as well as participate in seminars or enrichment courses.

Students are invited to apply for the Honors Program if they meet one of the following criteria:

1. Continuing Pima Community College students with a GPA of 3.5 in at least twelve hours of courses numbered 100 or above;
2. Students entering from high school must show evidence of a GPA of 3.5 on previous academic records if available and with Pima Community College assessment scores which qualify them for two of the following: WRT 101, MTH 130, and REA 112;
3. Continuing college students (from other than Pima) must have a GPA of 3.5 in at least twelve hours of college-level courses.

Students who meet the criteria or students invited to apply may obtain application forms from Downtown Campus—Career Counseling Center, East Campus—Counseling Center, and West Campus—Career Center. Selection will be made by the Honors Program Screening Committee, which meets four times a year: January, April, August, and November.

The Honors Program includes the following:

- HON 300—Honors Independent Study Projects
- HON 301—Honors Seminar
- HON 350—Honors Special Topics
- Honors Enrichment Sections
- Honors Course Sections

In addition, the Honors Program sponsors lectures, workshops, field trips, forums, and other special activities to foster informal interaction between students and faculty.

## Student Records

### Grading Policies

Grades at Pima Community College are recorded at the end of each session according to the following system:

- A—Superior (4 grade points per credit hour)
- B—Above Average (3 grade points per credit hour)
- C—Average (2 grade points per credit hour)
- D—Below Average (1 grade point per credit hour)
- F—Failure (0 grade point per credit hour)

P—Pass (C or better without grade differentiation ordinarily indicated by the college grading system. A P grade may be given at the student's request and the instructor's option.)

I—Incomplete (A record of Incomplete as a grade will be made at the student's request and at the instructor's option. This grade will be kept on record for one year after which it will be automatically changed to Y. A student receiving a grade of I will be provided with a standard form specifying the work necessary to complete the course.)

W—Official Withdrawal (This grade may be requested by the student at any time within the term of the course or may be given by the instructor on or before the official census reporting date to students who have ceased attending class before that date.)

Y—Unofficial Withdrawal (This grade indicates unofficial withdrawal. It is given by the instructor at the end of the term to a student who has ceased to attend classes after the official census date, but who has not filed a formal request for a grade of W.)

X—An X placed next to the grade indicates the grade was earned through the successful completion of a proficiency test.

AU—Audit (To audit a course means to enroll in and to attend a class without working for or expecting to receive credit. The symbol for audit, AU, appears on the transcript of grades and on the class list by the student's name. Students auditing a class must register by the end of the official refund period and must receive the written permission of the instructor.)

Graduation requirements include a 2.0 overall Grade Point Average (GPA). The GPA is found by multiplying the number of credit hours for each course by the number of points for the grade and dividing the sum of the total points by the total number of credit hours of A, B, C, D, and F grades. D grades do not fulfill graduation requirements if they are received in core courses. F grades do not fulfill any requirements. The GPA is based only on work completed at Pima Community College. A complete record of all credit courses attempted at Pima Community College is maintained for each student. Grade reports are mailed to each student at the end of each session.

**Course Repeat**—The higher of two grades earned for the same course will be used for the computation of the GPA. Both courses will remain on the student's transcript.

**Core Courses**—D grades do not fulfill graduation requirements if they are received in core courses. Core courses are designated in each college program by a footnote.

**Academic Standards of Progress**—The following criteria will be applied to determine good academic standing at Pima Community College. All students will be in good academic standing unless:



1. Their cumulative Grade Point Average falls below the minimum GPA.

Units Completed	Minimum Cumulative Grade Point Average (GPA)
15 through 29	1.50
30 through 44	1.75
45 or more	2.00\$FL

Units completed include those credits earned at Pima Community College with a grade of A, B, C, D, F, or P.

2. They receive 8 or more credit hours of W (official withdrawal) and/or Y (unofficial withdrawal) in each semester for two consecutive semesters of enrollment.

Implementation of these criteria were effective with the beginning of the Spring, 1984, semester based upon GPA earned during and prior to the Fall, 1983, semester at Pima Community College. Effective date of the W and Y criteria stated above began with the Fall, 1983, semester.

**Academic Alert**—Students will be placed on academic alert when:

1. Students are not in good academic standing.
2. Students have been readmitted after having been placed on academic disqualification.

The Academic Alert system:

1. Informs students of academic status.
2. Allows students one semester to achieve good academic standing.
3. Advises students of available College resources which may assist in improving academic performance.

**Academic Disqualification**—A student on academic alert will be academically disqualified under the following conditions:

1. Does not raise his/her cumulative GPA to the required Standards of Progress. (Exception: if the student earns a 2.00 GPA or higher for the current semester he/she will be permitted to continue on academic alert status.)
2. Records eight (8) or more credit hours of withdrawal (W) or unofficial withdrawal (Y) grades in any combination thereof during the current semester.

A student who has been academically disqualified will not be permitted to enroll for the semester following disqualification.

**Appeal of Academic Disqualification**—A student who has been academically disqualified must follow established College appeal procedures for immediate reinstatement if he/she feels that mitigating circumstances contributed to the unsatisfactory academic progress. Specific procedures for appeal will be outlined within the notification letter that is provided to students who are disqualified.

**Appeal of Grades**—Students who feel that a course grade has been unfairly awarded and have not been able to resolve the matter with the instructor involved must follow the established College appeals procedure for requesting a change of course grades.

**Reinstatement**—For reinstatement after academic disqualification:

1. Students must not enroll at PCC for one regular semester (excluding summer school) following their academic disqualification.
2. Students disqualified at the end of the spring semester may enroll for the summer session. Providing the student earned a 2.00 GPA in six (6) credit hours or more in the summer session, he/she may continue for the fall semester.
3. Students may appeal the academic disqualification in accordance with the established College appeals procedures.

After reinstatement the student will be placed on academic alert status.

### Assessment

Pima Community College requires skill assessment tests in mathematics, reading, and writing. These tests are provided free of charge and are administered throughout the college District.

- A. Assessment data shall be used by authorized college personnel to assist the student with the selection of appropriate courses and/or a course of study. Pima does not require mandatory placement into certain courses, but some programs may require entrance examinations or competency levels and may have prerequisites.
- B. Prior to the end of a student's third hour of instructional activity, all three assessment tests shall be required in accordance with the following criteria:
  1. Any full-time student; or
  2. Any student enrolling for the first time in a mathematics, reading and/or writing 070, 072, 073, 077, 100, 101 course and related modules; or
  3. Any student whose academic performance falls below a minimum grade point average of 2.0.

### Assessment Equivalencies

Assessment equivalencies have been developed to facilitate the admission of students into courses who have previously demonstrated adequate competencies in the basic skill areas. These equivalencies may not be used to meet college general education requirements or other specified program entrance requirements. Assessment tests are not required for students who have achieved one of the following:

1. A minimum composite score of 930 on the scholastic aptitude test (SAT), or
2. A minimum composite score of 21 on the American College Test (ACT), or
3. A degree or advanced certificate from an accredited college.

Documentation of national assessment scores, degrees and certificates must be filed with the Admissions Office by the time of registration.

## Student Classification and Standing

Pima Community College students will be classified using the following criteria:

**Full-Time Student**—Students enrolled for twelve (12) or more credit hours for the fall or spring semester or six (6) or more credit hours for an eight-week summer session or four (4) or more credit hours for a five-week session will be classified as full-time students.

**Part-Time Student**—Students enrolled for 1-11 credit hours during fall or spring semester or five (5) or fewer credit hours for an eight-week summer session or three (3) credits or fewer for a five-week summer session will be classified as part-time students.

**Freshman**—Students who have earned 27 or fewer semester hours of credit will be considered freshmen.

**Sophomore**—Students who have earned 28 or more semester hours of credit will be considered sophomores.

## College Programs

### Servicemembers Opportunity Colleges

Pima Community College has been designated as an institutional member of Servicemembers Opportunity Colleges (SOC), a group of over 400 colleges and universities providing voluntary postsecondary education to members of the military throughout the world. As a SOC member, Pima Community College recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements, and crediting learning from appropriate military training and experiences. SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense and a consortium of thirteen leading national higher education associations; it is sponsored by the American Association of State Colleges and Universities (AASCU) and the American Association of Community and Junior Colleges (AACJC).

### Veterans

Pima Community College is approved for the enrollment of veterans, dependents, and war orphans as provided under Title 38 of the U.S. Code. Students who qualify should contact the Veterans Office at one of the campuses for necessary forms prior to the start of the semester or during the registration period.

A veteran or eligible person must be enrolled for 12 or more credit hours to receive full-time benefits, 9 to 11 hours for three-fourths benefits, and 6 to 8 hours for half benefits. Those enrolled for less than 6 credits will be reimbursed only for appropriate fees charged at registration. Recipients of VA Educational Benefits enrolled in non-standard semester courses (i.e., open entry/open exit or short-term courses) should be aware that their monthly rate may vary depending on the number of credits for which

enrolled, the length of the non-standard semester courses, and whether the student is combining standard and non-standard semester courses.

If a veteran has received credit through DANTES (formerly USAFI), service schools, practical service experience, etc., it may be possible to receive equivalent credit at Pima. Contact one of the Admissions Offices for details.

The following standards of progress apply to all persons receiving VA educational benefits:

All eligible persons will be requested to select an approved program of study (listed in the College Catalog) prior to registration for classes in order to receive an educational allowance under Title 38, US Code.

The Veterans Administration requires that eligible persons who have attended another college or university prior to enrollment at Pima Community College must provide an official transcript of such records. Upon doing so, Pima Community College will award appropriate credit for previous education where applicable and report this to the Veterans Administration Regional Office. Students failing to provide official transcripts for an evaluation could find their benefits delayed or terminated.

Each eligible person will be required to comply with the academic standards of progress for all students as indicated in the College Catalog.

Educational benefits will not be paid for courses unless they are used in computing graduation requirements. Veterans and dependents receiving the grade of Unofficial Withdrawal or Official Withdrawal or Incomplete (unless the incomplete grade is changed to a passing grade within one year from receipt) in any of their courses will have to reimburse the VA for any difference in pay, retroactive to the beginning of the semester unless they can report mitigating circumstances when requested by the VA Regional Office.

Veterans or eligible persons who are academically disqualified from VA educational benefits must be approved for re-enrollment for educational benefits by the Adjudication Officer at the VA Regional Office in Phoenix, Arizona.

Pima does not exclude individuals from attending the College because they are not receiving VA educational benefits.

### Cooperative Education

Cooperative Education programs at Pima Community College provide students the opportunity to earn credit while working in jobs related to their area of study.

Students enrolled in the Cooperative Education program attend related class meetings to learn to develop competencies in the following areas:

1. Planning a career
2. Obtaining employment
3. Maintaining a job
4. Human relations
5. Economic understanding

Students in the program will be assigned a cooperative education instructor, who will work with the students individually and offer assistance in job placement and upgrading, and skills and career development.

Students holding full-time jobs find the Cooperative Education plan helpful in several ways. Most employers encourage employees to continue their education and some also provide plans which pay tuition and other costs for the successful completion of courses related to particular occupations.

Often, these employers become aware that their employees are trying to upgrade their knowledge and are willing to plan a work experience program. This could lead to faster promotions and higher pay.

Employers hiring students through the Cooperative Education program will evaluate the student/employee's performance each semester. In addition, the employer has the advantage of using College capabilities for training employees on new equipment or for newly created jobs. With this program the College assesses the employer's training needs while providing practical education for those employed.

#### **Evening/Extended Day Programs**

Many Pima courses are offered at night or on weekends. These courses cover many areas of interest and are offered at many places in Tucson. Classes can be found in degree programs, job training, and special interest areas. Night students may work for a degree for transfer to a four-year college or for a special certificate. They may also attend for self-interest.

#### **Summer Session**

Three terms of school are offered each summer with courses determined by student demand. Two terms are five weeks long each and one term is eight weeks long. Under Arizona law, summer programs must be self-supporting and receive no public support.

#### **Special Services (Disabled Student Resources)**

The Special Services Department is committed to providing educational support services for disabled students on all Pima Community College campuses. Disabled Student Resources assists students and instructors in adapting learning environments to allow each individual to realize his/her fullest academic potential within the scope of the College. Disabled Student Resources refers disabled students to other College departments and community agencies that can also enrich their educational experience. Services provided by Disabled Student Resources may include: advising, classroom assistance, special education tutoring, notetaking, sign language interpreting, mobility assistance, specialized equipment, developmental classes for the hearing impaired, and workshops for faculty, staff and the community about students with disabilities.

## **Bilingual and International Education Programs**

### **Bilingual Program**

Pima Community College offers students a unique educational opportunity through the bilingual program. The program serves students with a variety of backgrounds and needs.

#### **Both English and Spanish Used**

Bilingual program courses are taught using both English and Spanish. Bilingual instructors help students to understand and learn better by using both English and Spanish in their presentations and in their explanations when answering questions. If a student needs more help in English or vice-versa, they will be provided help through the language they best understand.

#### **Take Other Courses While Studying English**

The bilingual program makes it possible for students with limited English proficiency to begin coursework in the field which interests them because these courses are taught using both languages. While they are taking these bilingual courses they need to take ESL classes, if they are foreign students, as there are only a limited number of bilingual courses offered each semester. Bilingual degree programs all include some courses taught only in English. The vast majority of the classes offered at Pima Community College are taught in English only; thus, it is most important for them to take ESL courses to attain proficiency in English.

#### **Students Fluent in English Also Take Bilingual Courses**

Students who are not limited in their English proficiency, and who wish to increase their proficiency in Spanish in certain subject matter areas such as accounting, secretarial skills, business, etc., should also be informed of the bilingual program offerings and/or encouraged to speak to instructors or staff members of the bilingual program area. These students do not have to read Spanish; they merely have to understand and speak some Spanish. Taking bilingual program courses will help them improve their proficiency in Spanish while learning course content. Learning terminology in Spanish in particular subject matter areas such as accounting, secretarial studies, education, business, etc., provides them with additional marketable skills.

#### **Programa Bilingüe**

El colegio ofrece una variedad de cursos usando inglés y español como base para personas que ya hablan español y desean un enfoque bilingüe/bicultural.

Una gran variedad de cursos forman parte de este programa: clases para secretaría, educación, mecánica, arte, psicología, administración, matemáticas, deportes, bailes folklóricos, español para nativos, economía, cocina, historia, etc.

### ***El estudiante que estudia inglés***

Mientras el estudiante estudia inglés puede tomar clases bilingües en algún campo de interés para él, acumulando créditos para un certificado del Colegio Pima o para transferir a nivel universitario.

### ***El estudiante que desea destrezas en español***

La variedad de cursos que se ofrecen en una forma bilingüe dan destrezas lingüísticas y conocimientos culturales adicionales a estudiantes que desean algo extra. Por ejemplo las personas en el campo de la educación o de secretaría aprenden el vocabulario y la expresión necesaria para encontrar un mejor empleo.

### **International/Intercultural Education**

By virtue of its mixed cultural heritage and its proximity to Mexico, the Tucson area is an international/intercultural community. The need for international/intercultural education is recognized by the College and is embodied in the philosophy of the institution which states in part:

"All individuals in the College community are encouraged to take pride in their own heritage and at the same time to develop awareness and appreciation of differences which stem from varied backgrounds."

The goal of international/intercultural education is to provide students with basic information that allows them to function better within their own culture and fosters tolerance and understanding of other cultures.

To respond to this need, the College endeavors to provide a multiplicity of academic, social and cultural activities which increase international/intercultural understanding. On display on all campuses is a brochure entitled "Courses and Activities with International and Intercultural Dimensions," which highlights these activities."

As part of its academic program, the College now offers courses which have been modified to include international studies content, through a United States Department of Education grant. The modified courses, in addition to the regular subject material outlined in the course descriptions in this catalog, contain material to help students understand the course content on an international level. Students who take these courses can expect to gain a better understanding of other cultures and/or to be better informed about international events which affect their daily lives.

The following is a list of these courses:

BUS 100	Introduction to Business
BUS 200	Business Law
ECO 101	Introduction to Macroeconomics
ESC 103	Cultural Geography
ESL 050	A & B, English as a Second Language
GRA 101	Graphic Technology
HCA 154	Health Care
HCE 110	Approaches to Long-Term Care and Rehabilitation
HUM 110	Humanities

HUM 111	Humanities
MAN 110	Human Relations in Business & Industry
MAN 122	Supervision
MAN 124	Small Business Management
MAN 280	Business Organization & Management
MKT 111	Marketing
MKT 139	Retailing
OED 251	Business Communications
OED 271	Office Procedures
POL 110	American National Government and Politics
PSY 102	Introduction to Social Psychology
REL 130	Comparative Religions: Oriental
SPA 110	Intermediate Spanish
WRT 102	Writing

Students interested in these internationalized classes should consult the Schedule of Classes each semester for specific sections identified with the statement: "This section contains international studies content."

## **Library and Learning Centers**

### **Learning Resource Center (Library)**

Library Services for all Pima Community College students, faculty and staff members, as well as our larger community of Pima and Santa Cruz Counties are available at the Downtown Campus, East Campus, and West Campus Libraries. Library resources are shared District-wide and are listed in our "com cat." An Inter Campus Library loan system shares materials at all locations.

The West Campus Library, located on the second and third floors of the Library/Administration Building has a total collection of intershelved books and audio visual materials numbering almost 300,000 items. This total includes books, pamphlets, audio and video cassette tapes, records, maps, slides, art prints, games, filmstrips, films, magazines, newspapers, and microforms. The collection is particularly strong in the areas of art, ethnic studies, music, literature, law enforcement, business and legal reference, and Latin American history.

In addition to materials in the general stacks, the LRC features six separate collections of materials: Spanish-Language, Career Information, Children's Literature, Paperback Leisure Reading, Film and Video, and Current Best Sellers. Also available for use in the LRC are phonograph records and microfiche collections of college catalogs, national phone directories, and ERIC documents.

The LRC contains study tables, equipped carrels, and lounge areas to accommodate over 300 students. In addition, classes can view films or



videotapes in the film room. The LRC also displays art work done by faculty and students.

The public services staff is available to answer reference questions and assist users in locating and utilizing items in the collection. The staff also provides free bibliographies, tours, referral to other community resources, access to automated databases, student and faculty manuals, a self-paced library skills workbook, a self-paced audio tour, and the use of calculators and typewriters.

The Downtown Campus library, located on the second floor of the Campus Center, houses a collection numbering approximately 25,000 items of print and non-print materials for reference and curriculum support. This library specializes in the areas of automotive technology, sheet metal and air conditioning, welding, machine shop, alternative energy (especially solar), graphic technology, advertising art, hospitality, small business, office education, and practical nursing. Current magazines and newspapers are available for informational and leisure reading. Backfiles of selected periodicals in the areas of specialization are also available for research. The library maintains a small collection of popular fiction, non-fiction and poetry for leisure reading. The staff of the Downtown Campus library offer the same services and facilities to users that are offered at the West Campus LRC. Students registered at the Downtown Campus also are eligible and encouraged to use the West Campus library, whether independently or through the reference services offered by the Downtown Campus library staff.

The East Campus library has a collection of over 10,000 print and non-print materials for reference and in support of the curriculum. A collection of magazines and newspapers also is maintained. Backfiles of periodicals unique to the East Campus are available for research. Research assistance, guidance and referral to other library resources is available from the library staff. Students registered at the East Campus may also use the resources of the Downtown Campus and West Campus libraries either independently or through the reference services offered by the East Campus library staff.

Community Campus students taking courses at locations throughout the college district are urged to use library sources at either the West, Downtown, or East Campuses. Instructors often place reference material at participating public libraries.

**WHO MAY BORROW FROM THE LIBRARY**—Pima Community College students with a current plastic-laminate photo identification card may check out library materials at any branch. ID cards are available for a fee at the time of registration, or as needed during the year from Student Activities. If a library patron is not currently a student, he or she may be entered as an Off-Campus Borrower, with proper identification (driver's license, social security card, or military ID). The library loan period is normally two weeks, but students in the Honors Program may have special borrowing privileges. Copies of the Library's circulation policy are available on request from any branch.

## Alternative Learning Centers

**WEST CAMPUS**—A Learning Center has been established on the West Campus to provide alternative learning experiences in a variety of subject areas. In this center, students are encouraged to work independently and to progress at their own pace. Instructors and tutors are available during both the day and evening hours to work with any student.

The major services provided are: (1) Self-paced, individualized programs in the basic skills of reading, writing, and mathematics, (2) Supplemental tutorial assistance for students enrolled in regular classes in a variety of subject areas, (3) Testing to assist students in course selection and educational goal setting.

**DOWNTOWN CAMPUS**—The Alternative Learning Center (ALC), located on the second floor of the Campus Center provides students with three major services: (1) Courses for credit in math, reading and writing; (2) Supplemental tutorial assistance; and (3) Placement testing.

1. The ALC offers many courses for credit in math, reading and writing. Each course has an individual plan which allows for scheduling during the day and evening as well as self-paced study. Personal and individual attention from instructors, lab assistants and tutors is given to help the student successfully complete the one, two, three and/or four credit hour courses. The open entry/open exit format permits the student to enroll for credit after other classes have begun and to finish before the semester ends.
2. Tutoring in math, reading, and writing is offered to students enrolled in ALC classes as well as those enrolled in DTC classroom sections. Students may drop in during regularly scheduled tutoring hours in the ALC.
3. Four placement tests are administered in the ALC: math, reading, writing, and ESL. Before registering in any of the ALC courses, students are strongly advised to assess their abilities in the basic skills. This assessment information will help the advisors and counselors make the best recommendations to the students for program choices and course selections.

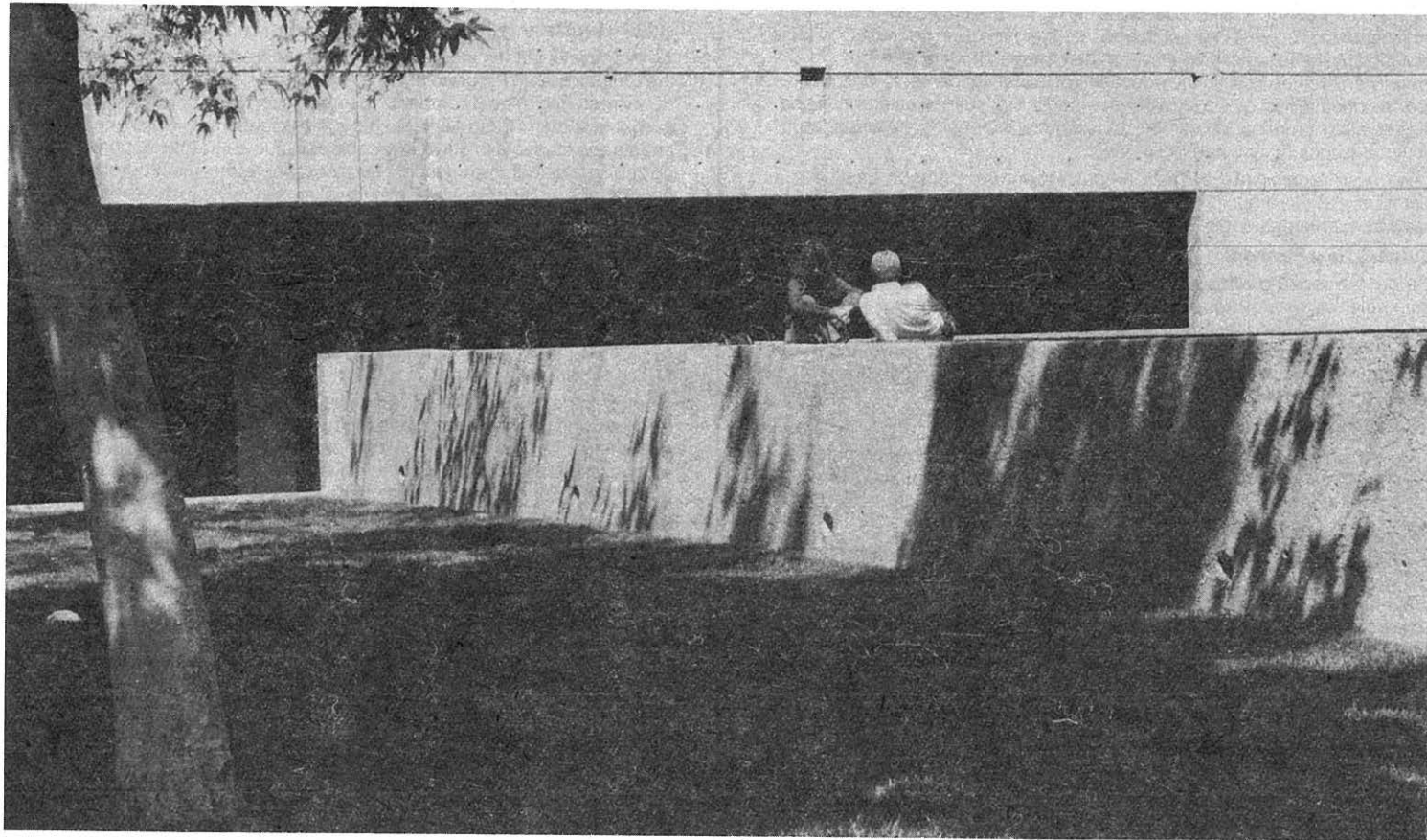
**EAST CAMPUS**—The Supplemental Learning Center, located in Rooms E3-5 and E3-6, provides free tutoring and testing services. Tutoring is available for courses in accounting, chemistry, computer science, ESL, French, humanities, math, Spanish, and writing. Students may make appointments for tutoring sessions, or they may be tutored on a walk-in basis.

The Testing Lab offers assessment tests in math, reading, and writing to help students in selecting appropriate courses. Some instructors use the Testing Lab to administer their class examinations.

All Pima Community College students should visit one of the centers to obtain additional information about this specific educational service.



## Student Life



# Student Life

## Student Services

The Student Services staff is responsible for furnishing students with what they need and request in order to educate themselves in addition to what is provided by the instructional areas of the College. Student Services, therefore, involves itself in the education of the whole person: individual growth, counseling, group experiences, social life, cultural awareness and appreciation, physical, emotional, and financial well-being, experiences in governing society, and earning a living.

Centers are located at the West Campus, Downtown Campus, East Campus, and Community Campus office, and at some off-campus sites used by evening students.

## Student Development

Students attending either day or evening sessions can receive an orientation to the College, academic advising, career planning, and testing and counseling services from members of the student development staff. These services are available at the West Campus, Downtown Campus, East Campus, the Community Campus office and at various off-campus locations used by evening students.

## Counseling

Counseling services cover academic, personal and/or career problems. Although students are accepted on a walk-in basis, appointments are recommended.

## Assessment Services

Individual assessments can be made, with the assistance of materials, for counseling, career and/or educational planning. Materials used by the staff help determine individual capabilities, specific learning disabilities, vocational interests, aptitudes, achievement and/or personal crisis situations. Group times also are made available for the General Education Development test (for high school equivalency) and the Test of English as a Foreign Language required of foreign students seeking admission to the College. Many tests are available in both English and Spanish.

## Human Development Program

Students seeking alternative approaches to personal growth can take part in a variety of group experiences and individual conferences. Classes are scheduled by modules each semester to focus on such areas as college survival skills, self-assessment, human relations and problem solving, career exploration and development, self-awareness, and specific needs for women and men to improve interpersonal skills. Units are offered at the time of class registration.

## Special Programs

Special programs are provided to assist Indian students, ex-offenders (PRISM), foreign students, veterans, and those who are physically impaired or have limited mobility. These programs include assisting the qualified student in obtaining financial benefits, counseling, and tutoring.

An example of such a program is the Paso Adelante Program. The goal of the Paso Adelante Program at Pima Community College is the exposure of newly recruited minority students to the wide range of career opportunities available to them. Paso Adelante recognizes that efforts which merely encourage students to enroll in a course of study but lack supportive follow-up services do not foster student success. Therefore, the program encourages a "Step Forward" by providing special support services to participants.

## Student Housing

Pima Community College does not own or operate student housing either on campus or in the community. Student Services provides information to students on request regarding community agencies and organizations providing housing.

## Office for Minority Affairs

The Director for Minority Affairs reports to the Vice President for Student Services and provides leadership for the planning, monitoring, and refinement of a District-wide minority communities program. He/she is responsible for coordination of the necessary educational/service support for minority groups in their search for a quality educational experience.

## Student Activities

Information on the student governance, student clubs, organizations, athletics and cultural events scheduled during the academic year can be obtained at any of the College campuses.

Cultural events include visiting artists, films, visiting speakers, lectures, informal discussion groups or colloquiums, poetry readings, art exhibits, cultural awareness weeks, and festivals.

Student activity offices also provide information on community events, housing and transportation. Information service personnel will help students reserve a meeting room for College activities or post a notice. A student handbook is made available through these offices.

For information on these services, consult the Student Services office on any campus.

## Career Centers

Career Centers located in the Student Center at the West Campus, the Campus Center at the Downtown Campus, and in the "O" Building at the East Campus provide information on various careers, training needed for different careers, salary projections, future outlooks for employment, special job requirements, resume writing, and job seeking skills. Assistance in



developing life management skills or making career decisions is available through individual and group counseling, film strips, slides, tapes, computer systems, and written materials.

### **Career and Job Placement**

The College offers career advising and job placement services on each campus. The centers provide assistance with employment preparation and maintain a listing of part-time, full-time, and temporary jobs for students. Personnel also assist students involved in the College cooperative education program.

A job information hot line is available after business hours by calling 884-6815. For more information and assistance on finding a job visit a campus Career Center or call the Career and Job Placement Office at 884-6815.

### **Student Leadership**

Students have a voice in College functions through many areas. These include recognized student governance associations at each of the campuses, the Board of Governors, and appropriate student groups and committees at each of the campuses. Representatives of the student body also sit on various task forces and committees that make recommendations to the President. Students are also elected to a District student council comprised of two representatives from each campus.

Although the student representatives on the Governing Board cannot cast a vote with the official members, they can voice an opinion on agenda items.

Students are urged to volunteer for College task forces and committees. Those interested in participating should check with a Student Activities office for available positions. Students also provide information on activities of the various groups to the student body government. For information on these activities, consult the Student Activities office on any campus.

Leadership courses are also offered through Human Development courses (HDE). The courses are designed to improve leadership skills and to provide an understanding of the working relationship of student government within the community college structure.

### **Standard of Conduct and Student Code of Conduct**

All students at Pima Community College are considered responsible adults and, as such, are accountable for their own personal behavior. All students are expected to conform to local, state, and federal laws and duly established College standards of conduct. For a detailed statement of College regulations refer to the Student Code of Conduct available in the office of the Campus Student Services administrator.

### **Intercollegiate Athletics and Intramural Sports**

Pima Community College offers well-rounded athletic, intramural and campus recreation programs plus physical education classes to meet a variety of student interests. Complete details on intercollegiate, intramural, and campus recreation programs can be obtained from the Athletics office on the second floor of the gymnasium. Physical education programs are handled by the Physical Education Department or the Human Resources Division of the West Campus.

**INTERCOLLEGIATE:** Pima is a member of the Arizona Community College Athletic Association and the National Junior College Athletic Association, Region #1. Intercollegiate activities are governed by a board of students, staff, and faculty with policies administered under the President by the Director of Athletics. Eligibility requirements are set by the sports organizations which govern our participation. The basic stipulations are that the student/athlete be enrolled full-time, making satisfactory academic progress, and that he or she has been granted a medical clearance for participation. Competition includes cross country (men and women), basketball (men and women), tennis (men and women), track (men and women), baseball (men), volleyball (women), wrestling (men), golf (men), softball (women), and archery (men and women).

**INTRAMURAL:** Intramural activities are open to any member of the College—students, faculty and staff—with sports geared to individual and team competition. More than 35 activities are available and others are developed when enough interest is shown. Activities include basketball, baseball, badminton, flag football, golf, ice cream eating contests, billiards, ping pong, seven-mile bicycle race, bucking horse contests, softball, swimming, tennis, volleyball, racquetball, weight lifting contests, and several two-mile cross country runs.

### **Student Health Services**

Limited assistance in health matters is available to students at each campus. Workshops and other means of health education are available to assist students in recognizing and understanding health needs.

It is hoped that students will avail themselves of these services as they recognize their own health needs or would like to have some health counseling.

Accident insurance is provided for Pima Community College students enrolled for credit courses without additional cost under a blanket policy. The policy covers students for injuries incurred during College activities. Details of the coverage are available to students at the time of registration. Supplementary accident and sickness medical expense insurance may be purchased by students. Forms are available in each student service area.

## Student Publications

Student publications include the "Aztec Press" and two literary magazines, "Mazagine" and "Llueve Tlaloc."

Those who would like to serve on the newspaper staff in any capacity should contact either the Fine, Applied and Communicative Arts area office or the Student Activities Office on the West Campus.

Students interested in publishing "Mazagine" (a literary/arts publication) should register for Writing 062. "Mazagine" is nationally distributed and acclaimed and contributions are welcomed from anyone. Submit to "Mazagine" in CBN 127, West Campus, SASE.

"Llueve Tlaloc," a bilingual literary magazine, is published annually by students enrolled in Literatura Creativa (Spanish 206). Selections are written in Spanish and some are translated into English for publication. Those who would like additional information regarding "Llueve Tlaloc" should contact the Bilingual and International Studies Office.

## Financial Aid

A complete financial aid program is offered to help students with the cost of school through scholarships, loans, grants, and jobs. The main purpose of this aid program is to help all interested students to be able to pay for college. The College does not discriminate against qualified individuals on the basis of sex, race, color, national origin or handicap in awarding financial aid. Early application for financial aid is essential. Contact a campus financial aid office for information and application.

For all types of Federal financial aid, exclusive of the Guaranteed Student Loan, students must be committed to educational programs which lead to a degree, certificate, or a university transfer program.

### Types

**Student Loans**—The College offers a large number of student loans at low interest rates and deferred repayment at favorable terms. Among these are Student Nursing Loans, Guaranteed Student Loans and National Direct Student Loans. A Pima Community College Emergency Loan Fund provides small loans for short periods of time to assist students in meeting emergencies.

**Grants**—A number of Supplemental Education Opportunity Grants are offered students having exceptional financial need. Arizona State Student Incentive Grants (SSIG) must be matched by existing scholarship awards to individual students.

**College Work-Study Program**—A number of campus jobs, supported jointly by college and federal funds under the College Work-Study Program are available to students. Students, generally, may work up to 15 hours per week when classes are in session. A financial aid application should be submitted at least six weeks prior to the beginning of a term.

**Eligibility**—Each of the programs has somewhat different eligibility requirements. In general, financial need is the most important selection factor. The lack of previous academic achievement should not discourage an otherwise deserving financial aid applicant.

**Pell Grants** are available to eligible students enrolled at least half-time in a program which leads to a certificate or a degree. Students who previously earned a bachelor's degree are ineligible. Applications can be obtained from any of the College's Financial Aid Offices or from high school counselors.

**Scholarships**—A number of scholarships have been set up for students by generous private donors. Awards range from \$100 to \$300 and often can be renewed for a second year. The current scholarships include:

- American Association of University Women Scholarship  
Source: American Association of University Women (Tucson Branch)  
Eligibility: Promising and needy students  
Value: \$150, number varies
- American Business Women's Association  
Source: American Business Women's Association of Tucson  
Eligibility: Female students interested in the business field  
Value: \$120, one award per year
- American Legion Post #66 Nursing Scholarship  
Source: Green Valley Post #66  
Eligibility: Needy, deserving student in RN program  
Value: \$400, one award per year
- Arizona Bank Scholarship  
Source: Arizona Bank  
Eligibility: Needy and academically deserving students, with preference to minority or disabled/handicapped  
Value: \$300, one award per year
- Delta Nu Alpha Scholarship  
Source: Delta Nu Alpha Organization  
Eligibility: Promising full-time students in the Transportation and Traffic Management Program  
Value: \$150, number of awards varies
- Riginette Enz Scholarship
- Margaret Ernst Memorial Scholarship  
Source: Family and friends  
Eligibility: Promising and needy students  
Value: Amount varies, number varies
- Exchange Clubs of Tucson Temporary Loan Fund  
Source: Exchange Clubs of Tucson  
Eligibility: Second semester students  
Value: Up to \$50 for books, number varies

- First Interstate Bank Scholarship  
Source: First Interstate Bank of Arizona  
Eligibility: Students in the business field  
Value: \$250, three awards per year
- Frederick B. Ginsburg Memorial Scholarship  
Source: Family and friends  
Eligibility: Deserving students in any field of study  
Value: \$300 per year, one award each year
- Hughes Aircraft Company Scholarship  
Source: Hughes Aircraft Company, TMD  
Eligibility: Promising and needy students pursuing a four-year degree program  
Value: \$500, two awards each year
- Golden Plate Scholarship  
Source: National Institute for the Foodservice Industry, National Restaurant Association  
Eligibility: Full-time student in Hospitality Education Program  
Value: \$750, number varies
- Kiwanis Club of Green Valley Scholarship  
Source: Kiwanis Club of Green Valley  
Eligibility: Promising and needy students  
Value: \$350, one award per year
- Kiwanis Club of Tucson Scholarship  
Source: Kiwanis Club of Tucson  
Eligibility: Promising and needy students  
Value: \$350, one award per year
- Sharon Krieg Memorial Scholarship Fund  
Source: Family and friends  
Eligibility: Promising and needy students  
Value: Amount varies, number varies
- League of Mexican-American Women Scholarship  
Source: League of Mexican-American Women  
Eligibility: Promising Mexican-American students  
Value: Amount varies, number varies
- Little Chapel of All Nations Scholarship  
Eligibility: Promising and needy full-time students, with preference to the field of Library Technology or related field  
Value: \$250, two awards per year
- Mary Macon Memorial Scholarship for Office Education Students  
Source: Family and friends  
Eligibility: Promising and needy students in Office Education  
Value: Varies, number of awards varies

- Marshall Foundation Fund—Allied Health  
Source: Marshall Foundation  
Eligibility: Students enrolled in an Allied Health program  
Value: Amount varies, number of awards varies
- Marshall Foundation Fund—Nursing  
Source: Marshall Foundation  
Eligibility: Female students enrolled in the RN program  
Value: Amount varies, number of awards varies
- Andrew P. Martin Scholarship Fund  
Source: Estate of the late Andrew P. Martin  
Eligibility: Graduate of a Tucson high school, enrolled in a one- or two-year building, electronics or mechanical trade course of study  
Value: \$300, number of awards varies, renewable
- M.E.C.H.A.—Lizzie Lopez Memorial Temporary Loan Fund  
Source: M.E.C.H.A. Club  
Eligibility: Promising and needy students  
Value: Amount varies, number varies
- Medical Secretary Society of Pima County  
Source: Medical Secretaries Society of Pima County  
Eligibility: Full-time enrollment in the medical assistants or an allied medical program  
Value: \$150, one award per year
- J.G. (Jack) Moore Memorial Scholarship  
Source: Mrs. Margery Moore  
Eligibility: Promising students interested in becoming teachers  
Value: \$250, two awards per year
- National Semiconductor Scholarship  
Source: National Semiconductor  
Eligibility: Full-time enrollment in Microelectronics program, with preference to employees and dependents  
Value: \$325, one award per year
- Phi Delta Kappa Scholarship  
Source: Phi Delta Kappa, Chapter 30  
Eligibility: Education majors  
Value: \$100, one award per year
- Pima Community College Faculty/Staff Scholarship Fund  
Source: Donations from faculty and staff  
Eligibility: Deserving students in any field  
Value: \$120, number of awards varies
- Pima Community College Foundation, Inc.  
Source: Various Donors  
Eligibility: Outstanding scholastic achievement and financial need  
Value: \$200, number of awards varies

- **Pima Community College General Scholarship Fund**  
Source: General donations to the fund  
Eligibility: Promising students in any field  
Value: Amount varies, number of awards varies
- **Pima County Sheriff's Posse—Law Enforcement Scholarship**  
Source: Pima County Sheriff's Possee  
Eligibility: Career oriented in law enforcement and show economic need  
Value: \$1,000, two or more awards per year
- **Pima Study Grant**  
Source: Various  
Eligibility: Promising and needy students  
Value: \$140, number varies
- **Andrew J. Pizzini Memorial Fund**  
Source: The estate  
Eligibility: Promising and needy students  
Value: Amounts vary, number and type vary
- **Recognition Award**  
Source: Pima Community College Student Association  
Eligibility: Participation in extra-curricular college activities and departmental recommendation  
Value: Up to \$308, number of awards varies
- **Rodeo Club Scholarship**  
Source: Various  
Eligibility: Active participation in Rodeo Club  
Value: Varies, number of awards varies
- **Jeffrey H. Ross Memorial Scholarship**  
Source: Family and Friends  
Eligibility: Students in Law-Enforcement  
Value: Amount varies, number varies
- **Rotary Club of Tucson Scholarship**  
Source: Rotary Club of Tucson  
Eligibility: Worthy and deserving students  
Value: Varies, number of awards varies
- **David Scott Memorial Scholarship for Handicapped Students**  
Source: Family and Friends  
Eligibility: Promising and needy handicapped students  
Value: Varies, number varies
- **Southern Arizona Chapter of A.C.U.L.**  
Source: Southern Arizona Credit Unions  
Eligibility: Credit Union members pursuing the credit union degree program  
Value: \$308 per year, number of awards varies

- **Southern Arizona Restaurant Association**  
Source: The Association  
Eligibility: Promising Pima County resident in Foodservice  
Value: \$600, one award per year
- **Southern Arizona/Tucson Association of Records Managers and Administrators Scholarship**  
Source: The Association  
Eligibility: Current enrollment in a course toward the AAS Degree in Records Management  
Value: \$150 per year, two awards per year, renewable
- **Southern Arizona Tucson Innkeeper Ranch and Resort Association Scholarship**  
Source: The Association  
Eligibility: Promising second-year students in the hospitality/tourism program  
Value: \$375, two awards per year
- **Suburban Women's Club Scholarship**  
Source: Suburban Women's Club of Tucson  
Eligibility: Promising and needy students  
Value: \$120, number of awards varies
- **Tucson Airport Authority Scholarships**  
Source: Tucson Airport Authority  
Eligibility: Employees of Tucson Airport Authority and their families  
Value: \$120, two awards per year
- **Tucson Broadcasters Scholarship**  
Source: Tucson Broadcaster  
Eligibility: Full-time student in the broadcast, journalism and/or electronics program  
Value: \$250, two awards per year
- **Tucson Electric Power Scholarship**  
Source: Tucson Electric Power Company  
Eligibility: Children of Tucson Electric Power Company employees  
Value: \$400, four awards per year, renewable
- **Tucson Jaycee-ettes Scholarship**  
Source: Tucson Jaycee-ettes  
Eligibility: Full-time needy students in RN Program or Allied Health Program  
Value: \$250, two awards per year
- **Tucson Medical Center Scholarship**  
Source: Tucson Medical Center Auxiliary  
Eligibility: Employees enrolled in Health Fields  
Value: \$600, number varies

- Tucson Transportation Club Scholarship  
Source: Tucson Transportation Club  
Eligibility: Promising, full-time students in the Transportation and Traffic Management Program  
Value: \$150, number of awards varies
- Maria Urquides Scholarship  
Source: League of Mexican-American Women  
Eligibility: Promising and needy students  
Value: \$250, two awards per year
- Adrian Van de Verde Memorial Scholarship  
Source: Alice Van de Verde  
Eligibility: Promising student in Nursing  
Value: \$100, one award per year
- Kara Watchman Memorial Scholarship  
Source: Family and friends  
Eligibility: Needy and deserving second-year students in RN program  
Value: Amount varies, one book award per year
- William R. Weaver Memorial Scholarship Fund  
Source: Family and friends  
Eligibility: Economic need and intent to pursue degree in manufacturing, engineering or drafting  
Value: Varies

APPLICATIONS: Pima Community College, in cooperation with other colleges and universities in Arizona, uses the American College Testing Service Family Financial Statement form. The Student Data Form must be submitted to the College's Financial Aid Office whereas the Family Financial Statement must be submitted to the American College Testing Service. Forms are available in the Financial Aid Office or the office of any Pima County high school counselor.

Because funds under all programs are limited in the amount available each year, applications received by April 1 —prior to the beginning of the school year—will be given priority consideration. Applicants are encouraged to apply as early as possible to insure full consideration. The financial aid staff welcomes inquiries, and members may be called upon to meet with groups of students and their families in high schools and neighborhood centers to provide information and counsel about financing college expenses. Inquiries should be directed to the Financial Aid Office.







# Programs

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# Degree Programs

## Associate of Arts Degree

Anthropology  
Corrections  
Corrections: Rehabilitation  
Criminal Justice  
Drama  
Fine Arts  
Liberal Arts  
Mathematics  
Music  
Physical Education  
Print Media Sequence  
Recreation Education  
Social Services  
Social Services (Substance Abuse Subspecialty)  
Speech  
Telecommunications Sequence  
Youth Care Rehabilitation

## Associate of Science Degree

Automotive Technology  
Biology  
Business Administration  
Chemistry  
Electronics Technology—Communications, Consumer, Industrial  
Engineering  
Geology  
Liberal Arts & Science  
Microbiology  
Physics  
Pre-Agriculture  
Pre-Dental  
Pre-Medical  
Pre-Medical Technology  
Pre-Pharmacy  
Pre-Professional Education  
Pre-Veterinary  
Public Administration

## Associate of Applied Arts Degree

Applied Arts  
Interior Design  
Interpreter Training

## Associate of General Studies

General Studies

## Associate of Applied Science Degree

Accounting  
Administrative Assistant  
Advertising Art  
Advertising Art: Graphic Artist Option  
Air Conditioning and Sheet Metal Technology  
Associate Degree Nursing  
Automotive Technology  
Banking  
Building Technology  
Business Administration/Management or Marketing  
Computer Programmer/Analyst  
Computer Specialist, Small Business  
Corrections  
Credit Union  
Criminal Justice  
Dental Laboratory Technology  
Drafting, Construction  
Drafting, Electro-Mechanical  
Drafting, Mechanical  
Electronics Technology—Communications, Consumer, Industrial  
Electronics Technology—Digital  
Energy and Conservation (Solar)  
Engineering Construction Technology  
Fashion Design  
Graphic Arts: Graphic Artist Option  
Graphic Technology  
Hotel-Motel Operations  
Landscape Technician  
Legal Assistant  
Machine Tool Technology  
Microelectronic Technician  
Natural Resource Recreation  
Ophthalmic Dispensing Technology  
Postal Service Management  
Print Media Sequence  
Public Transportation Maintenance Technician  
Radiologic Technology  
Real Estate, Sales/Brokerage  
Records Management  
Recreation Leader  
Respiratory Therapy  
Restaurant, Culinary & Food Management

Savings and Loan  
 Seamstress, Professional  
 Secretary, Bilingual  
 Secretary, Executive, Legal, Medical  
 Secretary, General  
 Social Services  
 Social Services (Substance Abuse Subspecialty)  
 Teacher Director  
 Telecommunications Sequence  
 Trade and Industrial Technology (Apprentice)  
 Training for Special Education  
 Transportation and Traffic Management  
 Wastewater Technology  
 Welding  
 Youth Care

## Certificates

### Basic Certificate

Advertising Art  
 Air Conditioning  
 Airframe and Powerplant Mechanics  
 Allied Health Services  
 Archaeological Fieldwork  
 Automotive Engine Repair and Rebuilding  
 Automotive Power Transmission  
 Automotive Suspension and Brakes  
 Automotive Tune-Up and Air Conditioning  
 Building Maintenance  
 Building Technology—Drywall  
 Building Technology—Painting  
 Communication Workers Technology  
 Corrections  
 Credit Union  
 Culinary and Food Management  
 Data Entry Operator  
 Drafting, Construction  
 Electronics, Consumer  
 Electronics, General  
 Emergency Medical Technology  
 Energy & Conservation  
 Fast Food Industry  
 Food and Beverage Service  
 Functional Design  
 Graphic Technology  
 Hospitality-Tourism Sales & Marketing Application  
 Hotel-Motel Operations  
 Housekeeping-Executive

Institutional Food Service  
 International Business Communication Studies  
 Interior Design  
 Machine Shop Fundamentals  
 Microelectronic Technician  
 Nursing Assistant  
 Ornamental Iron  
 Postal Service Management  
 Public Transportation Maintenance Technology  
 Real Estate, Sales/Brokerage  
 Real Estate, Escrow  
 Restaurant Management  
 Savings and Loan  
 Secretary, Bilingual  
 Sheet Metal Fabrication  
 Sign Language  
 Social Services  
 Social Services (Substance Abuse)  
 Telecommunications Sequence  
 Television Repair  
 Trade and Industrial Technology (Apprentice Major Area)  
 Training for Special Education  
 Transportation and Traffic Management  
 Travel Agent  
 Wastewater Technology  
 Welding

### Advanced Certificate

Accounting  
 Alteration Specialist  
 Business Administration  
 Clerk-Typist  
 Credit Union  
 Dental Assisting  
 Emergency Medical Technology—Paramedic  
 Energy and Conservation  
 Engineering Construction Technology  
 Housekeeping-Executive  
 Institutional Food Service  
 Interior/Functional Design  
 Landscape Technician  
 Microelectronic Technician  
 Postal Service Management  
 Practical Nursing  
 Real Estate, Sales/Brokerage  
 Real Estate, Escrow  
 Receptionist (Medical, Legal, General)  
 Records Management

Savings and Loan  
 Secretary, Bilingual  
 Systems Programmer  
 Teacher Aide/ Assistant (Pre-Service Program)  
 Travel-Tour Agency Manager  
 Training for Special Education  
 Transportation and Traffic Management  
 Wastewater Technology  
 Youth Care

#### Technical Certificate

Air Conditioning, Heating, and Ventilation  
 Automotive Mechanics  
 Building Maintenance  
 Building Technology—Drywall/Painting  
 Data Entry Operator  
 Drafting, Construction  
 Drafting, Electro-Mechanical  
 Drafting, Mechanical  
 Electronics Technology—Communications, Consumer, Industrial  
 Emergency Medical Technology  
 Machinist's Standard  
 Metal Fabrication  
 Public Transportation Maintenance  
 Sheet Metal Layout and Fabrication  
 Welding

## Accounting

The accounting degree program trains students in the theory, systems and basic problems of business accounting. The student will have the background for a beginning career in areas like private, public and government accounting. Students who plan to become Certified Public Accountants should take the courses required for the Business Administration Transfer program.

#### Accounting

##### Advanced Certificate For Direct Employment

Required Courses (36)	First Semester	Cr. Hrs.
Financial Accounting	ACC 101*(1)	3
Practical Accounting Procedures	ACC 050*(1)	3
Algebra I or higher level math course	MTH 070	3
Introduction to Computers	CSC 100	3
Introduction to Business	BUS 100	3
Business English or Writing I	OED 151 WRT 101	3
		18
	<b>Second Semester</b>	
Managerial Accounting	ACC 102*(1)	3
Tax Accounting	ACC 204*(1)	3
Accounting Practice on the Microcomputer	ACC 200*(1)	3
Business Law I	BUS 200	3
Human Relations in Business	MAN 110	3
Typing I or equivalent typing proficiency	OED 111	3
		18

#### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

#### Accounting

##### Associate of Applied Science Degree For Direct Employment

Required Courses (60-64)	First Semester	Cr. Hrs.
Financial Accounting	ACC 101*(1)	3
Introduction to Business	BUS 100	3
Algebra I or higher level math course	MTH 070	3
Human Relations in Business	MAN 110	3
Business English or Writing I	OED 151 WRT 101	3
Reading Requirement* (2)		



<b>Second Semester</b>		
Managerial Accounting	ACC 102*(1)	3
Tax Accounting	ACC 204*(1)	3
Introduction to Computers	CSC 100	3
Business & Professional Communication	SPE 120	3
Elective* (3)		3-4
		15-16
<b>Third Semester</b>		
Cost Accounting	ACC 203*(1)	3
Intermediate Accounting I	ACC 201*(1)	3
Business Law I	BUS 200	3
Introduction to Microeconomics	ECO 100	3
Elective* (3)		3-4
		15-16
<b>Fourth Semester</b>		
Intermediate Accounting II	ACC 202*(1)	3
Business Organization and Management	MAN 280	3
Accounting Practice on the Microcomputer	ACC 200*(1)	3
Humanities Elective* (4)		3-4
Elective* (3)		3-4
		15-17

**Notes:**

- \* (1) Core courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) Approved Electives:  
Select three of the following courses or other courses with the consent and written approval of the subject area or department coordinator:  
MTH 130 or MTH 150  
REA 100  
WRT 101 and/or WRT 154  
POL 110 and/or POL 111  
SPA 050 and/or SPA 055  
PHI 101 and/or PHI 102 and/or PHI 120  
PSY 100 and/or PSY 101  
SOC 100 and/or SOC 101  
HUM 110 and/or HUM 111  
ECO 100  
ANT 100 and/or ANT 110  
ANY COURSES SUBSTITUTED FOR THE ABOVE CHOICES MUST HAVE THE CONSENT AND WRITTEN APPROVAL OF INSTRUCTORS IN ACCOUNTING OR THE DEPARTMENT COORDINATOR.
- \* (4) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

## Administration of Justice

The Administration of Justice program area offers options in criminal justice and corrections serving three types of students: in-service, pre-service, and transfer. Students can gain skills needed to update their present duties, find a job, or transfer to a four-year school.

Job entry programs offer the largest number and broadest range of skills. Students in these programs should enroll in the core courses and general education courses that are required. Beyond this requirement, students are urged to seek the help of an Administration of Justice advisor in order to choose elective courses which will be best matched to their job entry needs.

Those who plan to transfer should follow the requirements of the four-year college that they wish to attend, taking only the core courses in their major area. It is also the student's task to get the correct program information from the college of his or her choice. Transfer programs also are offered at Pima.

Students who enter an Administration of Justice program must see one of the instructors in the area.

### Corrections Basic Certificate For Direct Employment

<b>Required Courses (18-19)</b>		<b>Cr. Hrs.</b>
Corrections as a System	AJS 123	3
Defensive Tactics	AJS 012	3
Detention Supervision Methods	AJS 240	3
First Aid	REC 121	2
Beginning Marksmanship or Firearms	AJS 152 or AJS 214*(1)	1-2
Human Relations/Business & Industry	MAN 110	3
Admin. of Justice Field Experience	AJS 290	3
		18-19

**Notes:**

- \* (1) AJS 214 requires that a student be an Administration of Justice major with previous firearms training. Although the minimum requirement for the certificate is AJS 152, the student is encouraged to complete AJS 214.

**Corrections**  
**Associate of Applied Science Degree**  
**For Direct Employment**

<b>Required Courses (66-67)</b>			<b>Cr. Hrs.</b>
Introduction Administration of Justice	AJS 101*(1)		3
Criminal Law	AJS 109*(1)		3
Crime & Delinquency	AJS 225*(1)		3
Criminal Procedures	AJS 115*(1)		3
Juvenile Justice Procedures	AJS 212*(1)		3
Rules of Evidence	AJS 201*(1)		3
Field Experience	AJS 290*(1)		3
Reading Requirement* (2)			
			21

**General Education Requirements**

Writing I	WRT 101	3
Technical Communications or Writing II	WRT 154	
American National Government	WRT 102	3
American State/Local Government	POL 110	3
Introduction Psychology I-II	POL 111	3
Introduction Sociology	PSY 100-101	6
Introduction Microeconomics	SOC 100	3
Business & Professional Communication	ECO 100	3
Electives* (3)	SPE 120	3
Humanities Elective		9
Math/Science Elective* (4)		3-4
		6
		45-46

**Notes:**

- \*(1) Core courses: D grades do not fulfill graduation requirement.  
 \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.  
 \*(3) Suggested Electives  
 At least 3 units of these electives must be chosen from related courses: AJS 123, AJS 163, AJS 240, or AJS 245.
- |  |         |   |
|--|---------|---|
| Corrections as a System                | AJS 123 | 3 |
| Child Abuse: Intervention & Protection | AJS 146 | 3 |
| First Aid                              | REC 121 | 2 |
| Introduction to Youth Care             | AJS 163 | 3 |
| Police Community and Human Relations   | AJS 210 | 3 |
| Treatment of the Offender              | AJS 245 | 3 |
| Introduction Social Welfare            | SSE 133 | 3 |
| Casework Methods                       | SSE 134 | 3 |

Group Work	SSE 235	3
Evaluation/Support of Drug User	SSE 217	3
Defensive Tactics	AJS 012	3
Survival	REC 118	2
Treatment Drug Abuser	SSE 218	3
Organized Crime Investigation	AJS 220	3
Crisis Intervention—Theory/Technology	SSE 236	3
Casework Methods II	SSE 234	3
Detention Super. Methods	AJS 240	3
Behavior Modification	PSY 104	3
Ethnic Studies Courses	ANT or HIS	3
Criminal Investigation & Report Prep.	AJS 204	3
Program Planning & Organization	REC 114	3
Normal Personality I	PSY 103	3
Nutrition	FSN 114	3
Environment and Management in Public Organization	PAD 201	3

Other course electives may be taken. For more information, students should contact an advisor.

- \*(4) See General Education Requirements under the Graduation section of this catalog for Math/Science electives.

**Corrections**  
**Associate of Arts Degree**  
**For Transfer\* (1)**

<b>Required Courses (71)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Introduction to Logic or Natural Science	PHI 120 or Natural Science elective* (2)	3-4
Finite Mathematics	MTH 170* (3)(4)	3
American National Government	POL 110	3
Introduction to Administration of Justice	AJS 101* (5)	3
Criminal Law	AJS 109* (5)	3
Reading Requirement* (6)		
		18-19
<b>Second Semester</b>		
Writing II	WRT 102	3
Introduction to Logic or Natural Science	PHI 120 or Natural Science elective* (2)	3-4
Topics in Calculus	MTH 175	3
American State/Local Government	POL 111	3
Introduction to Public Administration	PAD 105	3
Criminal Procedures	AJS 115* (5)	3
		18-19

<b>Third Semester</b>		
Introduction to Microeconomics	ECO 100	3
Business & Professional Communication	SPE 120	3
Intro to Analysis		
Decision Making	PAD 204	3
Juvenile Justice Procedures	AJS 212* (5)	3
Humanities or Foreign Language	HUM or Language* (7)	4
		16
<b>Fourth Semester</b>		
Introduction to Macroeconomics	ECO 101	3
Introduction to Computers	CSC 100	3
Principles of Accounting I	ACC 101	3
Humanities or Foreign Language	HUM or Language* (7)	4
Crime & Delinquency	AJS 225* (5)	3
Statistical Methods in Economics & Business	BUS 205	3
		19

#### Notes:

- \* (1) This program is designed for transfer into the PPPA Department at the U of A. Transfer students should follow the requirements of the four-year institutions which they plan to attend. It is the student's responsibility to obtain appropriate program information from the university of his/her choice on a regular basis, and consult a faculty advisor at Pima College. First Aid (REC 121) is strongly recommended for Corrections majors.
- \* (2) Fulfilled by Logic (PHI 120) and 3-4 units of natural science or by 2 semesters of natural science. The natural science courses may be selected from the following: (Although not required, students may enroll in laboratories and use lab units as free electives, unless otherwise specified.) AST 101, 102 (111 and 112 are labs); CHM 110, 111; ESC 101, 102; and LSC 103, LSC 104. In the care of the following courses, ESC 120, 121; LSC 207, 208; and PHY 121, 122, labs are required. The 2 semesters do not need to be in the same science.
- \* (3) The prerequisite for MTH 170 is MTH 150 (College Algebra). Math placement tests are available; students are urged to see advisor re: math early in their college career.
- \* (4) Upon transfer to the university, students will be expected to complete 6 units in each of 2 of the following fields: anthropology, cultural geography, psychology or sociology. If they have already completed MTH 150, students may select one of these social science courses in its place.
- \* (5) Core courses: D grades do not fulfill graduation requirement.
- \* (6) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

- \* (7) Fulfilled by either 2 semesters (8 units) of a single foreign language, or Humanities I and II (HUM 110, 111), or other selected Humanities electives. See an advisor for information concerning these electives.
- \* (8) Upper division courses (300-400 levels) in the U of A BPA college are only open to students who have taken all the lower division courses required in the student's program at the U of A or who have special permission from the Dean. ACC 272 (at Pima ACC 173 (Accounting for Government Agencies) is not part of the Pima transfer program; but is part of the U of A requirement. Pima students, upon transfer will require the BPA dean's signature to take other BPA courses until this course has been completed. Upper division courses in other colleges at the University generally are open to students who have satisfactorily completed 56 units.

#### Criminal Justice Associate of Applied Science Degree For Direct Employment

<b>Required Courses (66-67)</b>			<b>Cr. Hrs.</b>
Introduction Administration of Justice	AJS 101* (1)		3
Criminal Law	AJS 109* (1)		3
Criminal Procedures	AJS 115* (1)		3
Police Community/ Human Relations	AJS 210* (1)		3
Crime and Delinquency	AJS 225* (1)		3
Rules of Evidence	AJS 201* (1)		3
AJS Field Experience	AJS 290* (1)		3
Reading Requirement* (2)			
			21
<b>General Education Requirements</b>			
Writing I			
Technical Communications or Writing II	WRT 154 or WRT 102		3
American National Government	POL 110		3
American State/ Local Government	POL 111		3
Introduction to Sociology	SOC 100		3
Introduction to Psychology I-II	PSY 100-101		6
Introduction to Microeconomics	ECO 100		3
Business & Professional Communication	SPE 120		3
Electives* (3)			9
Humanities Elective* (4)			3-4
Math/ Science Elective* (4)			6
			45-46

### Notes:

- \* (1) Core courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) Suggested Electives
 

Corrections as a System	AJS 123	3
Child Abuse Intervention & Protection	AJS 146	3
Patrol Procedures	AJS 071	3
Crime Scene Technology I	AJS 218	3
Crime Scene Technology II	AJS 273	3
Criminalistics Evidence	AJS 276	3
Advanced Criminalistics	AJS 277	3
Co-op Related Class in AJS	AJS 299*(1)	1
Co-op Work in AJS	AJS 299*(1)	2
Police Administration	AJS 208	3
Traffic Safety Functions	AJS 106	3
Organized Crime Investigation	AJS 220	3
Criminal Investigation & Report Prep.	AJS 204	3
Detention Super. Methods	AJS 240	3
Treatment of the Offender	AJS 245	3
Introduction to Public Administration	PAD 105	3
Defensive Tactics	AJS 012	2
Firearms	AJS 214	2
Juvenile Justice Procedures	AJS 212	3
Typing I	OED 111	3
Political & Legal Aspects of Drug Use	SSE 127	3
Drugs in American Society	SSE 115	3
Introduction to Youth Care	AJS 163	3
Introduction to Social Welfare	SSE 133	3
Casework Methods	SSE 134	3
Crisis Intervention	SSE 236	3
Intro to Behavior Modification	PSY 104	3
Ethnic Studies Courses	HIS or ANT	3
Intro to Human Development	ECE 107	3
Environment and Management in Public Organization	PAD 201	3

Other approved electives may be taken. For more information the student should contact an advisor.
- \* (4) See General Education Requirements under the Graduation section of this catalog for Humanities and Math/Science electives.

### Criminal Justice Associate of Arts Degree For Transfer\* (1)

Required Courses (71)	First Semester	Cr. Hrs.
Writing I	WRT 101	3
Introduction to Logic or Natural Science	PHI 120 or Natural Science elective* (2)	3-4
Finite Math	MTH 170* (3)(4)	3
American National Government	POL 110	3
Introduction to Administration of Justice	AJS 101* (5)	3
Criminal Law	AJS 109* (5)	3
Reading Requirement* (6)		
		18-19
	<b>Second Semester</b>	
Writing II	WRT 102	3
Introduction to Logic or Natural Science	PHI 120 or Natural Science elective* (2)	3-4
Topics in Calculus	MTH 175	3
American State/Local Government	POL 111	3
Introduction to Public Administration	PAD 105	3
Criminal Procedures	AJS 115* (5)	3
		18-19
	<b>Third Semester</b>	
Introduction to Microeconomics	ECO 100	3
Business & Professional Communication	SPE 120	3
Intro to Analysis for Decision Making	PAD 204	3
Humanities or Foreign Language	HUM or Language* (7)	4
Rules of Evidence	AJS 201* (5)	3
		16
	<b>Fourth Semester</b>	
Introduction to Macroeconomics	ECO 101	3
Introduction to Computers	CSC 100	3
Police Community/ Human Relations	AJS 210* (5)	3
Statistical Methods in Busines & Economics	BUS 205	3
Principles of Accounting I	ACC 101	3
Humanities or Foreign Language	HUM or Lang* (7)	4
		19

**Notes:**

- \*(1) This program is designed for transfer into the PPPA Department at the U of A. Transfer students should follow the requirements of the four-year institutions which they plan to attend. It is the student's responsibility to obtain appropriate program information from the university of his/her choice on a regular basis, and consult a faculty advisor at Pima College. Courses in Physical education are strongly recommended for Criminal Justice majors.
- \*(2) Fulfilled by Logic (PHI 120) and 3-4 units of natural science or by 2 semesters of natural science. The natural science courses may be selected from the following: (Although not required, students may enroll in laboratories and use lab units as free electives unless otherwise specified.) AST 101, 102 (111 and 112 are labs); CHM 101, 102, 110, 111; ESC 101, 102; and LSC 103, 104. in the case of the following courses: ESC 120, 121; LSC 207, 208; and PHY 121, 122, labs are required. The 2 semesters do not need to be in the same science.
- \*(3) The prerequisite for MTH 170 is MTH 150 (College Algebra). Math placement tests are available; Students are urged to see an advisor about math early in their college career.
- \*(4) Upon transfer to the university, students will be expected to complete 6 units in each of 2 of the following fields: anthropology, cultural geography, psychology or sociology. If they have already completed MTH 150, students may select one of these social science courses in its place.
- \*(5) Core courses: D grades do not fulfill graduation requirement.
- \*(6) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(7) Fulfilled by either 2 semesters (8 units) of a single foreign language or Humanities I and II (HUM 120, 111) or other approved Humanities electives. See an advisor for information concerning these electives.
- \*(8) Upper division courses (300-400 level) at the U of A BPA college are only open to students who have taken all the lower division courses required in the student's program at the U of A or who have special permission from the dean. ACC 272 (ACC-173 at Pima) is not part of the Pima transfer program, but is part of the U of A requirement. Upon transfer, Pima students must get the BPA dean's signature to take other BPA courses until this course has been completed. Upper division courses in other colleges at the U of A are usually open to students who have satisfactory completed 56 units.

**Corrections: Rehabilitation  
Associate of Arts Degree  
For Transfer**

<b>Required Courses (67-70)* (1)</b>		
Writing I	First Semester WRT 101	Cr. Hrs. 3
Psychology I	PSY 100	3
Intro. to Admin. of Justice	AJS 101*(2)	3
Criminal Law	AJS 109*(2)	3
Accounting for Public Agencies	ACC 173	3
Reading Requirement* (3)		
		15
<b>Second Semester</b>		
Writing II	WRT 102	3
Psychology II	PSY 101	3
Rules of Procedure	AJS 201*(2)	3
Crime and Delinquency	AJS 225*(2)	3
Business and Professional Communication	SPE 120	3
Math Elective* (4)		3
		18
<b>Third Semester</b>		
Social Science Elective* (5)		3
Humanities or Option* (6)	HUM 110	4
		(3-6)
Human Anatomy and Physiology I* (7)	LSC 120	4
Juvenile Justice Procedures	AJS 212*(2)	3
Criminal Procedures	AJS 115*(2)	3
Total		17
Total with option		(16-19)
<b>Fourth Semester</b>		
Social Science Elective* (5)		3
Humanities or Option* (6)	HUM 111	4
		(3-6)
Human Anatomy and Physiology II* (7)	LSC 121	4
Treatment of the Offender	AJS 245*(2)	3
Introduction to Computers	CSC 100	3
Total		17
Total with option		(16-19)

**Notes:**

- \*(1) These courses are required. Their arrangement by semester as specified is not required. The student should be careful, however, to satisfy any prerequisites before taking a more advanced course. See an advisor.



- \* (2) Core Courses: D grades do not fulfill graduation requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement. A strong reading background is helpful in this program. Students are required to achieve a minimum score of 12th grade reading proficiency as determined by the reading department in order to receive a degree in this program. The student is urged to take the reading test at the beginning of the program and to correct any reading deficiency early in the program.
- \* (4) In order to count as a transferable course, this math elective must be Algebra II (MTH 130) or above. The student is urged to take this course if it was not taken in high school. Algebra II (MTH 130) will be helpful as a background course for upper division statistical methods courses.
- \* (5) Requires minimum of 6 units from Anthropology, Psychology, or Sociology, in addition to PSY 100 or 101. Choose transferable courses. See an advisor.
- \* (6) See General Education Requirements under the Graduation section of this catalog for Humanities options.
- \* (7) Prior to taking LSC 120, 121, students should either have had Chemistry in high school, or taken Fundamentals of Chemistry (CHM 110) at either Pima or another college. The student is urged to correct any deficiency in this area during this semester. Students who are transferring into the Rehabilitation program at the U of A must take LSC 120 & 121. Students transferring into other programs may substitute 2 semesters (8 units) of another transferrable lab science.

## Advertising Art

Both a Basic Certificate and an Associate of Applied Science degree program are offered in advertising art. The first two semesters of the whole program serve as a basic core of instruction in the areas of advertising art, graphic technology and liberal arts. Studies in the third and fourth semesters center on higher skills and require joining in the Cooperative Education work experience. Both programs lead to direct employment.

### Advertising Art Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Introduction to Business	BUS 100	3
Math (based on placement exam)	MTH	3
Advertising Art I	ADA 101*(1)	3
Advertising Design I	ADA 110*(1)	3
Production Techniques & Processes I-II	ADA 111*(1), 211*(1)	6
Advertising Drawing I	ADA 103*(1)	3
		<hr/> 21

#### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

### Advertising Art Associate of Applied Science Degree For Direct Employment

Required Courses (63-64)	First Semester	Cr. Hrs.
Advertising Art I	ADA 101*(1)	3
Advertising Design I	ADA 110*(1)	3
Advertising Drawing I	ADA 103*(1)	3
Practical Communications	WRT 150	3
Graphic Technology I	GRA 101*(1)	3
Math (based on placement exam)	MTH	3
Reading Requirement* (2)		<hr/> 18
	<b>Second Semester</b>	
Advertising Drawing II	ADA 105*(1)	3
Production Techniques & Processes I	ADA 111*(1)	3
Advertising Design II	ADA 120*(1)	3
Math (second course in sequence)	MTH	3
Graphic Technology II	GRA 102*(1)	3
		<hr/> 15

<b>Third Semester</b>		
Advertising Design III	ADA 210*(1)	3
Production Techniques & Processes II	ADA 211*(1)	3
Advertising Drawing III	ADA 205*(1)	3
Humanities Elective*(3)		3-4
Business & Professional Communication	SPE 120	3
		15-16
<b>Fourth Semester</b>		
Advertising Drawing IV	ADA 207*(1)	3
Production Techniques & Processes III	ADA 212*(1)	3
Advertising Design IV	ADA 220*(1)	3
Co-op Related Class in ADA	ADA 199	1
Co-op Work in ADA	ADA 199	2
Human Relations in Business	MAN 110	3
		15

**Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

**Advertising Art**

**Graphic Artist Option**

**Associate of Applied Science Degree**

**For Direct Employment**

<b>Required Courses</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Practical Communications	WRT 150	3
Graphic Technology I	GRA 101*(1)	3
Advertising Art I	ADA 101*(1)	3
Advertising Design I	ADA 110*(1)	3
Math (based on placement exam)	MTH	3
Reading Requirement*(2)		
		15
<b>Second Semester</b>		
Advertising Drawing I	ADA 103*(1)	3
Math (second course in sequence)	MTH	3
Business & Professional Communication	SPE 120	3
Graphic Technology II	GRA 102*(1)	3
Production Techniques & Processes I	ADA 111*(1)	3
		15

<b>Third Semester</b>		
Production Techniques & Processes II	ADA 211*(1)	3
Advertising Drawing II	ADA 105*(1)	3
Advertising Design II	ADA 120*(1)	3
Color Theory and Practice	GRA 201*(1)	3
Humanities I	HUM 110	4
		16
<b>Fourth Semester</b>		
Offset Photography	GRA 104*(1)	3
Offset Presswork	GRA 202*(1)	3
Advanced Stripping & Platemaking for Color	GRA 221*(1)	3
Human Relations in Business	MAN 110	3
Co-op Related Class in ADA	ADA 199	1
Co-op Work in ADA	ADA 199	2
		15

**Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Air Conditioning

Conditions much the same as found in industry are set up in a fully-equipped air conditioning lab. Students learn about both the heating and cooling cycles. They also learn how to take apart, repair, and rebuild all types of air conditioning and refrigeration units. These units may be found in a small appliance, a home, a small business or office, or a large factory.

A person who majors in this program may find that Cooperative Education offers an ideal way of gaining more actual work experience while attending classes. See a Cooperative Education teacher-coordinator for details.

## Air Conditioning Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Residential Air Conditioning:		
Principles and Psychrometrics	ACD 101*(1)	3
Electrical Circuitry & Controls	ACD 120*(1)	4
Troubleshooting and Service	ACD 125*(1)	4
Technical Math I-II	MTH 110, 120	6
Human Relations in Business	MAN 110	3
		<hr/> 20

Light Commercial Endorsement:  
Above coursework plus  
Commercial Refrigeration  
Load Calculation

ACD 210*(1)	4
ACD 220*(1)	4
	<hr/> 28

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Air Conditioning, Heating, Ventilation Technical Certificate For Direct Employment

Required Courses		Cr. Hrs.
Principles and Psychrometrics	ACD 101*(1)	3
Electrical Circuitry & Controls	ACD 120*(1)	4
Troubleshooting and Service	ACD 125*(1)	4
Commercial Refrigeration	ACD 210*(1)	4
Load Calculation	ACD 220*(1)	4
Technical Math I-II	MTH 110, 120	6
Practical Communications	WRT 150	3
Technical Communications	WRT 154	3
Technical Physics I-II	PHY 101, 102	6
Human Relations in Business	MAN 110	3
Combination Welding	WLD 110	3
		<hr/> 43

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Air Conditioning Technology Associate of Applied Science Degree For Direct Employment

Required Courses (62)		Cr. Hrs.
Principles and Psychrometrics	ACD 101*(1)	3
Electrical Circuitry & Controls	ACD 120*(1)	4
Troubleshooting and Service	ACD 125*(1)	4
Commercial Refrigeration	ACD 210*(1)	4
Load Calculation	ACD 220*(1)	4
Estimating	ACD 250*	3
Blueprint Reading & Sketching	DFT 101	4
Technical Math I	MTH 110	3
Technical Math II	MTH 120	3
Humanities Elective* (2)		3-4
Social Science Elective* (2)		3
Practical Communications or	WRT 150	
Technical Communications or	WRT 154	
Bus & Prof Communications	SPE 120	6
Electives or Technical Courses* (3)		18
Reading Requirement* (4)		
		<hr/> 62-63

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

\*(3) Select electives or technical courses from the following list of courses:

Sheet Metal I	SML 110*(1)	4
Sheet Metal II	SML 120*(1)	4
Sheet Metal Pattern Layout I	SML 130*(1)	3
Sheet Metal Pattern Layout II	SML 135*(1)	3
Sheet Metal Pattern Layout III	SML 210*(1)	3
Architectural Sheet Metal	SML 220*(1)	3
Combination Welding	WLD 110	3
Technical Drafting I	DFT 150	4
Technical Drafting II	DFT 151	4
Machine Shop I	MAC 110	4
Technical Physics I	PHY 101	3
Technical Physics II	PHY 102	3
The Sun & Solar Energy	SET 100	3
Solar Energy Fundamentals	SET 101	3
Solar Design & Installation	SET 102	4
Solar Maintenance & Repair	SET 103	4
Electronics for Technical Careers	ETR 112	3

\*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Allied Health

The Allied Health program offers training for men and women in health-related fields. Programs are from one semester to three years long. They prepare the graduate for certification, registry and/or licensure. Special refresher and continuing education courses and programs are also offered.

In some areas the student can complete a certificate program and continue his/her studies at the advanced certificate or associate degree levels.

Students can register at the beginning of each semester for the following courses: Emergency Medical Technician, Allied Health Services, and Nursing Assistant.

For other Allied Health programs the students must apply to the selections committee by:

March 1 for classes starting in the fall  
October 1 for classes starting in the spring

The student will know about his acceptance by:

May 1 for classes starting in the fall  
December 1 for classes starting in the spring

Some Allied Health programs can have only a certain number of students. This situation is because of limited laboratory and clinical space and because of the number of jobs available in each health field. These special programs have admission requirements based on state and national standards for certification, registry, licensure and program accreditation rules.

## Admission Policies:

Students who want to enroll in programs should:

1. Apply to the specific Allied Health program in addition to applying for admission to the college.
2. Show certain educational skills which may change from one program to another. They should look at the part of the catalog which tells about the program and/or talk with the admission secretary for Allied Health programs to learn the necessary skills for each program.

The selections committee for Allied Health programs will choose the students for each entering class. This method makes sure that the same selection practices and standards are used.

The application for admission is held for only one application period. If a student wants to be admitted to the next entering class, he/she must apply again.

The Allied Health admissions secretary must have the completed student application form by the deadline.

Arizona residents of the Pima College District will be chosen first.

## Admission Procedure:

1. The student can get the application forms at the following career and advising district campus centers.

### Downtown Campus

Allied Health Service Programs—Beginning Level

- Nursing Assistants/Patient-Care Attendants
- Nursing Assistant
- Practical Nursing
- Practical Nursing Update

### East Campus

- Emergency Medical Technology
- Nursing Assistant

### West Campus

Associate Degree Nursing

Dental Programs

- Dental Assisting
- Dental Laboratory Technology
- Emergency Medical Technology
- Ophthalmic Technology
- Ophthalmic Dispensing
- Optical Laboratory Technician
- Radiologic (X-ray) Technology
- Respiratory Therapy
- RN Refresher

2. The completed application must include all official high school and college transcripts. The admissions secretary must have the completed application by the deadline for the next entering class. The student must ask the Registrar's Office to send Pima Community College transcripts to the admissions secretary. Applications received after the deadline will not be accepted.
3. Students can get information about pre-entrance testing and interviews from the admissions secretary in the Career and Advising Center.
4. By the selections date for each application period, the selections committee will tell the student of his/her acceptance into the program, placement as an alternate, or non-acceptance into the program.
5. If the student is accepted, he/she must send the admissions secretary a card showing that he/she will enroll in the program. No deposit is required. If a vacancy in the program occurs, an alternate will be enrolled. When the class is filled in each enrollment period, alternate placement will stop.

### Health Core Curriculum:

There is a basic course of study in Health Services which will give the student the skills to follow a career in the health care profession. Two courses are offered in this core: Introduction to Health Care (HCA 154) and Independent Studies in Health Sciences (HCA 099). Look under Health Care for course descriptions.

### S.A.R.A.H.E.L.P. Consortium:

SARAHHELP is the Southern Arizona Regional Allied Health Educational Linkage Program. This program helps to develop jobs for community college students and to attract well-trained health workers to rural Southern Arizona. Central Arizona College or the Aravaipa Campus, Arizona Western College, Cochise College and Pima Community College work together to help solve rural health needs through combined educational programs. Counties served are Pima, Santa Cruz, Cochise, Yuma, and parts of Pinal County.

Our college district trains allied health students after high school. Our program works closely with the University of Arizona Medical Center and the greater Tucson hospitals. The program also works with health care centers in Cochise and Yuma counties.

Under SARAHHELP students study one semester to one year of liberal arts, pre-technical and beginning technical courses at their home college. Next they have one year of technical/clinical work at Pima Community College. Some clinical training may be at the student's home community (for example: Cochise County Hospital, Sierra Vista Community Hospital or the Yuma Regional Medical Center).

When the student completes the program, he/she will get a Pima College associate degree or an advanced certificate. The student will be able to take the national and/or state registry/licensure test in his/her area. SARAHHELP study allows students to get the best training found in Southern Arizona. The program avoids costly duplication of programs and encourages students to return to their home community for service.

Graduates can become ophthalmic dispensers, radiologic technologists, respiratory therapists or dental assistants.

### Program

First year courses at the home community college consist of basic science, communications, social sciences and humanities. These courses are common to all the allied health programs. Introduction to Health Care (first semester) gives the student an overview of health jobs, knowledge of health science fundamentals, delivery practices and applications.

The curriculum at Pima Community College concentrates on the clinical education within the student's area of occupational choice. To meet national standards, some programs extend beyond the spring semester or the second year placing the student in a period of clinical externship.

Students who successfully fulfill requirements for admission to their home college may apply for admission to this program. Because of limited laboratory space and clinical facilities and the delicate balance of job opportunities in the health field, most programs have limited enrollments. These programs have special eligibility requirements, and a special SARAHHELP application is needed in addition to the general admission application.

All applicants are responsible for submitting completed applications by the proper deadlines announced by the registrar's office. Pre-entrance examinations and interviews also may be required. Preference is given to Arizona residents in the college district.

Interested students should consult the college catalog for career counselors and/or the SARAHHELP coordinator at the respective colleges for information on enrollment, fees, scholarship, stipend and housing.

## Allied Health Services

This is a one-semester program of three courses which include lectures, laboratories, and clinical experience in community health facilities. When the student completes 12 credit hours, he/she will get a Pima Community College Basic Certificate.

This program will help the student to use basic health worker skills in many types of health related jobs. When a student finishes the program, he/she can perform basic client care skills in hospitals and in long term and home care facilities as nursing assistants or patient hospital care attendants.

Graduates can perform beginning health worker skills when they are supervised by licensed health care personnel.

### Acceptance Into Program:

1. The student must be accepted by the college.
2. The student must complete the special application for the program.
3. The student must complete placement examinations in mathematics and reading. (Note—Students must read at the eighth grade level or higher.)
4. The student must have an interview with the Allied Health Services Review Committee or with an individual committee member.
5. The student must have a physical examination which includes a TB test if he/she is accepted into the program.

### General Requirements:

Total credits—12 semester hours.

The student must complete with success all academic and clinical program requirements.



**Allied Health Services  
Basic Certificate  
For Direct Employment**

Required Courses		Lec.	Lab	Cr. Hrs.	
Principles of Human Anatomy & Physiology	LSC 102*(1)	3	+	3	4
Introduction to Health Care	HCA 154*(1)	3	+	0	3
Skills for Allied Health Services	HCA 150*(1)	2	+	9	5
					12

**Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Anthropology

**(See Also Archaeology)**

The anthropology and archaeology programs prepare graduates for further academic studies at a four-year college or university as well as providing practical job-related skills. Anthropology students can select from an Associate of Arts transfer degree program and a basic certificate that emphasizes archaeological fieldwork.

The anthropology program provides a global understanding of the nature of humankind as well as developing student's awareness of the biological and cultural development of humanity, heritage and present cultural diversity of the Southwest. The program prepares students for upper division study in anthropology at a major university. The curriculum generally parallels the lower division Anthropology/Liberal Arts requirements at the state universities.

All students must complete the core curriculum of 18 units (ANT 100, 110, 200, 210, 215, 225). In addition, students with interests in archaeology/physical anthropology must also complete Option 1 and students with interests in cultural anthropology/linguistics must complete Option 2 as outlined here. (One option must be selected by each student.) Those with specific interests in field archaeology may pursue the course outlined under the Archaeological Fieldwork Certificate.

**Anthropology  
Associate of Arts Degree  
For Transfer\* (1)**

Required Courses (62-68)	First Semester	Cr. Hrs.
Human Origins and Prehistory	ANT 100*(2)	3
Introduction to Cultural Anthropology	ANT 110*(2)	3
Foreign Language or Electives*(3)		4
Science or Math*(4)		3-4
Writing I	WRT 101	3*
Reading Requirement*(5)		
		16-17
<b>Second Semester</b>		
Cultural Anthropology	ANT 210*(2)	3
Biological Anthropology	ANT 200*(2)	3
Foreign Language or Electives*(3)		4
Science or Math*(4)		3-4
Writing II	WRT 102	3
		16-17
<b>Third Semester</b>		
Archaeology	ANT 225*(2)	3
Humanities*(6)		3-4
Foreign Language or Electives*(3)		4
Anthropology Option I or II*(7)		4
		14-15
<b>Fourth Semester</b>		
The Nature of Language	ANT 215*(2)	3
Humanities*(4)		4-6
Foreign Language or Electives*(4)		4
Anthropology Option I or II*(7)		3-4
Survival	REC 118	2
		16-19
<b>Summary</b>		
Major Requirements		18
Science or Math Requirements*(4)		6-8
Writing		6
Language Proficiency and/or Electives*(3)		16
Humanities*(6)		8-9
Required Option I or II*(7)		8-9
		62-68

**Notes:**

- \*(1) Students, after successful completion of the program, may be eligible to transfer to upper class levels at a four-year university. Students should consult the anthropology major requirements at the college or university to which they plan to transfer.
- \*(2) Core courses: D grades do not fulfill graduation requirement.
- \*(3) Fulfilled by either 4 semesters (2 years) of any one foreign language or 2 semesters (1 year) each of 2 different languages or one year of foreign language and 6-8 units of electives in consultation with the anthropology-archaeology advisor. Students meeting the language proficiency requirement may take 6-8 units of transferable electives selected in consultation with an advisor.
- \*(4) See General Education Requirements under the Graduation section of this catalog for Math/Science electives.
- \*(5) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(6) Choose one of the following options: Humanities I and II (HUM 110, 111)
  - b. Humanities I or II and 6 units from option c
  - c. Not less than 9 units from the following 3 groups, with no more than 6 units from any one group:
    - 1. DRA 240, 241; LIT 241, 242, 261, 265, 270, 271, 272
    - 2. PHI 101, 102, 130
    - 3. ART 130, 131, 132; MUS 151, 201, 202
- \*(7) Option I—Students with area emphasis in Archaeology/Physical Anthropology should take Ecology I and a 3 unit elective.  
Option II—Students with area emphasis in Cultural Anthropology/Linguistics should select six units in consultation with the cultural anthropology advisor.

## Applied Design

Functional Design program provides the student with the skills and techniques needed for employment. It is not intended as a transfer program, but rather provides the student with experience in solving problems of design and production of a product. Drafting students may find this program very useful in furthering their skills. Emphasis in the commercial graphics courses are given in merchandising and marketing areas.

The Interior Design program consists of a series of highly practical courses leading to apprenticeship or direct employment. Interior Design offers the student a variety of skills and experience in such areas as landscaping, custom furniture design, built-ins, light-weight structures, and unique Southwestern environmental problems (heating, cooling and solar energy).

Commercial artists create artwork for newspapers, magazines, advertising agencies, billboards, catalogs, flyers, brochures and television commercials.

Functional or industrial designers combine artistic talents with the development of materials and methods of production to improve the appearance and usability of products.

Interior designers or decorators help create more attractive and functional living, working and playing conditions through the use of color, furnishings, fabrics, floor covering and accessories.

These various programs of study can be taken for job training, cultural enrichment or personal interest. The programs also provide an opportunity of combining design courses with other practical studies such as mechanical, electronic and architectural drafting.

Training in these areas is available at Pima Community College through basic and advanced certificate programs as well as a two-year associate of arts degree program in interior design.

All of these courses are designed to interface with the complete drafting program and to augment the skills of drafting students graphically and design-wise.

### Functional Design Program Basic Certificate

Required Courses		Cr. Hrs.
Industrial Graphics	DES 111*(1)	3
Functional Design	DES 150*(1)	3
Design for Living or Textiles	DES 156*(1)	
	FDC 126	3
Industrial Functional Design	DES 250*(1)	3
Construction Drafting I or Technical Drafting or Commerical Graphics	DFT 110	
	DFT 150	
	DES 211	3-4
		15-16

**Notes:**

- \*(1) Core courses: D grades do not fulfill graduation requirement.

# **Interior Design Program Basic Certificate**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Home Furnishings	DES 155* (1)	3
Design for Living or Textiles	DES 156 FDC 126	3
Spatial Design	DES 255* (1)	3
Interior Environmental Design	DES 256* (1)	3
Practical Communications or Construction Drafting I or Technical Drafting	WRT 150 DFC 110 DFT 150	3-4
		15-16

## **Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

# **Interior/Functional Design Advanced Certificate**

Required Courses (37-38)	First Semester	Cr. Hrs.
Industrial Graphics	DES 111*(1)	3
Functional Design	DES 150*(1)	3
Home Furnishings or Commercial Graphics	DES 155*(1)	3
Design for Living or Textiles	DES 211	3
Construction Drafting I or Technical Drafting	DES 156	3
	FDC 126	3
	DFC 110	4
	DFT 150	4
Communication Elective*(2)		3
		19
	Second Semester	
Light-Weight Structure Design	DES 151*(1)	3
Advanced Commerical Design or Interior Plantscape Design/ Maintenance	DES 222	3-4
Industrial Functional Design	LTP 215	3
Spatial Design	DES 250*(1)	3
Interior Environmental Design	DES 255*(1)	3
Math/Science Elective*(2)	DES 256*(1)	3
		3
		18-19

## **Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for Communication, Math/Science electives.

# **Interior Design Associate of Applied Arts**

Required Courses (64-68)		First Semester	Cr. Hrs.
Industrial Graphics	DES 111*(1)	3	
Design for Living or Textiles	DES 156 FDC 126	3	
Writing I or Practical Communications or Comunigraphics I	WRT 101 WRT 150 MET 050	3	
Construction Drafting I or Technical Drafting	DFC 110 DFT 150	4	
Commercial Drafting	DES 211	3	
Reading Requirement* (2)			
		16	
		Second Semester	
Light-Weight Structure Design	DES 151*(1)	3	
Functional Design	DES 150*(1)	3	
Home Furnishings	DES 155*(1)	3	
Writing II or Technical Communications	WRT 102 WRT 154	3	
Humanities Electives* (3)		3-4	
		15-16	
		Third Semester	
Industrial Functional Design	DES 250*(1)	3	
Spatial Design	DES 255*(1)	3	
Advanced Commercial Graphics	DES 222	4	
Salesmanship	MKT 113	3	
Math/Science Elective* (3)		3-4	
		16-17	
		Fourth Semester	
Interior Environmental Design	DES 256*(1)	3	
Human Relations in Business	MAN 110	3	
Interior Plantscape Design/ Maintenance of Independent Study in DFT	LTP 215 DFT 149	3	
Applied Design or Co-op Related Class in DES and Co-op Work in DES	DES 080 DES 299 DES 299C	1 3	
Math/Science Elective* (3)		3-4	
		16-17	

**Notes:**

- \* (1) Core courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities and Math/Science electives.

## Apprentice Related Instruction

Pima Community College works jointly with local and state apprenticeship groups to offer related instruction in a number of apprenticeship programs. Most programs require 1 year or more of on-the-job training. At the same time that apprentices learn a skilled craft or trade on the job, they also receive apprentice related classroom instruction which explains the principles and procedures used on the job.

Before students may enroll for apprentice related instruction, they must either receive on-the-job training with individual employers or they must be tested, selected, signed up (indentured) and registered with the U.S. Department of Labor's Bureau of Apprenticeship and Training. Apprentice related instruction at Pima Community College is presently offered in these areas:

Automotive	Lathing
Bricklaying	Lineman
Cableman	Meterman
Carpentry	Operating Engineer
Electric Distribution Developer	Painting & Decorating
Engineering Technician	Pipe Fitting
Floor Covering	Plastering & Cement Masonry
General Construction	Plumbing
Glazing	Sheet Metal
Inside Electrical Wireman	Shop Electrician
Ironworking	Substation Electrician

**Certificate Program:** Upon finishing all apprentice related instruction in a chosen program, a student will obtain a Certificate of Completion from Pima Community College. One is also able to work toward a degree while enrolled in apprentice programs.

**Degree Program:** Those working to gain an Associate of Applied Science degree (trade and industrial technology option) must meet the minimum degree requirement of 64 credit hours. Upon completing the apprenticeship, a student may receive from 12 to 28 hours of credit in related instruction and/or approved technical courses.

In addition to the 28 credit hours, these general education course requirements must also be met:

Course	Cr. Hrs.
Communications	6
Mathematics and/or Science	6
Social Sciences	3
Humanities	3

The remaining 18-20 credit hours of electives should be chosen with help from the college apprenticeship coordinator.

### Trade and Industrial Technology\* (1) Associate of Applied Science

28 hours* (2)	Apprenticeship related instruction and/or approved technical courses.
18-20 hours* (2)	Apprenticeship related instruction and/or approved technical courses.
6 hours	Writing
6 hours	Mathematics and/or Science (Select 6 hours from the following: mathematics, astronomy, chemistry, earth sciences, physics.)* (3)
3 hours	Social Sciences (Select 3 hours from the following: anthropology, history, humanities, literature, philosophy, sociology, management.)* (3)
3 hours	Humanities elective* (3)
	Reading requirement* (4)
64-66 hours	Total

**Notes:**

- \* (1) Information on how to become an apprentice may be obtained from the U.S. Department of Labor, Bureau of Apprenticeship and Training, telephone 629-6267. Information on college-related instruction and non-apprentice building trade programs may be obtained from the Coordinator of Apprenticeship Training, Pima Community College, Downtown Campus.
- \* (2) Core courses: D grades do not fulfill graduation requirement. Core courses are for all apprentice related courses.
- \* (3) See General Education Requirements under the Graduation section of this catalog for math/science and humanities electives.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Archaeology

(See Also Anthropology)

## Field Archaeology

The archaeological fieldwork curriculum at Pima Community College is designed to provide interested persons with a basic level of practical archaeological field experience. Field courses are taught within the context of Arizona prehistory and emphasize an appreciation of the archaeological and environmental resources of the Southwest. No prior experience or prerequisites are necessary to begin the program or to enroll for classes.

Students have the opportunity to develop a wide variety of skills and abilities in field archaeology. Emphasis is placed on actual field experience, supplemented by appropriate lecture courses. The curriculum is flexible enough to meet the needs of students pursuing professional training in archaeology, amateur archaeologists, and people with a general interest in archaeology. The program strives to promote the preservation, and conservation of archaeological resources and to contribute to the knowledge of the prehistory of Southern Arizona. Upon the completion of the courses listed, an individual will receive a Basic Certificate in Archaeological Fieldwork.

## Archaeological Fieldwork

### Basic Certificate\* (1)

Required Courses		Cr. Hrs.
Human Origins & Prehistory Introduction to	ARC 100* (2)	3
Southwestern Prehistory	ARC 141* (2)	3
Archaeology	ARC 225* (2)	3
Archaeology Laboratory	ARC 250* (2)	3
Archaeology Field Methods	ARC 275* (2)	3
Archaeological Excavation	ARC 277* (2)	3
Archaeological Exploration I	ARC 276* (2)	3
Construction Surveying or	ENG 110* (2)	3
Elementary Surveying	ENG 130* (2), * (3)	3
		24

### Notes:

- \* (1) Students wishing to complete an A.A. in Anthropology with an emphasis in Archaeology, should consult the anthropology section of this catalog.
- \* (2) Core courses: D grades do not fulfill graduation requirement.
- \* (3) This course may be waived with consent of archaeology faculty advisor.

# Arts, Applied

(The Art area offers two programs of study—Applied Arts and Fine Arts.) This program provides students the opportunity to gain experience in several media or to concentrate in a single area of interest. Art electives and supportive courses should be selected according to the major emphasis of interest. (Suggested sequence.)

## Applied Arts

### Associate of Applied Arts Degree

Required Courses	First Semester	Cr. Hrs.
Basic Design	ART 100* (1)	3
Drawing I	ART 110* (1)	3
Art and Culture I	ART 130* (1)	3
Writing I	WRT 101	3
Humanities Elective* (2)		3-4
Reading Requirement* (3)		
		15-16
	<b>Second Semester</b>	
Color and Design	ART 115* (1)	3
Introduction to Sculpture	ART 120* (1)	3
Art and Culture II	ART 131* (1)	3
Writing II	WRT 102	3
Social Science Elective* (2)		3-4
		15-16

### Third and Fourth Semesters

Art requirements: Select any eight additional art courses from the following categories for a total of 24 credits with 6 hours from Math/ Science elective\*.

### Arts and Crafts

Principles of Lapidary, ART 060\* (4)  
 Advanced Lapidary, ART 065  
 Ceramics I, II & III, ART 160, 260, 261  
 Metalwork I: Jewelry, ART 170  
 Metalwork II: Jewelry, ART 270  
 Metalwork II: Smithing and Casting, ART 271  
 Weaving, ART 179, 180  
 Fiber Structures, ART 181  
 Commercial Graphics, ART 211

### Photography

Photography I & II, ART 140, 141  
 Commercial Photography, ART 143  
 History of Photography, ART 230



## Art History

Masks, ART 136  
Art of the 20th Century, ART 132  
History of Art and Design, ART 231  
Pre-Columbian Art, ART 135

## Drawing and Sculpture

Drawing II, ART 210  
Printmaking I, II, ART 212, 214  
Life Drawing, ART 213  
Sculpture, ART 220  
Painting, ART 215  
Silkscreen, ART 216

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for Humanities or Social Science electives.
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(4) Non-transferable.

# Arts, Fine

(The Art area offers two programs of study—Applied and Fine Arts.) This program provides two years of study for the student who plans to transfer to a four-year school or professional school. Areas of study may be painting, sculpture, printmaking, crafts, art history, photography, drawing and art education. Students should consult the catalog of the school to which they plan to transfer.

## Fine Arts

### Associate of Arts Degree For Transfer

Required Courses	First Semester	Cr. Hrs.
Basic Design	ART 100*(1)	3
Drawing I	ART 110*(1)	3
Art and Culture I	ART 130*(1)	3
Writing I	WRT 101	3
Humanities Elective*(2)		3-4
Reading Requirement*(3)		
		<hr/> 15-16

Color and Design  
Introduction to Sculpture  
Art and Culture II  
Writing II  
Social Science Elective\*(2)

## Second Semester

ART 115*(1)	3
ART 120*(1)	3
ART 131*(1)	3
WRT 102	3
	<hr/> 3
	15

## Third Semester

Drawing II or Life Drawing	
Art Electives	3
Lab Science	6
Social Science Elective*(2)	4
	<hr/> 3
	16

## Fourth Semester

Art Electives	9
Social Science Elective*(2)	3
Math or Lab Science Elective*(2)	4
	<hr/> 4
	16

### Notes:

- \*(1) Core courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for Humanities, Social Science and Math/Science electives.
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Automotive Technology

The automotive classes on the Downtown Campus are offered in an open-entry/open-exit, self-paced format. Students may enter classes any time of the year, including summer. They may take the classes as rapidly or as slowly as they wish. However, a typical schedule is to take four classes once a week for four hours apiece, completing all four classes in 20 weeks. The automotive department offers a two-year associate degree program, a two-year technical certificate program and special interest courses.

Classes meet the needs of the beginner, the mechanic who wants to update his skills and the do-it-yourself person. The degree program may also help students enter the automotive field in positions other than auto mechanic. Students in the mechanics certificate program are trained in general automotive repair. The four basic mechanic certificate programs offer courses in selected areas of automotive repair. Persons who later decide to move up to the technical certificate or degree level may use the basic certificate programs as the first step.

Programs can also be arranged for students planning to attend four-year colleges. Students should follow the first two-year requirements of the school to which they plan to transfer. All students taking Downtown Campus auto classes must have safety glasses and work shoes.

A person majoring in Automotive Technology may find that Cooperative Education offers a good way to get extra experience while enrolled in classes. See the Cooperative Education instructor-coordinator for details.

## Automotive Engine Repair and Rebuilding Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Internal Combustion Engines	AUT 120*(1)	4
Automotive Engine Service Repair	AUT 22*(1)	3
Automotive Diesel Engines	AUT 124*(1)	3
Engine Tune-Up	AUT 125*(1)	4
Human Relations in Business	MAN 110	3
		17

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Automotive Tune-Up and Air Conditioning Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Internal Combustion Engines	AUT 120*(1)	4
Engine Tune-Up	AUT 125*(1)	4
Automotive Electricity I-II	AUT 128*(1), 129*(1)	6
Automotive Air Conditioning	AUT 142*(1)	3
Human Relations in Business	MAN 110	3
		20

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Power Transmission Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Automatic Transmissions	AUT 132*(1), 133*(1)	8
Automotive Drive Line	AUT 136*(1)	4
Human Relations in Business	MAN 110	3
		15

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Suspension and Brakes Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Automotive Chassis	AUT 138*(1)	4
Automotive Drive Line	AUT 136*(1)	4
Automotive Brakes	AUT 140*(1)	4
Human Relations in Business	MAN 110*(1)	3
		15

### Notes:

\*(1) Core courses: D grades do not fulfill graduation requirement.

## Automotive Mechanics\*(1) Technical Certificate For Direct Employment

Required Courses (52)	First Semester	Cr. Hrs.
Internal Combustion Engines	AUT 120*(2)	4
Automotive Electricity I	AUT 128*(2)	3
Automatic Transmission Removal	AUT 132*(2)	4
Technical Math I*(3)	MTH 110	3
		14

<b>Second Semester</b>		
Automotive Engine Service Repair	AUT 122*(2)	3
Automotive Electricity II	AUT 129*(2)	3
Automatic Transmission Rebuilding	AUT 133*(2)	4
Technical Physics I	PHY 101	3
		<hr/> 13

<b>Third Semester</b>		
Engine Tune-Up	AUT 125*(2)	4
Automotive Chassis	AUT 138*(2)	4
Practical Communications	WRT 150	3
Human Relations in Business	MAN 110	3
		<hr/> 14

<b>Fourth Semester</b>		
Automotive Drive Line	AUT 136*(2)	4
Automotive Brakes	AUT 140*(2)	4
Automotive Air Conditioning	AUT 142*(2)	3
		<hr/> 11

#### Notes:

\*(1) Students who enter the program with advance standing or who desire additional training may take AUT 124, Automotive Diesel Engines, in addition to the above program requirements.

\*(2) Core courses: D grades do not fulfill graduation requirement.

\*(3) This course requires prerequisite or placement test.

#### Automotive Technology\* (1) Associate in Applied Science Degree For Direct Employment

<b>Required Courses (64)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Internal Combustion Engines	AUT 120*(2)	4
Automotive Electricity I	AUT 128*(2)	3
Automatic Transmission Removal	AUT 132*(2)	4
Technical Math I* (3)	MTH 110	3
Technical Physics I	PHY 101	3
Reading Requirement* (4)		<hr/> 17

<b>Second Semester</b>		
Automotive Engine Service Repair or Engine Tune-Up	AUT 122*(2)	3-4
Automotive Electricity II	AUT 125*(2)	3
Automatic Transmission Rebuilding	AUT 129*(2)	3
Technical Math II	AUT 133*(2)	4
Technical Physics II	MTH 120	3
	PHY 102	3
		<hr/> 16-17

<b>Third Semester</b>		
Automotive Engine Service Repair or Engine Tune-Up	AUT 122*(2)	3-4
Automotive Chassis	AUT 125*(2)	4
Human Relations in Business	AUT 138*(2)	4
Practical Communications	MAN 110	3
Humanities Elective* (5)	WRT 150	3
		<hr/> 16-17

<b>Fourth Semester</b>		
Automotive Brakes	AUT 140*(2)	4
Automotive Air Conditioning	AUT 142*(2)	3
Automotive Drive Line	AUT 136*(2)	4
Technical Communications	WRT 154	3
		<hr/> 14

#### Notes:

\*(1) Students who enter the program with advance standing or who desire additional training may take AUT 124, Automotive Diesel Engines, in addition to the above program requirements.

\*(2) Core courses: D grades do not fulfill graduation requirement.

\*(3) This course requires prerequisite or placement test.

\*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(5) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

#### Automotive Technology Associate of Science Degree For Transfer

<b>Required Courses (65-71)</b>	<b>Cr. Hrs.</b>
Internal Combustion Engines	AUT 120*(1) 4
Automotive Electricity I-II	AUT 128*(1), 129*(1) 6
Automatic Transmissions	AUT 132*(1), 133*(1) 8
Automotive Engine Service Repair	AUT 122*(1) 3
Engine Tune-Up	AUT 125*(1) 4
Automotive Chassis	AUT 138*(1) 4
Automotive Drive Line	AUT 136*(1) 4
Automotive Brakes	AUT 140*(1) 4
General Education Requirements* (2)	28-34
Reading Requirement* (3)	<hr/> 65-71

Intermediate Acting II  
 Humanities II\*(3)  
 Social Science Elective\*(4)  
 Laboratory Science\*(4)

**Fourth Semester**  
 DRA 251\*(1)3  
 HUM 111

4  
 6  
 4  
 17

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) The humanities requirement may also be met by a minimum of 9 credit hours from among ART 130-131, MUS 151, LIT 241-141, or PHI 101-102.
- \*(4) See General Education Requirements under the Graduation section of this catalog for social science and math/science electives.

## Early Childhood Education

Two programs are offered in Early Childhood Education for direct employment: Teacher Aide/Assistant and Teacher-Director. Certificates are awarded to those successfully completing the Teacher Aide/Assistant program. The Teacher-Director program leads to an associate of applied science degree.

Programs may also be arranged for transfer to universities in the following areas: Child Development and Family Relations, Elementary Education and Early Childhood Education. Students should first consult the catalog of the institution to which they plan to transfer to determine requirements for the first two years. Then they should arrange their transfer program with an advisor.

### Teacher Aide/Assistant (Pre-Service Program) Certificate For Direct Employment Advanced

Required Courses (30-31)	First Semester	Cr. Hrs.
Introduction to Education	ECE 118*(1)	3
Teaching Techniques	ECE 126*(1)	3
Literature/Social Studies for Children	ECE 108*(1)	3
Understanding Children	ECE 116*(1)	3
Writing I or Reading	WRT 101 REA 100	3-4
		15-16
	<b>Second Semester</b>	
Child Care Programs I	ECE 128*(1)	3
Music/Art for Children	ECE 112*(1)	3
Communication Skills for Children	ECE 110*(1)	3
Co-op Related Class in ECE	ECE 199*(1)	1
Co-op Work in ECE	ECE 199*(1)	2
Math/Sciences for Children	ECE 124*(1)	3
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

**Teacher-Director  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Teaching Techniques	ECE 126*(1)	3
Literature/Social Studies for Children	ECE 108*(1)	3
Math/Sciences for Children	ECE 124*(1)	3
Writing I	WRT 101	3
Music/Art for Children	ECE 112*(1)	3
Reading Requirement*(2)		
		15
	<b>Second Semester</b>	
Introduction to Education	ECE 118*(1)	3
Understanding Children	ECE 116*(1)	3
Communication Skills for Children	ECE 110*(1)	3
Co-op Related Class in ECE	ECE 199*(1)	1
Co-op Work in ECE	ECE 199*(1)	2
Child Care Programs I	ECE 128*(1)	3
		15
	<b>Third Semester</b>	
The Growing Years OR	ECE 106*(1)	
Child Development OR	ECE 117*(1)	3
Human Development	ECE 107*(1)	
Techniques for the Special Child	ECE 111*(1)	3
Day Care Programs	ECE 130*(1)	3
Nutrition for the Young Child	FSN 124	3
Communication Elective*(3)		3
		15
	<b>Fourth Semester</b>	
Effective Parenthood	ECE 114*(1)	3
Co-op Related Class in ECE	ECE 299*(1)	1
Co-op Work in ECE	ECE 299*(1)	2
Supervision & Administration	ECE 120*(1)	3
Math/Science Elective*(3)		3
Elective		3
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Communication and Math/Science electives.

## Education

An associate of science degree is available for students planning to enter one of the fields of Education: Elementary, Early Childhood or Secondary (and, at the University of Arizona, Rehabilitation).

Students should, however, follow the requirements of the upper division school to which they plan to transfer\*(1). Students should meet with their advisor for correct course selection.

Students must plan courses to meet the general education requirements as listed on General Education Requirements under the Graduation section of this catalog for the Associate of Science Degree at Pima Community College.

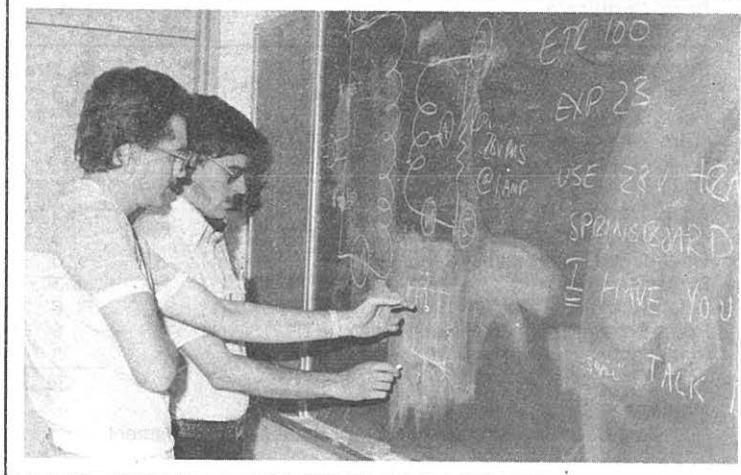
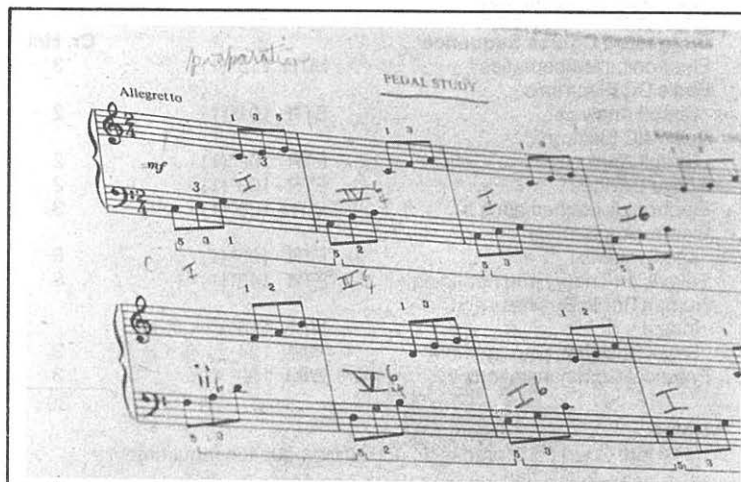
In addition to the above listed requirements, students majoring in Elementary or Early Childhood Education who plan to receive an associate of science degree in Pre-Education are required to take one of the following two ECE courses:

ECE 118 Introduction to Education  
ECE 126 Teaching Techniques  
Reading Requirement\*(2)

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement. Core courses are those courses which transfer to the universities as listed in the college transfer curriculum guide.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.





# Electronics Technology

The Electronics Technology program offers many opportunities for the student. The certificate programs and elective courses enable students looking for the shortest route to employment to specialize. These credits may later be applied to a degree program.

The two-year associate of applied science degree program is for direct employment training. The associate of science degree program is for students who plan to transfer to a four-year technology school.

Students are encouraged to participate in the Cooperative Education program which offers important benefits in updating present job skills, preparing for a job, and qualifying for a better job.

Throughout the program emphasis is placed on vocational training and practical applications. Extensive laboratory experiences are offered to reinforce classroom theory and develop skills in the use of basic test equipment. Up-to-date trainers and test equipment are available for use by students in advanced and specialized courses.

Students with no prior electronics experience or having a weak math background should take Introduction to Electronics (ETR 001) and Algebra I (MTH 070) as program entry prerequisites.

Advisors are available and a written plan to satisfy the requirements of the student's immediate and highest educational-occupational goals should be jointly developed and recorded each semester. Students should plan their school, work, family, and play schedules to allow sufficient time for study—1 to 2 hours outside study for each hour of class time.

## General Electronics Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Practical Communications	WRT 150	3
		24

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Television Repair Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Television Theory and Servicing	ETR 143*(1)	6
Human Rel. in Business and Industry or Small Business Management	MAN 110 or MAN 124	3
Practical Communications	WRT 150	3
		30

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Consumer Electronics Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Television Theory and Servicing	ETR 143*(1)	6
Home Entertainment Equipment Repair	ETR 150*(1)	6
Practical Communications	WRT 150	3
		36

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Communications, Consumer, Industrial  
Electronics Technology  
Technical Certificate  
For Direct Employment**

<b>Suggested Course Sequence (46)* (1)</b>		
	<b>First Semester</b>	<b>Cr. Hrs.</b>
Electronics Mathematics I	MTH 115* (2)	3
Basic DC Electronic Circuit Analysis	ETR 101* (1)	2
Basic AC Electronic Circuit Analysis	ETR 102* (1)	2
Active Devices	ETR 103* (1)	2
		<hr/> 9
	<b>Second Semester</b>	
Electronics Mathematics II	MTH 125* (2)	3
Electronics Circuits and Systems I	ETR 105* (2)	6
Digital Electronics	ETR 110* (2)	3
Practical Communications	WRT 150	3
		<hr/> 15
	<b>Third Semester</b>	
Technical Communications	WRT 154* (2)	3
Option 1* (3)	ETR	6
		<hr/> 9
	<b>Fourth Semester</b>	
Electronic Drafting	DFT 154	4
Human Relations in Business & Industry or Small Business Management	MAN 110 or MAN 124	3
Option 2* (3)	ETR	6
		<hr/> 13

**Notes:**

\*(1) The following are electronics elective courses:

Introduction to Electronics	ETR 001	(6)
FCC Amateur License Preparation	ETR 050	(3)
General Radio & Telephone F.C.C. License	ETR 290	(4)
Co-op Related Class in ETR	ETR 199	(1)
Co-op Work in ETR	ETR 199	(2)
Co-op Related Class in ETR	ETR 299	(1)
Co-op Work in ETR	ETR 299	(6)

\*(2) Core Courses: D grades do not fulfill graduation requirement.

\*(3) Students should choose appropriate courses from the three specialized options given.

Communications Electronics

Option 1 ETR 230\* (2) (6)

Option 2 ETR 235\* (2) (6)

Consumer Electronics

Option 1 ETR 143\* (2) (6)

Option 2 ETR 150\* (2) (6)

Industrial Electronics

Option 1 ETR 274\* (2) (6)

Option 2 ETR 276\* (2) (6)

**Communications, Consumer, Industrial Electronics Technology  
Associate of Applied Science Degree  
For Direct Employment**

<b>Suggested Course Sequence (68-71)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Practical Communications	WRT 150	3
Humanities Elective* (2)		3-4
Reading Requirement* (3)		
		15-16
	<b>Second Semester</b>	
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Technical Communications	WRT 154	3
Social Science Elective* (3)		3
		18
	<b>Third Semester</b>	
Human Relations in Business and Industry or Small Business Management	MAN 110 or MAN 124	3
Introductory Physics I	PHY 121	5
Option 1* (4)	ETR	6
Social Science or Humanities Elective* (3)		3-4
		17-18
	<b>Fourth Semester</b>	
Electronic Drafting	DFT 154*(1)	4
Introductory Physics II	PHY 122	5
Option 2* (4)	ETR	6
Social Science or Humanities Elective* (3)		3-4
		18-19

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Social Science and Humanities electives.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Students should choose appropriate course options from the three specializations given:  
 Communications Electronics  
 Option 1 ETR 230 (6)\* (1)  
 Option 2 ETR 235 (6)\* (1)  
 Consumer Electronics\* (1)  
 Option 1 ETR 143 (6)\* (1)  
 Option 2 ETR 150 (6)\* (1)  
 Industrial Electronics  
 Option 1 ETR 274 (6)\* (1)  
 Option 2 ETR 276 (6)\* (1)

**Communications, Consumer, Industrial Electronics Technology  
Associate of Science Degree  
For Transfer**

<b>Suggested Course Sequence (64-66)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
College Algebra	MTH 150*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Writing I	WRT 101	3
Social Science Elective* (2)		3
Reading Requirement* (3)		
		15
	<b>Second Semester</b>	
Trigonometry	MTH 155*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Writing II	WRT 102	3
Social Science Elective* (2)		3
		18
	<b>Third Semester</b>	
Analytic Geometry & Calculus I	MTH 180*(1)	3
Electronic Drafting	DFT 154*(1)	4
Option 1* (4)	ETR	6
Humanities Elective* (2)		3-4
		16-17

Analytic Geometry & Calculus II	MTH 185* (1)	3
Elementary Circuit Theory* (5)	ENG 245* (1)	3
Option 2* (4)	ETR	6
Humanities Elective* (2)		3-4
		15-16

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Humanities and Social Science electives.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Students should choose appropriate course options from the three specializations given.  
 Communications Electronics  
 Option 1 ETR 230 (6)\* (1)  
 Option 2 ETR 235 (6)\* (1)  
 Consumer Electronics  
 Option 1 ETR 143 (6)\* (1)  
 Option 2 ETR 150 (6)\* (1)  
 Industrial Electronics  
 Option 1 ETR 274 (6)\* (1)  
 Option 2 ETR 276 (6)\* (1)
- \* (5) Prerequisites for ENG 245 for Electronics Technology students only are changed to ETR 101, ETR 102, ETR 103, ETR 110, MTH 180, and concurrent enrollment in MTH 185.

## Electronics Digital Technology

The Digital Electronics program provides the student with training and experience on microprocessors, minicomputers, digital communications equipment and computer peripherals. Students will work with industrial quality equipment to learn both programming and maintenance of digital equipment.

The rapidly expanding local digital electronics industry has created a high demand for trained digital electronics technicians as well as the opportunity for students to work at cooperative education work stations while attending school.

## Electronics Digital Technology Associate of Applied Science Degree

### Suggested Course Sequence (75-76)

First Year	First Semester	Cr. Hrs.
Electronics Mathematics I	MTH 115* (1)	3
Basic DC Electronic Circuit Analysis	ETR 101* (1)	2
Basic AC Electronic Circuit Analysis	ETR 102* (1)	2
Active Devices	ETR 103* (1)	2
Writing I* (2) (see catalog)	WRT 101	3
Introduction to Computers	CSC 100	3
Social Science Elective* (3)		3
Reading Requirement* (4)		
		18
	<b>Second Semester</b>	
Electronics Mathematics II	MTH 125* (1)	3
Electronics Circuits and Systems I	ETR 105* (1)	6
Digital Electronics	ETR 110* (1)	3
Electronics Construction and Assembly	ETR 122* (1)	2
Programming in BASIC	CSC 180	3
Humanities Elective* (3)		3-4
		20-21
<b>Second Year</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Advanced Circuits and Systems	ETR 230* (1)	6
Digital Devices	ETR 250* (1)	4
Electronic Measurements	ETR 124* (1)	2
Digital Systems	ETR 255* (1)	6
		18
	<b>Second Semester</b>	
Digital Devices II	ETR 251* (1)	6
Microprocessors	ETR 256* (1)	6
Computer Peripherals	ETR 257* (1)	4
Writing II* (2) (see catalog)	WRT 102	3
		19

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) Writing 150, 154 may be substituted for Writing 101, 102. Students who may transfer to a four-year college or university should take the Math sequence MTH 130, MTH 150, MTH 155, and up.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities and Social Science electives.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.



# Emergency Medical Technology

This curriculum provides the theoretical and practical preparation to qualify graduates for three levels of service: (1) The basic certificate for the Emergency Medical Technician, Ambulance (AMT-A); (2) The certificate for the Intermediate Emergency Medical Technician (IEMT); and (3) The advanced certificate for the Paramedic.

## Basic (EMT-A) Certificate, EMT 051 (5)

This five-credit course consists of 114 clock hours of instruction providing a solid introduction to the field of pre-hospital emergency medical care. Emphasis is placed on basic aspects of emergency disease conditions and the recognition and treatment of emergency medical and traumatic conditions.

Students who complete the program will be issued a certificate of course completion from Pima Community College. Current Arizona Department of Health Services regulations allow program graduates to take the Arizona EMT Registry Examination. Program graduates with enough work experience may be eligible to take the national certifying examination through the National Registry of Emergency Medical Technicians.

### Acceptance Into the Program:

- Completion of college and EMT acceptance requirements.
- CPR classes are provided through non-credit or credit EMT 100, and students must enroll in one of these offerings or present a current CPR card to the instructor.

### Note:

Priority in admission will be given to persons affiliated with agencies providing pre-hospital emergency services (ambulance service, fire departments). Hospital and clinic workers and others presenting a documented need for training (students in other allied health programs, fire science, and law enforcement) also qualify for admission.

## Emergency Medical Technology

### Basic Certificate

#### For Direct Employment

Required Credits (5)		Lec	Lab	Cr. Hrs.	
Emergency Medical Tech.	EMT 051*(1)	4	+	2	5

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Intermediate (IEMT) Certificate (18)

The intermediate level of education consists of four additional EMT courses, which increase the knowledge and skills of the EMT 051 graduate (Basic Certificate) to include I.V. therapy and treatment with drug therapy.

Acceptance is dependent upon direct employment needs and prior completions of EMT 051. Students must be currently certified as EMT-A.

## Emergency Medical Technology

### Technical Certificate

#### For Direct Employment

Required Credits (18)		Lec	Lab	Cr. Hrs.	
Intermediate Emergency Medical Technology	EMT 101*(1)	6	+	1	6
Intermediate Emergency Medical Technology	EMT 102*(1)	4	+	1	4
Intermediate Emergency Medical Technology	EMT 103*(1)	4	+	1	4
Intermediate Emergency Medical Technology	EMT 104*(1)	4	+	1	4

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Advanced Paramedic Certificate (41)

The paramedic level of education consists of fifteen (15) additional EMT courses plus the IEMT courses, which increases the knowledge and skill of the IEMT graduate in advanced life support including endotracheal intubation, cardiac arrhythmia recognition, drug therapy, and needle thoracostomy. Acceptance is dependent upon direct employment needs and completion of the basic EMT course. Students must be currently certified as EMT-A.

To complete college requirements for the advanced certificate, in addition to the satisfactory completion of all EMT courses, students must document the completion of 3 credits in writing (WRT 101 or equivalent) and 3 credits in math (MTH 070 or higher equivalency) or science (see program advisor for acceptable science course credits).

## Advanced Paramedic Certificate

### For Direct Employment

Required Credits (41)		Lec	Lab	Cr. Hrs.	
Writing I (or equivalent)	WRT 101	3	+	0	3
Math or Sci Elec		3	+	0	3
Intro to Paramedicine	EMT 201*(1)	3	+	3	4
Paramedicine:					
Pharmacology	EMT 202*(1)	2	+	1	2

Pathophysiology & Management of Respiratory Emergencies	EMT 203*(1)	2	+	1	2
Advanced Life Support: Cardiology	EMT 204*(1)	3	+	3	4
Pathophysiology & Management of Neurological Problem	EMT 205*(1)	2	+	1	2
Pathophysiology & Management of Soft Tissue Injuries	EMT 206*(1)	2	+	1	2
Pathophysiology and Management of Musculo Skeletal Injuries	EMT 207*(1)	2	+	1	2
Pathophysiology and Management of Medical Problems	EMT 208*(1)	2	+	1	2
Pathophysiology & Management of Gynecologic Emergencies	EMT 209*(1)	2	+	1	2
Pathophysiology & Management of Pediatrics & Neonatal Patient	EMT 210*(1)	2	+	1	2
Emotional Aspects of Illness & Injury	EMT 211*(1)	1	+	1	1
Extrication/Rescue Techniques	EMT 212*(1)	1	+	1	1
Telemetry & EMS Communications	EMT 213*(1)	1	+	1	1
Paramedic Procedures: Hospital	EMT 214*(1)	0	+	15	3
Paramedic Procedures: Ambulance	EMT 215*(1)	0	+	25	5

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

Applicants for IEMT and Paramedic Programs are screened in accordance with Arizona State Department of Health Services, Divisions of Emergency Medical Services requirements, which usually involve a basic written test and oral interview.

## Engineering

Students completing the two-year program should be able to transfer to a four-year college or university for further studies. By selecting appropriate options, the student can specialize in one of the following branches of engineering: aerospace, agricultural, chemical, civil, electrical, geological, mechanical, metallurgical or mining.

### Engineering Associate of Science Degree# For Transfer

Suggested Courses (68-70)	First Semester	Cr. Hrs.
Writing I, II	WRT 101, 102	6
Anal. Geometry & Calculus I, II, III	MTH 180, 185, 215*(1)	10
Differential Equations*(2)	MTH 219*(1)	3
General Chemistry I	CHM 120*(1)	4
General Chemistry II*(3)	CHM 121*(1)*(3)	3
Introductory Physics I, II	PHY 131, 132*(1) or	10
Introductory Mechanics	PHY 210 and	
Introductory Electricity & Magnetism*(4)	PHY 216*(1)	
Fortran IV Programming	CSC 140	3
Eng. Mechanics-Statics	ENG 210*(1)	3
Humanities Electives*(5)		6
Social Science Electives*(6)		6
Technical Electives*(7)		14
Physical Educational Elective (Optional)		(2)
Reading Requirement*(8)		
		68 (70)

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) As a technical elective some students will take the 4 credit MTH 220 instead of MTH 219.

\*(3) As a technical elective some students will take the 4 credit CHM 121 including 1 credit of lab.

\*(4) Students taking the PHY 210, 216 alternative will also take PHY 221 as a technical elective.

\*(5) Humanities electives must be selected from the following list:

ART 130, 131, 132, 135  
DRA 240, 241  
LIT 131, 166, 265, 270, 272  
HUM 110, 111  
MUS 151  
PHI 101, 120, 130  
REL 120, 121  
SPE 136

- \* (6) Social Science Electives must be selected from the following list:

ANT 100, 110, 121, 141, 150, 210, 215, 220, 225

ECO 100, 101, 210

ESC 103

HIS 101, 102, 113, 114, 127, 141, 142, 147, 150

POL 110, 110, 111, 112, 120, 130, 250

PSY 100, 101

SOC 100, 101, 105, 210

- \* (7) Technical electives must be selected from the following list and **must have prior approval by an engineering advisor or they will not count toward graduation**. Selection of technical electives will depend upon the specific engineering discipline that the student intends to study at a 4-year college or university.

**Technical Electives Cr.**

MTH 220 instead of MTH 219 1

CHM 121 with lab 1

PHY 221\* (1) 4

ENG 120 3

ENG 130 3

ENG 140 3

ENG 220\* (1) 3

ENG 240\* (1) 3

ENG 245\* (1) 3

ENG 250\* (1) 3

ENG 260 3

ENG 261 3

CHM 240\* (1), 241\* (1) 8

LSC 205 4

The student should be aware that the suggested 14 hours of technical elective required to obtain an associate of science degree from Pima Community College is not an adequate preparation for entering upper division coursework at a 4-year college or university. It will probably be to the student's advantage to take fewer humanities and social science electives during his/her first two years at Pima Community College and transfer to a 4-year school without obtaining the A.S. degree. Students must consult an engineering advisor to explore these alternatives.

- \* (8) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Engineering Construction Technology

The Engineering Construction Technology Program is an occupational program leading to an Advanced Certificate (one year) and/or Associate of Applied Science Degree (two years). The Engineering Construction Technology (ECT) Program is an occupational program leading to an Advanced Certificate (one year) and/or an Associate of Applied Science Degree (two years). The ECT student may follow one of three basic paths toward a certificate/degree: a Residential and Light Commercial Construction Option, a Commercial Building Construction Option or a Grading and Paving Construction Option. The Residential and Light Commercial Construction Option prepares the student for a variety of supervisory positions ranging from superintendent to project manager. The Commercial Building Construction Option and the Grading and Paving Construction Option provide the student with skill and supervisor training leading to positions at the superintendent level. Employment at these levels in the construction industry also requires job experience.

### Engineering Construction Technology Residential and Light Commercial Construction Option Advanced Certificate

Required Courses (32)	First Semester	Cr. Hrs.
Principles of Construction	ECT 100* (1)	4
Mathematics* (2)		3
Construction Drafting I	DFT 110	4
Construction: Piping Systems	ECT 130* (1)	3
Blueprint Reading	GTC 099	3
		17
	<b>Second Semester</b>	
Building Materials	ECT 120* (1)	3
Mathematics* (2)		3
Business and Professional Communication	SPE 120	3
Construction Drafting II	DFT 120	4
Construction: Electricity	ECT 140* (1)	2
		15

#### Notes:

\* (1) Core Courses: D grades do not fulfill graduation requirement.

\* (2) Six (6) hours of Math with proficiency at the MTH 120 or MTH 155 level.

**Engineering Construction Technology  
Residential and Light Commercial Construction Option  
Associate of Applied Science Degree**

The two semesters of the advanced certificate program are the first two semesters of the associate of applied science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Building & Material Cost Estimating	ECT 210*(1)	3
Construction: Masonry	ECT 150*(1)	3
Construction: Surveying	ENG 110	3
Practical Communications or Writing I	WRT 150	3
Reading Requirement* (2)	WRT 101	3
		15
	<b>Fourth Semester</b>	
Construction: Management	ECT 220*(1)	3
Humanities Elective* (3)		3
Introduction to Computers	CSC 100	3
Human Relations in Business and Industry	MAN 110	3
Reading	REA 100	4
		16

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) For Humanities elective see General Education Requirements under the Graduation section of this catalog.

**Engineering Construction Technology  
Commercial Building Construction Option  
Advanced Certificate for Direct Employment**

<b>Required Courses (33)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Construction: Carpentry I	ECT 160*(1)	3
Construction: Commercial Blueprint Reading I	ECT 111*(1)	3
Mathematics* (2)		3
Construction: Electricity	ECT 140*(1)	2
Construction: Masonry	ECT 150*(1)	3
Business & Professional Communications	SPE 120	3
		17

Construction: Carpentry II	ECT 170*(1)	3
Construction: Piping Systems	ECT 130*(1)	3
Mathematics* (2)		3
Human Relations in Business and Industry	MAN 110	3
Reading* (3)	REA 100	4
		16

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirements.
- \* (2) Six credit hours of mathematics courses at the MTH 110 level or higher.
- \* (3) See General Education Requirements under the Graduation section of the catalog for the reading requirement.

**Engineering Construction Technology  
Commercial Building Construction Option  
Associate of Applied Science Degree**

The two semesters of the Advanced Certificate are the first two semesters of the Associate of Applied Science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Construction: Commercial Blueprint Reading II	ECT 206*(1)	3
Writing I or Practical Communications	WRT 101	3
Building and Material Cost Estimating	WRT 150	3
Introduction to Business	ECT 210*(1)	3
	BUS 100*(1)	3
		15
	<b>Fourth Semester</b>	
Construction: Management	ECT 220*(1)	3
Writing II or Technical Communications	WRT 102	3
Humanities* (2)	WRT 154	3
Intro to Microeconomics		3
Intro to Computers	ECO 100*(1)	3
	ECO 100	3
		15

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See the General Education Requirement under the Graduation Section of the catalog for the Humanities requirement.

**Engineering Construction Technology  
Grading and Paving Construction Option  
Advanced Certificate for Direct Employment**

<b>Required Courses (33)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Construction: Carpentry I	ECT 160*(1)	3
Construction: Civil Blueprint Reading I	ECT 110*(1)	3
Mathematics*(2)		3
Construction: Electricity	ECT 140*(1)	2
Construction: Masonry	ECT 150*(1)	3
Business & Professional Communications	SPE 120	3
		<hr/> 17
	<b>Second Semester</b>	
Construction: Carpentry II	ECT 170*(1)	3
Construction: Piping Systems	ECT 130*(1)	3
Mathematics*(2)		3
Human Relations in Business and Industry	MAN 110	3
Reading*(3)	REA 100	4
		<hr/> 16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirements.
- \*(2) Six credit hours of mathematics courses at the MTH 110 level or higher.
- \*(3) See General Education Requirements under the Graduation section of the catalog for the reading requirement.

**Engineering Construction Technology  
Grading and Paving Construction Option  
Associate of Applied Science Degree**

The two semesters of the Advanced Certificate are the first two semesters of the Associate of Applied Science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Construction: Civil Blueprint Reading II	ECT 205*(1)	3
Writing I or Practical Communications	WRT 101	
	WRT 150	3
Building and Material Cost Estimating	ECT 210*(1)	3
Introduction to Business	BUS 100*(1)	3
		<hr/> 15

Construction: Management	ECT 220*(1)	3
Writing II or Technical Communications	WRT 102	
	WRT 154	3
Humanities*(2)		3
Intro to Microeconomics	ECT 100*(1)	3
Intro to Computers	CSC 100	3
		<hr/> 15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See the General Education Requirement under the Graduation Section of the catalog for the Humanities requirement.

## English as a Second Language (ESL)

The ESL 050 program is for students who want to learn spoken and written American English. Students are placed in classes by the results of a placement test. The student will learn basic skills in listening, speaking, and reading and writing American English in this series of courses.

<b>Courses</b>		<b>Cr. Hrs.</b>
Elementary Grammatical Patterns I	ESL 050a	3
Elementary Grammatical Patterns II	ESL 050b	3
Intermediate Grammatical Patterns (Level 1)	ESL 051	3
Intermediate Grammatical Patterns (Level 2)		
Intermediate Reading and Writing (Level 1)	ESL 052	3
Intermediate Reading and Writing (Level 2)		
Advanced Grammatical Patterns	ESL 053	3
Advanced Writing	ESL 054	3
Gaining Independence in Reading	ESL 055	3
Composition I	ESL 057	3
American English Pronunciation	ESL 060	3



# Finance

Pima Community College works jointly with many financial institutions in the Tucson area to offer the two-year associate of applied science degree. This program allows for many speciality options within the finance industry. Numbered among these are banking, savings and loan associations, and credit unions. Basic and advanced certificate programs also are offered in savings and loan and in credit union.

## Banking

### Associate of Applied Science Degree For Direct Employment

Required Courses (60)	First Semester	Cr. Hrs.
Principles of Bank Operations	FIN 102* (1)	3
Introduction to Microeconomics	ECO 100	3
Math (based on placement exam)	MTH	3
Humanities Elective* (2)		3
Banking Elective* (3)		3
Reading Requirement* (4)		
		15
	<b>Second Semester</b>	
Principles of Accounting I	ACC 101* (1)	3
Human Relations in Business	MAN 110	3
Writing 100 (or above)	WRT	3
Communications Elective* (5)		3
Banking Elective* (3)		3
		15
	<b>Third Semester</b>	
Introduction to Macroeconomics	ECO 101* (1)	3
Principles of Accounting II	ACC 102	3
Supervision	MAN 122	3
Business Law I	BUS 200	3
Elective* (6)		3
		15
	<b>Fourth Semester</b>	
Bank Management or	FIN 203* (1)	
Installment Credit or	FIN 208* (1)	
Bus. Organization 7 Management	MAN 280* (1)	3
Electives* (6)		6
Banking Electives* (3)		6
		15

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

- \* (3) Banking electives may be selected from FIN prefix courses and other courses which relate to the banking industry.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (5) See General Education Requirements under the Graduation section of this catalog for Communication electives.
- \* (6) Electives selected from humanities, psychology, sociology, philosophy, anthropology or history.

## Credit Union

### Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Principles of Credit Union	FIN 131* (1)	3
Credit Union Accounting	FIN 139* (1)	3
Installment Credit	FIN 208* (1)	3
Elective (select any course from two-year program)		3
		12

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

## Credit Union

### Advanced Certificate For Direct Employment

Required Courses		Cr. Hrs.
Basic Certificate Requirements		12
Introduction to Macroeconomics	ECO 101	3
Principles of Accounting I	ACC 101	3
Credit Union Financial Management	FIN 239* (1)	3
Electives* (2)		3
Communication Elective* (3)		3
		27

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) Select any courses from Credit Union Associate of Applied Science degree program.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Communication electives.

**Credit Union  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Principles of Credit Union	FIN 131* (1)	3
Installment Credit	FIN 208* (1)	3
Human Relations in Business	MAN 110	3
Math (based on placement exam)	MTH	3
Writing (based on placement exam, 100 level or above)	WRT	3
Reading Requirement* (2)		
		15
	<b>Second Semester</b>	
Credit Union Accounting	FIN 139* (1)	3
Supervision	MAN 122	3
Introduction to Macroeconomics	ECO 101	3
Humanities Elective* (3)		3
Elective* (4)		3
		15
	<b>Third Semester</b>	
Credit Union Financial Management	FIN 239* (1)	3
Principles of Accounting I	ACC 101	3
Introduction to Microeconomics	ECO 100	3
Business Law I	BUS 200	3
Communication Elective* (3)		3
		15
	<b>Fourth Semester</b>	
Investment & Family		
Financial Management	FIN 136* (1)	3
Advertising	MKT 125	3
Principles of Accounting II* (5)	ACC 102	3
Elective* (6)		3
Elective* (4)		3
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities and Communication electives.
- \*(4) Select from FIN prefix courses and other courses which relate to the credit union industry.
- \*(5) May select a 200 level RLS or FIN course as an option.
- \*(6) Select from history, psychology, sociology, philosophy, political science or anthropology.

**Savings and Loan  
Basic Certificate  
For Direct Employment**

<b>Required Courses</b>	<b>Cr. Hrs.</b>
Savings and Loan Business	
Operations	FIN 101* (1)
Insurance of Savings Accounts	FIN 104* (1)
Teller Operations	FIN 106* (1)
Human Relations in Business	MAN 110
	12

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

**Savings and Loan  
Advanced Certificate  
For Direct Employment**

<b>Required Courses</b>	<b>Cr. Hrs.</b>
Basic Certificate Requirements	12
Financial Institutions	FIN 212* (1)
Supervision	MAN 122
Real Estate Principles	RLS 101
Business & Professional Communication	SPE 120
Elective* (2)	
Math (based on placement exam)	MTH
	30

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Select from history, humanities, anthropology, psychology, sociology, philosophy or political science.

**Savings and Loan  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60-61)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Savings & Loan Business		
Operations	FIN 101* (1)	3
Insurance of Savings Accounts	FIN 104* (1)	3
Human Relations in Business	MAN 110	3
Business & Professional Communication	SPE 120	3
Math (based on placement exam)	MTH	3
Reading Requirement* (2)		
		15

<b>Second Semester</b>		
Principles of Accounting I	ACC 101* (1)	3
Introduction to Microeconomics	ECO 100	3
Supervision	MAN 122	3
Real Estate Principles	RLS 101	3
Writing (based on placement exam, 100 level or above)	WRT	3
		15
<b>Third Semester</b>		
Principles of Accounting II	ACC 102* (1)	3
Introduction to Macroeconomics	ECO 101	3
Humanities Elective* (3)		3-4
Elective* (4)		3
Elective* (5)		3
		15-16
<b>Fourth Semester</b>		
Financial Institutions	FIN 212* (1)	3
Electives* (5)		6
Electives* (4)		6
		15

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.
- \* (4) Select from FIN prefix courses and other courses which relate to the savings and loan industry.
- \* (5) Select from history, psychology, sociology, philosophy, political science or anthropology.

## General Studies

A general or exploratory studies program which meets individual interests may be arranged by meeting with a counselor or faculty advisor. Courses can be chosen from many subject areas. An associate of general studies degree will be granted when 60 credit hours of study are completed with 3 hours in Communication and 3 hours in Math/Science. Students may transfer to another program at any time subject to exact course requirements of that program. Students with an associate of arts degree in general or exploratory studies who transfer to a four-year school may need more courses to complete a four-year degree.

Reading Requirement\* (1)

**Notes:**

- \* (1) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Geology

### Associate of Science Degree For Transfer

<b>Suggested Courses (65-67)* (1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101* (2)	3
Introductory Geology I	ESC 120	4
College Algebra	MTH 150	3
Social Science Elective* (3)		3
Physical Education	PED	1
Reading Requirement* (4)		14
	<b>Second Semester</b>	
Writing II	WRT 102* (2)	3
Introductory Geology II	ESC 121* (2)	4
Trigonometry	MTH 155	3
General Chemistry I	CHM 120	4
Social Science Elective* (3)		3
		17
	<b>Third Semester</b>	
Engineering Graphics	ENG 120* (2)	3
General Chemistry II	CHM 121* (2)	4
Introductory Physics I	PHY 121	5
Humanities Elective* (3)		3-4
Physical Education	PED	1
		16-17
	<b>Fourth Semester</b>	
Elementary Surveying	ENG 130* (2)	3
Introductory Physics II	PHY 122* (2)	5
Fortran IV Programming	CSC 140	3
Humanities Elective* (3)		3-4
Earth Science	ESC	4
		18-19

**Notes:**

- \* (1) A foreign language may be required in lieu of, or in addition to, courses listed.
- \* (2) Core Courses: D grades do not fulfill graduation requirement.
- \* (3) For course electives in humanities and social sciences, consult the catalog of the college or university you plan to enter.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Graphic Technology

The Graphic Technology program offers two options: a basic certificate that requires 24 credit hours and an associate of applied science degree that requires 60 credit hours. The first two semesters of the total program serve as a basic core of instruction in the areas of graphic technology, advertising art, and liberal arts. During the third and fourth semesters students may choose to major in graphic technology as well as join in the Cooperative Education work experience. This program leads the way to direct employment.

## Graphic Technology Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Introduction to Business	BUS 100	3
Graphic Technology I-II	GRA 101*(1), 102*(1)	6
Offset Photography— Stripping & Platemaking	GRA 104*(1)	3
Binding & Finishing Processes	GRA 103*(1)	3
Offset Presswork	GRA 202*(1)	3
Advanced Offset Presswork	GRA 222*(1)	3
Math (based on placement exam)		3
		<hr/> 24

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Graphic Technology Associate of Applied Science Degree For Direct Employment

Required Courses (60)	First Semester	Cr. Hrs.
Practical Communications	WRT 150	3
Graphic Technology I	GRA 101*(1)	3
Production Techniques & Processes I	ADA 111	3
Binding and Finishing Processes	GRA 103*(1)	3
Humanities Elective*(2)		3
Reading Requirement*(3)		
		<hr/> 15

Math (based on placement test)  
Business & Professional  
Communication  
Graphic Technology II  
Production Techniques  
& Processes II  
Offset Photography—  
Stripping & Platemaking

## Second Semester

MTH	3
SPE 120	3
GRA 102*(1)	3
ADA 211	3
GRA 104*(1)	3
	<hr/> 15

## Third Semester

Color Theory & Practice	GRA 201*(1)	3
Offset Presswork	GRA 202*(1)	3
Estimating Printing & Materials	GRA 203*(1)	3
Math (second course in sequence)	MTH	3
Co-op Related Class in GRA	GRA 199	1
Co-op Work in GRA	GRA 199	2
		<hr/> 15

## Fourth Semester

Advanced Offset Presswork	GRA 222*(1)	3
Advanced Stripping and Platemaking	GRA 221*(1)	3
Human Relations in Business	MAN 110	3
Offset Operations & Maintenance	GRA 232*(1)	3
Co-op Related Class in GRA	GRA 299	1
Co-op Work in GRA	GRA 299	2
		<hr/> 15

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for Humanities elective.

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

Intermediate Acting II  
 Humanities II\*(3)  
 Social Science Elective\*(4)  
 Laboratory Science\*(4)

**Fourth Semester**  
 DRA 251\*(1)3  
 HUM 111

4  
 6  
 4  
 17

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) The humanities requirement may also be met by a minimum of 9 credit hours from among ART 130-131, MUS 151, LIT 241-141, or PHI 101-102.
- \*(4) See General Education Requirements under the Graduation section of this catalog for social science and math/science electives.

## Early Childhood Education

Two programs are offered in Early Childhood Education for direct employment: Teacher Aide/Assistant and Teacher-Director. Certificates are awarded to those successfully completing the Teacher Aide/Assistant program. The Teacher-Director program leads to an associate of applied science degree.

Programs may also be arranged for transfer to universities in the following areas: Child Development and Family Relations, Elementary Education and Early Childhood Education. Students should first consult the catalog of the institution to which they plan to transfer to determine requirements for the first two years. Then they should arrange their transfer program with an advisor.

### Teacher Aide/Assistant (Pre-Service Program) Certificate For Direct Employment Advanced

Required Courses (30-31)	First Semester	Cr. Hrs.
Introduction to Education	ECE 118*(1)	3
Teaching Techniques	ECE 126*(1)	3
Literature/Social Studies for Children	ECE 108*(1)	3
Understanding Children	ECE 116*(1)	3
Writing I or	WRT 101	
Reading	REA 100	3-4
		15-16
	<b>Second Semester</b>	
Child Care Programs I	ECE 128*(1)	3
Music/Art for Children	ECE 112*(1)	3
Communication Skills for Children	ECE 110*(1)	3
Co-op Related Class in ECE	ECE 199*(1)	1
Co-op Work in ECE	ECE 199*(1)	2
Math/Sciences for Children	ECE 124*(1)	3
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

**Teacher-Director  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Teaching Techniques	ECE 126*(1)	3
Literature/Social Studies for Children	ECE 108*(1)	3
Math/Sciences for Children	ECE 124*(1)	3
Writing I	WRT 101	3
Music/Art for Children	ECE 112*(1)	3
Reading Requirement*(2)		
		<hr/> 15
	<b>Second Semester</b>	
Introduction to Education	ECE 118*(1)	3
Understanding Children	ECE 116*(1)	3
Communication Skills for Children	ECE 110*(1)	3
Co-op Related Class in ECE	ECE 199*(1)	1
Co-op Work in ECE	ECE 199*(1)	2
Child Care Programs I	ECE 128*(1)	3
		<hr/> 15
	<b>Third Semester</b>	
The Growing Years OR	ECE 106*(1)	
Child Development OR	ECE 117*(1)	3
Human Development	ECE 107*(1)	
Techniques for the Special Child	ECE 111*(1)	3
Day Care Programs	ECE 130*(1)	3
Nutrition for the Young Child	FSN 124	3
Communication Elective*(3)		3
		<hr/> 15
	<b>Fourth Semester</b>	
Effective Parenthood	ECE 114*(1)	3
Co-op Related Class in ECE	ECE 299*(1)	1
Co-op Work in ECE	ECE 299*(1)	2
Supervision & Administration	ECE 120*(1)	3
Math/Science Elective*(3)		3
Elective		3
		<hr/> 15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Communication and Math/Science electives.

## Education

An associate of science degree is available for students planning to enter one of the fields of Education: Elementary, Early Childhood or Secondary (and, at the University of Arizona, Rehabilitation).

Students should, however, follow the requirements of the upper division school to which they plan to transfer\*(1). Students should meet with their advisor for correct course selection.

Students must plan courses to meet the general education requirements as listed on General Education Requirements under the Graduation section of this catalog for the Associate of Science Degree at Pima Community College.

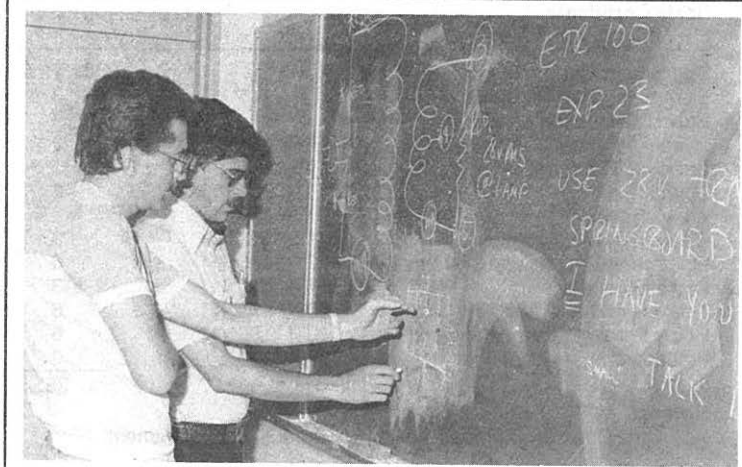
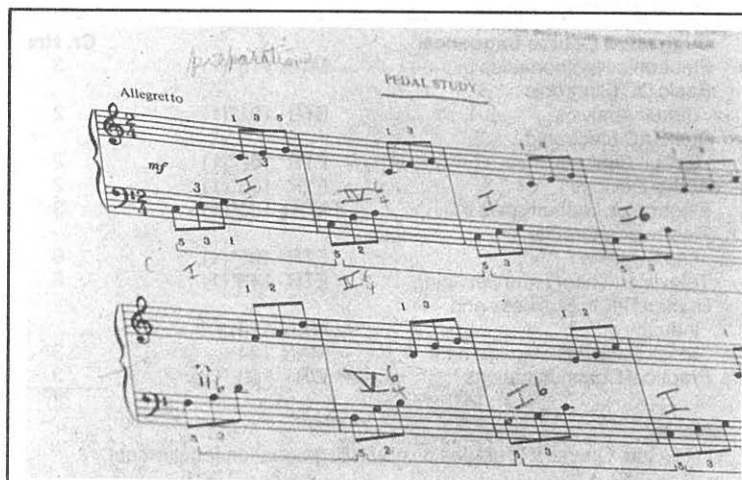
In addition to the above listed requirements, students majoring in Elementary or Early Childhood Education who plan to receive an associate of science degree in Pre-Education are required to take one of the following two ECE courses:

ECE 118 Introduction to Education  
ECE 126 Teaching Techniques  
Reading Requirement\*(2)

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement. Core courses are those courses which transfer to the universities as listed in the college transfer curriculum guide.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.





# Electronics Technology

The Electronics Technology program offers many opportunities for the student. The certificate programs and elective courses enable students looking for the shortest route to employment to specialize. These credits may later be applied to a degree program.

The two-year associate of applied science degree program is for direct employment training. The associate of science degree program is for students who plan to transfer to a four-year technology school.

Students are encouraged to participate in the Cooperative Education program which offers important benefits in updating present job skills, preparing for a job, and qualifying for a better job.

Throughout the program emphasis is placed on vocational training and practical applications. Extensive laboratory experiences are offered to reinforce classroom theory and develop skills in the use of basic test equipment. Up-to-date trainers and test equipment are available for use by students in advanced and specialized courses.

Students with no prior electronics experience or having a weak math background should take Introduction to Electronics (ETR 001) and Algebra I (MTH 070) as program entry prerequisites.

Advisors are available and a written plan to satisfy the requirements of the student's immediate and highest educational-occupational goals should be jointly developed and recorded each semester. Students should plan their school, work, family, and play schedules to allow sufficient time for study—1 to 2 hours outside study for each hour of class time.

## General Electronics Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Practical Communications	WRT 150	3
		24

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Television Repair Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Television Theory and Servicing	ETR 143*(1)	6
Human Rel. in Business and Industry or Small Business Management	MAN 110 or MAN 124	3
Practical Communications	WRT 150	3
		30

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Consumer Electronics Basic Certificate For Direct Employment

Suggested Course Sequence		Cr. Hrs.
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Television Theory and Servicing	ETR 143*(1)	6
Home Entertainment Equipment Repair	ETR 150*(1)	6
Practical Communications	WRT 150	3
		36

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Communications, Consumer, Industrial  
Electronics Technology  
Technical Certificate  
For Direct Employment**

<b>Suggested Course Sequence (46)* (1)</b>		<b>First Semester</b>	<b>Cr. Hrs.</b>
Electronics Mathematics I	MTH 115* (2)		3
Basic DC Electronic Circuit Analysis	ETR 101* (1)		2
Basic AC Electronic Circuit Analysis	ETR 102* (1)		2
Active Devices	ETR 103* (1)		2
			<hr/>
			9
		<b>Second Semester</b>	
Electronics Mathematics II	MTH 125* (2)		3
Electronics Circuits and Systems I	ETR 105* (2)		6
Digital Electronics	ETR 110* (2)		3
Practical Communications	WRT 150		3
			<hr/>
			15
		<b>Third Semester</b>	
Technical Communications Option 1* (3)	WRT 154* (2)		3
	ETR		6
			<hr/>
			9
		<b>Fourth Semester</b>	
Electronic Drafting	DFT 154		4
Human Relations in Business & Industry or Small Business Management	MAN 110 or MAN 124		3
Option 2* (3)	ETR		6
			<hr/>
			13

**Notes:**

\* (1) The following are electronics elective courses:

Introduction to Electronics	ETR 001	(6)
FCC Amateur License Preparation	ETR 050	(3)
General Radio & Telephone F.C.C. License	ETR 290	(4)
Co-op Related Class in ETR	ETR 199	(1)
Co-op Work in ETR	ETR 199	(2)
Co-op Related Class in ETR	ETR 299	(1)
Co-op Work in ETR	ETR 299	(6)

\* (2) Core Courses: D grades do not fulfill graduation requirement.

\* (3) Students should choose appropriate courses from the three specialized options given.  
 Communications Electronics  
 Option 1 ETR 230\* (2) (6)  
 Option 2 ETR 235\* (2) (6)  
 Consumer Electronics  
 Option 1 ETR 143\* (2) (6)  
 Option 2 ETR 150\* (2) (6)  
 Industrial Electronics  
 Option 1 ETR 274\* (2) (6)  
 Option 2 ETR 276\* (2) (6)

**Communications, Consumer, Industrial Electronics Technology  
Associate of Applied Science Degree  
For Direct Employment**

<b>Suggested Course Sequence (68-71)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Electronics Mathematics I	MTH 115*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Practical Communications	WRT 150	3
Humanities Elective* (2)		3-4
Reading Requirement* (3)		
		<hr/> 15-16
	<b>Second Semester</b>	
Electronics Mathematics II	MTH 125*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Technical Communications	WRT 154	3
Social Science Elective* (3)		3
		<hr/> 18
	<b>Third Semester</b>	
Human Relations in Business and Industry or Small Business Management	MAN 110 or MAN 124	3
Introductory Physics I	PHY 121	5
Option 1* (4)	ETR	6
Social Science or Humanities Elective* (3)		3-4
		<hr/> 17-18
	<b>Fourth Semester</b>	
Electronic Drafting	DFT 154*(1)	4
Introductory Physics II	PHY 122	5
Option 2* (4)	ETR	6
Social Science or Humanities Elective* (3)		3-4
		<hr/> 18-19

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Social Science and Humanities electives.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Students should choose appropriate course options from the three specializations given:  
 Communications Electronics  
 Option 1 ETR 230 (6)\* (1)  
 Option 2 ETR 235 (6)\* (1)  
 Consumer Electronics\* (1)  
 Option 1 ETR 143 (6)\* (1)  
 Option 2 ETR 150 (6)\* (1)  
 Industrial Electronics  
 Option 1 ETR 274 (6)\* (1)  
 Option 2 ETR 276 (6)\* (1)

**Communications, Consumer, Industrial Electronics Technology  
Associate of Science Degree  
For Transfer**

<b>Suggested Course Sequence (64-66)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
College Algebra	MTH 150*(1)	3
Basic DC Electronic Circuit Analysis	ETR 101*(1)	2
Basic AC Electronic Circuit Analysis	ETR 102*(1)	2
Active Devices	ETR 103*(1)	2
Writing I	WRT 101	3
Social Science Elective* (2)		3
Reading Requirement* (3)		
		<hr/> 15
	<b>Second Semester</b>	
Trigonometry	MTH 155*(1)	3
Electronics Circuits and Systems I	ETR 105*(1)	6
Digital Electronics	ETR 110*(1)	3
Writing II	WRT 102	3
Social Science Elective* (2)		3
		<hr/> 18
	<b>Third Semester</b>	
Analytic Geometry & Calculus I	MTH 180*(1)	3
Electronic Drafting	DFT 154*(1)	4
Option 1* (4)	ETR	6
Humanities Elective* (2)		3-4
		<hr/> 16-17

Analytic Geometry & Calculus II  
 Elementary Circuit Theory\* (5)  
 Option 2\* (4)  
 Humanities Elective\* (2)

#### Fourth Semester

MTH 185* (1)	3
ENG 245* (1)	3
ETR	6
	3-4
	15-16

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Humanities and Social Science electives.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Students should choose appropriate course options from the three specializations given.  
 Communications Electronics  
 Option 1 ETR 230 (6)\* (1)  
 Option 2 ETR 235 (6)\* (1)  
 Consumer Electronics  
 Option 1 ETR 143 (6)\* (1)  
 Option 2 ETR 150 (6)\* (1)  
 Industrial Electronics  
 Option 1 ETR 274 (6)\* (1)  
 Option 2 ETR 276 (6)\* (1)
- \* (5) Prerequisites for ENG 245 for Electronics Technology students only are changed to ETR 101, ETR 102, ETR 103, ETR 110, MTH 180, and concurrent enrollment in MTH 185.

## Electronics Digital Technology

The Digital Electronics program provides the student with training and experience on microprocessors, minicomputers, digital communications equipment and computer peripherals. Students will work with industrial quality equipment to learn both programming and maintenance of digital equipment.

The rapidly expanding local digital electronics industry has created a high demand for trained digital electronics technicians as well as the opportunity for students to work at cooperative education work stations while attending school.

## Electronics Digital Technology Associate of Applied Science Degree

### Suggested Course Sequence (75-76)

First Year	First Semester	Cr. Hrs.
Electronics Mathematics I	MTH 115* (1)	3
Basic DC Electronic Circuit Analysis	ETR 101* (1)	2
Basic AC Electronic Circuit Analysis	ETR 102* (1)	2
Active Devices	ETR 103* (1)	2
Writing I* (2) (see catalog)	WRT 101	3
Introduction to Computers	CSC 100	3
Social Science Elective* (3)		3
Reading Requirement* (4)		
		18
	<b>Second Semester</b>	
Electronics Mathematics II	MTH 125* (1)	3
Electronics Circuits and Systems I	ETR 105* (1)	6
Digital Electronics	ETR 110* (1)	3
Electronics Construction and Assembly	ETR 122* (1)	2
Programming in BASIC	CSC 180	3
Humanities Elective* (3)		3-4
		20-21
<b>Second Year</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Advanced Circuits and Systems	ETR 230* (1)	6
Digital Devices	ETR 250* (1)	4
Electronic Measurements	ETR 124* (1)	2
Digital Systems	ETR 255* (1)	6
		18
	<b>Second Semester</b>	
Digital Devices II	ETR 251* (1)	6
Microprocessors	ETR 256* (1)	6
Computer Peripherals	ETR 257* (1)	4
Writing II* (2) (see catalog)	WRT 102	3
		19

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) Writing 150, 154 may be substituted for Writing 101, 102. Students who may transfer to a four-year college or university should take the Math sequence MTH 130, MTH 150, MTH 155, and up.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities and Social Science electives.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Emergency Medical Technology

This curriculum provides the theoretical and practical preparation to qualify graduates for three levels of service: (1) The basic certificate for the Emergency Medical Technician, Ambulance (AMT-A); (2) The certificate for the Intermediate Emergency Medical Technician (IEMT); and (3) The advanced certificate for the Paramedic.

## Basic (EMT-A) Certificate, EMT 051 (5)

This five-credit course consists of 114 clock hours of instruction providing a solid introduction to the field of pre-hospital emergency medical care. Emphasis is placed on basic aspects of emergency disease conditions and the recognition and treatment of emergency medical and traumatic conditions.

Students who complete the program will be issued a certificate of course completion from Pima Community College. Current Arizona Department of Health Services regulations allow program graduates to take the Arizona EMT Registry Examination. Program graduates with enough work experience may be eligible to take the national certifying examination through the National Registry of Emergency Medical Technicians.

## Acceptance Into the Program:

- Completion of college and EMT acceptance requirements.
- CPR classes are provided through non-credit or credit EMT 100, and students must enroll in one of these offerings or present a current CPR card to the instructor.

## Note:

Priority in admission will be given to persons affiliated with agencies providing pre-hospital emergency services (ambulance service, fire departments). Hospital and clinic workers and others presenting a documented need for training (students in other allied health programs, fire science, and law enforcement) also qualify for admission.

## Emergency Medical Technology

### Basic Certificate

### For Direct Employment

Required Credits (5)		Lec	Lab	Cr. Hrs.	
Emergency Medical Tech.	EMT 051*(1)	4	+	2	5

## Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Intermediate (IEMT) Certificate (18)

The intermediate level of education consists of four additional EMT courses, which increase the knowledge and skills of the EMT 051 graduate (Basic Certificate) to include I.V. therapy and treatment with drug therapy. Acceptance is dependent upon direct employment needs and prior completions of EMT 051. Students must be currently certified as EMT-A.

## Emergency Medical Technology

### Technical Certificate

### For Direct Employment

Required Credits (18)			Lec		Lab	Cr. Hrs.
Intermediate Emergency Medical Technology	EMT 101*(1)	6	+	1		6
Intermediate Emergency Medical Technology	EMT 102*(1)	4	+	1		4
Intermediate Emergency Medical Technology	EMT 103*(1)	4	+	1		4
Intermediate Emergency Medical Technology	EMT 104*(1)	4	+	1		4

## Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Advanced Paramedic Certificate (41)

The paramedic level of education consists of fifteen (15) additional EMT courses plus the IEMT courses, which increases the knowledge and skill of the IEMT graduate in advanced life support including endotracheal intubation, cardiac arrhythmia recognition, drug therapy, and needle thoracostomy. Acceptance is dependent upon direct employment needs and completion of the basic EMT course. Students must be currently certified as EMT-A.

To complete college requirements for the advanced certificate, in addition to the satisfactory completion of all EMT courses, students must document the completion of 3 credits in writing (WRT 101 or equivalent) and 3 credits in math (MTH 070 or higher equivalency) or science (see program advisor for acceptable science course credits).

## Advanced Paramedic Certificate

### For Direct Employment

Required Credits (41)		Lec		Lab	Cr. Hrs.
Writing I (or equivalent)	WRT 101	3	+	0	3
Math or Sci Elec		3	+	0	3
Intro to Paramedicine	EMT 201*(1)	3	+	3	4
Paramedicine:					
Pharmacology	EMT 202*(1)	2	+	1	2



Pathophysiology & Management of Respiratory Emergencies	EMT 203*(1)	2	+	1	2
Advanced Life Support: Cardiology	EMT 204*(1)	3	+	3	4
Pathophysiology & Management of Neurological Problem	EMT 205*(1)	2	+	1	2
Pathophysiology & Management of Soft Tissue Injuries	EMT 206*(1)	2	+	1	2
Pathophysiology and Management of Musculo Skeletal Injuries	EMT 207*(1)	2	+	1	2
Pathophysiology and Management of Medical Problems	EMT 208*(1)	2	+	1	2
Pathophysiology & Management of Gynecologic Emergencies	EMT 209*(1)	2	+	1	2
Pathophysiology & Management of Pediatrics & Neonatal Patient	EMT 210*(1)	2	+	1	2
Emotional Aspects of Illness & Injury	EMT 211*(1)	1	+	1	1
Extrication/Rescue Techniques	EMT 212*(1)	1	+	1	1
Telemetry & EMS Communications	EMT 213*(1)	1	+	1	1
Paramedic Procedures: Hospital	EMT 214*(1)	0	+	15	3
Paramedic Procedures: Ambulance	EMT 215*(1)	0	+	25	5

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

Applicants for IEMT and Paramedic Programs are screened in accordance with Arizona State Department of Health Services, Divisions of Emergency Medical Services requirements, which usually involve a basic written test and oral interview.

## Engineering

Students completing the two-year program should be able to transfer to a four-year college or university for further studies. By selecting appropriate options, the student can specialize in one of the following branches of engineering: aerospace, agricultural, chemical, civil, electrical, geological, mechanical, metallurgical or mining.

### Engineering Associate of Science Degree# For Transfer

Suggested Courses (68-70)	First Semester	Cr. Hrs.
Writing I, II	WRT 101, 102	6
Anal. Geometry & Calculus I, II, III	MTH 180, 185, 215*(1)	10
Differential Equations*(2)	MTH 219*(1)	3
General Chemistry I	CHM 120*(1)	4
General Chemistry II*(3)	CHM 121*(1)*(3)	3
Introductory Physics I, II	PHY 131, 132*(1) or	10
Introductory Mechanics	PHY 210 and	
Introductory Electricity & Magnetism*(4)	PHY 216*(1)	
Fortran IV Programming	CSC 140	3
Eng. Mechanics-Statics	ENG 210*(1)	3
Humanities Electives*(5)		6
Social Science Electives*(6)		6
Technical Electives*(7)		14
Physical Educational Elective (Optional)		(2)
Reading Requirement*(8)		
		68 (70)

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) As a technical elective some students will take the 4 credit MTH 220 instead of MTH 219.

\*(3) As a technical elective some students will take the 4 credit CHM 121 including 1 credit of lab.

\*(4) Students taking the PHY 210, 216 alternative will also take PHY 221 as a technical elective.

\*(5) Humanities electives must be selected from the following list:

ART 130, 131, 132, 135  
DRA 240, 241  
LIT 131, 166, 265, 270, 272  
HUM 110, 111  
MUS 151  
PHI 101, 120, 130  
REL 120, 121  
SPE 136

- \* (6) Social Science Electives must be selected from the following list:

ANT 100, 110, 121, 141, 150, 210, 215, 220, 225  
 ECO 100, 101, 210  
 ESC 103  
 HIS 101, 102, 113, 114, 127, 141, 142, 147, 150  
 POL 110, 110, 111, 112, 120, 130, 250  
 PSY 100, 101  
 SOC 100, 101, 105, 210

- \* (7) Technical electives must be selected from the following list and **must have prior approval by an engineering advisor or they will not count toward graduation**. Selection of technical electives will depend upon the specific engineering discipline that the student intends to study at a 4-year college or university.

Technical Electives	Cr.
MTH 220 instead of MTH 219	1
CHM 121 with lab	1
PHY 221*(1)	4
ENG 120	3
ENG 130	3
ENG 140	3
ENG 220*(1)	3
ENG 240*(1)	3
ENG 245*(1)	3
ENG 250*(1)	3
ENG 260	3
ENG 261	3
CHM 240*(1), 241*(1)	8
LSC 205	4

The student should be aware that the suggested 14 hours of technical elective required to obtain an associate of science degree from Pima Community College is not an adequate preparation for entering upper division coursework at a 4-year college or university. It will probably be to the student's advantage to take fewer humanities and social science electives during his/her first two years at Pima Community College and transfer to a 4-year school without obtaining the A.S. degree. Students must consult an engineering advisor to explore these alternatives.

- \* (8) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Engineering Construction Technology

The Engineering Construction Technology Program is an occupational program leading to an Advanced Certificate (one year) and/or Associate of Applied Science Degree (two years). The Engineering Construction Technology (ECT) Program is an occupational program leading to an Advanced Certificate (one year) and/or an Associate of Applied Science Degree (two years). The ECT student may follow one of three basic paths toward a certificate/degree: a Residential and Light Commercial Construction Option, a Commercial Building Construction Option or a Grading and Paving Construction Option. The Residential and Light Commercial Construction Option prepares the student for a variety of supervisory positions ranging from superintendent to project manager. The Commercial Building Construction Option and the Grading and Paving Construction Option provide the student with skill and supervisor training leading to positions at the superintendent level. Employment at these levels in the construction industry also requires job experience.

### Engineering Construction Technology Residential and Light Commercial Construction Option Advanced Certificate

Required Courses (32)	First Semester	Cr. Hrs.
Principles of Construction	ECT 100*(1)	4
Mathematics*(2)		3
Construction Drafting I	DFT 110	4
Construction: Piping Systems	ECT 130*(1)	3
Blueprint Reading	GTC 099	3
		<hr/> 17
	<b>Second Semester</b>	
Building Materials	ECT 120*(1)	3
Mathematics*(2)		3
Business and Professional Communication	SPE 120	3
Construction Drafting II	DFT 120	4
Construction: Electricity	ECT 140*(1)	2
		<hr/> 15

#### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.  
 \* (2) Six (6) hours of Math with proficiency at the MTH 120 or MTH 155 level.

**Engineering Construction Technology  
Residential and Light Commercial Construction Option  
Associate of Applied Science Degree**

The two semesters of the advanced certificate program are the first two semesters of the associate of applied science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Building & Material Cost Estimating	ECT 210*(1)	3
Construction: Masonry	ECT 150*(1)	3
Construction: Surveying	ENG 110	3
Practical Communications or Writing I	WRT 150	
	WRT 101	3
Reading Requirement*(2)		15
	<b>Fourth Semester</b>	
Construction: Management	ECT 220*(1)	3
Humanities Elective*(3)		3
Introduction to Computers	CSC 100	3
Human Relations in Business and Industry	MAN 110	3
Reading	REA 100	4
		16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) For Humanities elective see General Education Requirements under the Graduation section of this catalog.

**Engineering Construction Technology  
Commercial Building Construction Option  
Advanced Certificate for Direct Employment**

<b>Required Courses (33)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Construction: Carpentry I	ECT 160*(1)	3
Construction: Commercial Blueprint Reading I	ECT 111*(1)	3
Mathematics*(2)		3
Construction: Electricity	ECT 140*(1)	2
Construction: Masonry	ECT 150*(1)	3
Business & Professional Communications	SPE 120	3
		17

	<b>Second Semester</b>	
Construction: Carpentry II	ECT 170*(1)	3
Construction: Piping Systems	ECT 130*(1)	3
Mathematics*(2)		3
Human Relations in Business and Industry	MAN 110	3
Reading*(3)	REA 100	4
		16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirements.
- \*(2) Six credit hours of mathematics courses at the MTH 110 level or higher.
- \*(3) See General Education Requirements under the Graduation section of the catalog for the reading requirement.

**Engineering Construction Technology  
Commercial Building Construction Option  
Associate of Applied Science Degree**

The two semesters of the Advanced Certificate are the first two semesters of the Associate of Applied Science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Construction: Commercial Blueprint Reading II	ECT 206*(1)	3
Writing I or Practical Communications	WRT 101	
	WRT 150	3
Building and Material Cost Estimating	ECT 210*(1)	3
Introduction to Business	BUS 100*(1)	3
		15
	<b>Fourth Semester</b>	
Construction: Management	ECT 220*(1)	3
Writing II or Technical Communications	WRT 102	
	WRT 154	3
Humanities*(2)		3
Intro to Microeconomics	ECO 100*(1)	3
Intro to Computers	ECO 100	3
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See the General Education Requirement under the Graduation Section of the catalog for the Humanities requirement.

**Engineering Construction Technology  
Grading and Paving Construction Option  
Advanced Certificate for Direct Employment**

<b>Required Courses (33)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Construction: Carpentry I	ECT 160*(1)	3
Construction: Civil Blueprint Reading I	ECT 110*(1)	3
Mathematics*(2)		3
Construction: Electricity	ECT 140*(1)	2
Construction: Masonry	ECT 150*(1)	3
Business & Professional Communications	SPE 120	3
		<hr/> 17

	<b>Second Semester</b>	
Construction: Carpentry II	ECT 170*(1)	3
Construction: Piping Systems	ECT 130*(1)	3
Mathematics*(2)		3
Human Relations in Business and Industry	MAN 110	3
Reading*(3)	REA 100	4
		<hr/> 16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirements.
- \*(2) Six credit hours of mathematics courses at the MTH 110 level or higher.
- \*(3) See General Education Requirements under the Graduation section of the catalog for the reading requirement.

**Engineering Construction Technology  
Grading and Paving Construction Option  
Associate of Applied Science Degree**

The two semesters of the Advanced Certificate are the first two semesters of the Associate of Applied Science degree program.

<b>Required Courses (63)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Soil Mechanics	ECT 200*(1)	3
Construction: Civil Blueprint Reading II	ECT 205*(1)	3
Writing I or Practical Communications	WRT 101	
	WRT 150	3
Building and Material Cost Estimating	ECT 210*(1)	3
Introduction to Business	BUS 100*(1)	3
		<hr/> 15

	<b>Fourth Semester</b>	
Construction: Management Writing II or Technical Communications	ECT 220*(1)	3
	WRT 102	
	WRT 154	3
Humanities*(2)		3
Intro to Microeconomics	ECT 100*(1)	3
Intro to Computers	CSC 100	3
		<hr/> 15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(1) See the General Education Requirement under the Graduation Section of the catalog for the Humanities requirement.

## English as a Second Language (ESL)

The ESL 050 program is for students who want to learn spoken and written American English. Students are placed in classes by the results of a placement test. The student will learn basic skills in listening, speaking, and reading and writing American English in this series of courses.

<b>Courses</b>		<b>Cr. Hrs.</b>
Elementary Grammatical Patterns I	ESL 050a	3
Elementary Grammatical Patterns II	ESL 050b	3
Intermediate Grammatical Patterns (Level 1)	ESL 051	3
Intermediate Grammatical Patterns (Level 2)		
Intermediate Reading and Writing (Level 1)	ESL 052	3
Intermediate Reading and Writing (Level 2)		
Advanced Grammatical Patterns	ESL 053	3
Advanced Writing	ESL 054	3
Gaining Independence in Reading	ESL 055	3
Composition I	ESL 057	3
American English Pronunciation	ESL 060	3

# Finance

Pima Community College works jointly with many financial institutions in the Tucson area to offer the two-year associate of applied science degree. This program allows for many speciality options within the finance industry. Numbered among these are banking, savings and loan associations, and credit unions. Basic and advanced certificate programs also are offered in savings and loan and in credit union.

## Banking

### Associate of Applied Science Degree For Direct Employment

Required Courses (60)	First Semester	Cr. Hrs.
Principles of Bank Operations	FIN 102*(1)	3
Introduction to Microeconomics	ECO 100	3
Math (based on placement exam)	MTH	3
Humanities Elective*(2)		3
Banking Elective*(3)		3
Reading Requirement*(4)		
		15
	<b>Second Semester</b>	
Principles of Accounting I	ACC 101*(1)	3
Human Relations in Business	MAN 110	3
Writing 100 (or above)	WRT	3
Communications Elective*(5)		3
Banking Elective*(3)		3
		15
	<b>Third Semester</b>	
Introduction to Macroeconomics	ECO 101*(1)	3
Principles of Accounting II	ACC 102	3
Supervision	MAN 122	3
Business Law I	BUS 200	3
Elective*(6)		3
		15
	<b>Fourth Semester</b>	
Bank Management or	FIN 203*(1)	
Installment Credit or	FIN 208*(1)	
Bus. Organization 7 Management	MAN 280*(1)	3
Electives*(6)		6
Banking Electives*(3)		6
		15

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

- \*(3) Banking electives may be selected from FIN prefix courses and other courses which relate to the banking industry.
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(5) See General Education Requirements under the Graduation section of this catalog for Communication electives.
- \*(6) Electives selected from humanities, psychology, sociology, philosophy, anthropology or history.

## Credit Union

### Basic Certificate

#### For Direct Employment

Required Courses		Cr. Hrs.
Principles of Credit Union	FIN 131*(1)	3
Credit Union Accounting	FIN 139*(1)	3
Installment Credit	FIN 208*(1)	3
Elective (select any course from two-year program)		3
		12

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

## Credit Union

### Advanced Certificate

#### For Direct Employment

Required Courses		Cr. Hrs.
Basic Certificate Requirements		12
Introduction to Macroeconomics	ECO 101	3
Principles of Accounting I	ACC 101	3
Credit Union Financial Management	FIN 239*(1)	3
Electives*(2)		3
Communication Elective*(3)		3
		27

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Select any courses from Credit Union Associate of Applied Science degree program.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Communication electives.

**Credit Union  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Principles of Credit Union	FIN 131*(1)	3
Installment Credit	FIN 208*(1)	3
Human Relations in Business	MAN 110	3
Math (based on placement exam)	MTH	3
Writing (based on placement exam, 100 level or above)	WRT	3
Reading Requirement* (2)		15
	<b>Second Semester</b>	
Credit Union Accounting	FIN 139*(1)	3
Supervision	MAN 122	3
Introduction to Macroeconomics	ECO 101	3
Humanities Elective* (3)		3
Elective* (4)		3
		15
	<b>Third Semester</b>	
Credit Union Financial Management	FIN 239*(1)	3
Principles of Accounting I	ACC 101	3
Introduction to Microeconomics	ECO 100	3
Business Law I	BUS 200	3
Communication Elective* (3)		3
		15
	<b>Fourth Semester</b>	
Investment & Family		
Financial Management	FIN 136*(1)	3
Advertising	MKT 125	3
Principles of Accounting II* (5)	ACC 102	3
Elective* (6)		3
Elective* (4)		3
		15

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities and Communication electives.
- \* (4) Select from FIN prefix courses and other courses which relate to the credit union industry.
- \* (5) May select a 200 level RLS or FIN course as an option.
- \* (6) Select from history, psychology, sociology, philosophy, political science or anthropology.

**Savings and Loan  
Basic Certificate  
For Direct Employment**

<b>Required Courses</b>	<b>Cr. Hrs.</b>
Savings and Loan Business	
Operations	FIN 101*(1) 3
Insurance of Savings Accounts	FIN 104*(1) 3
Teller Operations	FIN 106*(1) 3
Human Relations in Business	MAN 110 3
	12

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

**Savings and Loan  
Advanced Certificate  
For Direct Employment**

<b>Required Courses</b>	<b>Cr. Hrs.</b>
Basic Certificate Requirements	12
Financial Institutions	FIN 212*(1) 3
Supervision	MAN 122 3
Real Estate Principles	RLS 101 3
Business & Professional	
Communication	SPE 120 3
Elective* (2)	3
Math (based on placement exam)	MTH 3
	30

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) Select from history, humanities, anthropology, psychology, sociology, philosophy or political science.

**Savings and Loan  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60-61)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Savings & Loan Business		
Operations	FIN 101*(1)	3
Insurance of Savings Accounts	FIN 104*(1)	3
Human Relations in Business	MAN 110	3
Business & Professional		
Communication	SPE 120	3
Math (based on placement exam)	MTH	3
Reading Requirement* (2)		15



Principles of Accounting I	ACC 101* (1)	3
Introduction to Microeconomics	ECO 100	3
Supervision	MAN 122	3
Real Estate Principles	RLS 101	3
Writing (based on placement exam, 100 level or above)	WRT	3
		15
<b>Third Semester</b>		
Principles of Accounting II	ACC 102* (1)	3
Introduction to Macroeconomics	ECO 101	3
Humanities Elective* (3)		3-4
Elective* (4)		3
Elective* (5)		3
		15-16
<b>Fourth Semester</b>		
Financial Institutions	FIN 212* (1)	3
Electives* (5)		6
Electives* (4)		6
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.
- \*(4) Select from FIN prefix courses and other courses which relate to the savings and loan industry.
- \*(5) Select from history, psychology, sociology, philosophy, political science or anthropology.

## General Studies

A general or exploratory studies program which meets individual interests may be arranged by meeting with a counselor or faculty advisor. Courses can be chosen from many subject areas. An associate of general studies degree will be granted when 60 credit hours of study are completed with 3 hours in Communication and 3 hours in Math/Science. Students may transfer to another program at any time subject to exact course requirements of that program. Students with an associate of arts degree in general or exploratory studies who transfer to a four-year school may need more courses to complete a four-year degree.

Reading Requirement\* (1)

**Notes:**

- \*(1) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Geology

### Associate of Science Degree For Transfer

<b>Suggested Courses (65-67)* (1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101* (2)	3
Introductory Geology I	ESC 120	4
College Algebra	MTH 150	3
Social Science Elective* (3)		3
Physical Education	PED	1
Reading Requirement* (4)		14
<b>Second Semester</b>		
Writing II	WRT 102* (2)	3
Introductory Geology II	ESC 121* (2)	4
Trigonometry	MTH 155	3
General Chemistry I	CHM 120	4
Social Science Elective* (3)		3
		17
<b>Third Semester</b>		
Engineering Graphics	ENG 120* (2)	3
General Chemistry II	CHM 121* (2)	4
Introductory Physics I	PHY 121	5
Humanities Elective* (3)		3-4
Physical Education	PED	1
		16-17
<b>Fourth Semester</b>		
Elementary Surveying	ENG 130* (2)	3
Introductory Physics II	PHY 122* (2)	5
Fortran IV Programming	CSC 140	3
Humanities Elective* (3)		3-4
Earth Science	ESC	4
		18-19

**Notes:**

- \*(1) A foreign language may be required in lieu of, or in addition to, courses listed.
- \*(2) Core Courses: D grades do not fulfill graduation requirement.
- \*(3) For course electives in humanities and social sciences, consult the catalog of the college or university you plan to enter.
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Graphic Technology

The Graphic Technology program offers two options: a basic certificate that requires 24 credit hours and an associate of applied science degree that requires 60 credit hours. The first two semesters of the total program serve as a basic core of instruction in the areas of graphic technology, advertising art, and liberal arts. During the third and fourth semesters students may choose to major in graphic technology as well as join in the Cooperative Education work experience. This program leads the way to direct employment.

## Graphic Technology Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Introduction to Business	BUS 100	3
Graphic Technology I-II	GRA 101*(1), 102*(1)	6
Offset Photography— Stripping & Platemaking	GRA 104*(1)	3
Binding & Finishing Processes	GRA 103*(1)	3
Offset Presswork	GRA 202*(1)	3
Advanced Offset Presswork	GRA 222*(1)	3
Math (based on placement exam)		3
		<hr/> 24

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Graphic Technology Associate of Applied Science Degree For Direct Employment

Required Courses (60)	First Semester	Cr. Hrs.
Practical Communications	WRT 150	3
Graphic Technology I	GRA 101*(1)	3
Production Techniques & Processes I	ADA 111	3
Binding and Finishing Processes	GRA 103*(1)	3
Humanities Elective*(2)		3
Reading Requirement*(3)		
		<hr/> 15

Math (based on placement test)  
Business & Professional  
Communication  
Graphic Technology II  
Production Techniques  
& Processes II  
Offset Photography—  
Stripping & Platemaking

## Second Semester

MTH	3
SPE 120	3
GRA 102*(1)	3
ADA 211	3
GRA 104*(1)	3
	<hr/> 15

## Third Semester

Color Theory & Practice	GRA 201*(1)	3
Offset Presswork	GRA 202*(1)	3
Estimating Printing & Materials	GRA 203*(1)	3
Math (second course in sequence)	MTH	3
Co-op Related Class in GRA	GRA 199	1
Co-op Work in GRA	GRA 199	2
		<hr/> 15

## Fourth Semester

Advanced Offset Presswork	GRA 222*(1)	3
Advanced Stripping and Platemaking	GRA 221*(1)	3
Human Relations in Business	MAN 110	3
Offset Operations & Maintenance	GRA 232*(1)	3
Co-op Related Class in GRA	GRA 299	1
Co-op Work in GRA	GRA 299	2
		<hr/> 15

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for Humanities elective.

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

**Graphic Arts**  
**Graphic Artist Option**  
**Associate of Applied Science Degree**  
**For Direct Employment**

<b>Required Courses</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Practical Communications	WRT 150	3
Graphic Technology I	GRA 101*(1)	3
Advertising Art I	ADA 101*(1)	3
Advertising Design I	ADA 110*(1)	3
Math (based on placement exam)	MTH	3
Reading Requirement* (2)		
		<hr/> 15
	<b>Second Semester</b>	
Advertising Drawing I	ADA 103*(1)	3
Math (second course in sequence)	MTH	3
Business & Professional Communication	SPE 120	3
Graphic Technology II	GRA 102*(1)	3
Production Techniques & Processes I	ADA 111*(1)	3
		<hr/> 15
	<b>Third Semester</b>	
Production Techniques & Processes II	ADA 211*(1)	3
Advertising Drawing II	ADA 105*(1)	3
Advertising Design II	ADA 120*(1)	3
Color Theory and Practice	GRA 201*(1)	3
Humanities I	HUM 110	4
		<hr/> 16
	<b>Fourth Semester</b>	
Offset Photography	GRA 104*(1)	3
Offset Presswork	GRA 202*(1)	3
Advanced Stripping & Platemaking for Color	GRA 221*(1)	3
Human Relations in Business	MAN 110	3
Co-op Related Class in ADA	ADA 199	1
Co-op Work in ADA	ADA 199	2
		<hr/> 15

**Notes:**

\*(1) Core courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Home Economics

Home Economics offers students coursework toward the following objectives:

- 2 year transfer program toward B.S. degree at universities
- career preparation for direct employment
- service courses for nurses and psychology and other disciplines
- personal development for home and family living

### Home Economic Transfer Programs

Students can fulfill the first two year requirements at Pima College and complete the last two years of a bachelor's degree at the university of their choice. The major fields of study at the U of A's School of Home Economics are listed below. Pima College offers all courses required (first two years) of the options listed under each program.

#### A. Child Development & Family Relations

- Child Development Option
- Family Studies Option
- Early Childhood Education

#### B. Clothing & Textiles

- Fashion Merchandising
- Clothing & Textiles

#### C. Food, Human Nutrition & Dietetics

- Human Nutrition & Dietetics
- Food Service Management
- Consumer Service in Food

#### D. General Home Economics

- Home Economics Education
- General Home Economics

Students can plan for a wide range of careers in Home Economics:

- Child Development and Family Relations
- Early Childhood Education
- Human Nutrition and Dietetics
- Consumer Service in Food
- Food Service Management
- Clothing and Textiles
- Fashion Merchandising
- Home Economics Education
- Interior Design
- Home Economics and Journalism
- Home Economics Extension Education

**Alteration Specialist  
Advanced Certificate  
For Direct Employment**

Required Courses (30)	First Semester	Cr. Hrs.
Clothing Construction I	FDC 111*(1)	3
Alteration & Designing	FDC 112*(1)	3
History of Fashion	FDC 122	3
Business English or Business Communications	OED 151	3
Elective*(2)	OED 251	3
		<hr/> 15
	<b>Second Semester</b>	
Clothing Selection	FDC 131*(1)	3
Alteration & Repair	FDC 142*(1)	3
Textiles	FDC 126*(1)	3
Math/Science Elective*(3)		3
Elective*(2)		3
		<hr/> 15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirements.

\*(2) Suggested Electives:

Human Relations in Business and Industry	MAN 110
Small Business Management	MAN 124
Basic Design	ART 100
Color and Design	ART 115

\*(3) See General Education Requirements under the Graduation section of this catalog for Math/Science electives.

**Professional Seamstress  
Associate of Applied Science Degree  
For Direct Employment**

Required Courses (60-61)	First Semester	Cr. Hrs.
Clothing Construction I	FDC 111*(1)	3
Alteration & Designing	FDC 112*(1)	3
History of Fashion	FDC 122	3
Business English or Business Communications	OED 151	3
Elective*(2)	OED 251	3
Reading Requirement*(3)		
		<hr/> 15

**Second Semester**

Clothing Selection	FDC 131*(1)	3
Alteration & Repair	FDC 142*(1)	3
Textiles	FDC 126*(1)	3
Math/Science Elective*(4)		3
Elective*(2)		3
		<hr/> 15

**Third Semester**

Clothing Construction II	FDC 211*(1)	3
Applied Dress Design	FDC 121*(1)	3
Art & Culture I or Art & Culture II	ART 130	
	ART 131	3
Human Development & Relations or Introduction to Psychology I	ECE 117	
Communication Elective*(4)	PSY 100	3
		<hr/> 3-4
		15-16

**Fourth Semester**

Clothing Construction III	FDC 212	3
Psychology of Dress	FDC 132	3
Today's World	HEC 137	3
Math/Science Elective*(4)		3
Elective*(2)		3
		<hr/> 15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) Suggested Electives (or see advisor)

Human Relations in Business & Industry	MAN 110
Small Business Management	MAN 124
Basic Design	ART 100
Color & Design	ART 115

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(4) See General Education Requirements under the Graduation section of this catalog for Communication and Math/Science electives.

**Fashion Design  
Associate Degree In Applied Science  
For Direct Employment**

<b>Required Courses (60-61)</b>		<b>Cr. Hrs.</b>
Clothing Construction I	FDC 111*(1)	3
Art & Culture I or II	ART 130 or 131	3
Textiles	FDC 126*(1)	3
Clothing Selection	FDC 131	3
Elective* (2)		3-4
Reading Requirement* (3)		
		15-16
<b>Second Semester</b>		
Clothing Construction II	FDC 111*(1)	3
Introduction to Math	MTH 060	3
Basic Design or	ART 100	
Color and Design	ART 115	3
History of Fashion	FDC 122*(1)	3
Introduction to Writing	WRT 101	3
		15
<b>Third Semester</b>		
Fashion Design I	FDC 141*(1)	3
Professional Communication or	WRT 150	
Communication Elective		3
Psychology of Dress	FDC 132*(1)	3
Alteration & Design	FDC 112	3
Math/Science Elective* (4)		3
		15
<b>Fourth Semester</b>		
Applied Dress Design	FDC 121*(1)	3
Fashion Design II	FDC 241*(1)	3
Human Relations in		
Business & Industry or	MAN 110	
Advertising	MKT 125	3
Clothing & Textile Elective		3
Elective* (2)		3
		15

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirement.

\* (2) Suggested Electives (or see advisor)

Clothing Construction-		
Tailoring III	FDC 212	3
Alteration and Repair	FDC 142	3
Drawing I	ART 110	3
Fundamentals of Chemistry I	CHM 110	4
Introduction to Psychology I	PSY 100	3
Human Development & Relations	ECE 107	3
Advertising Drawing II	ADA 203	3
Stagecraft/Production I	DRA 120	3

\* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\* (4) See General Education Requirements under the Graduation section of this catalog for Math/Science electives.

## Hospitality Education Program

This program prepares students for public service in the broad-based hospitality industry. Tucson's rapid growth affords many opportunities within this industry, which encompasses hotels, motels, clubs, food and beverage establishments and tourist services.

The thrust of the program is two-fold: developing introductory skills for beginners and updating the knowledge of those already in the field. The Southern Arizona hospitality industry, which sought the program options through the college, continues to be concerned with subject development and supplies many instructors. Courses provide theory and practice; they cover management and profits; and customer satisfaction is stressed.

## Hotel-Motel Operations Options:

### Food and Beverage Service Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Introduction to Hotel-Motel Management	HMM 100* (1)	3
Food and Beverage Management	HMM 104* (1)	3
Food Study	FSN 113	3
Food Service Specialties I/ Culinary Preparation	RCF 102	3
Co-op Related Class in HMM	HMM 199	1
Co-op Work in HMM	HMM 199	3
		<hr/> 16

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirements.

### Hotel-Motel Operations Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Introduction to Hotel-Motel Management	HMM 100	3
Front Office Procedures	HMM 101* (1)	3
Hotel-Motel Accounting	HMM 102* (1)	3
Supervisory Housekeeping	HMM 103* (1)	3
Co-op Related Class in HMM	HMM 299	1
Co-op Work in HMM	HMM 299	3
		<hr/> 16

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

### Hotel-Motel Operations Associate of Applied Science Degree For Direct Employment

Required Courses (67)		First Semester	Cr. Hrs.
Introduction to Hotel-Motel Management		HMM 100* (1)	3
Front Office Procedures		HMM 101* (1)	3
Writing Fundamentals or Writing I or Practical Communications		WRT 100 or WRT 101 or WRT 150	3
Math (determined by placement test)		MTH	3
Co-op Related Class in HMM		HMM 199	1
Co-op Work in HMM		HMM 199	3
Reading Requirement* (2)			<hr/> 16
		<b>Second Semester</b>	
Hotel-Motel Accounting		HMM 102* (1)	3
Supervisory Housekeeping		HMM 103* (1)	3
Food and Beverage Management		HMM 104* (1)	3
Human Relations in Business and Industry		MAN 110	3
Hotel-Motel Operations		HMM 110* (1)	3
Co-op Related Class in HMM		HMM 199	1
Co-op Work in HMM		HMM 199	3
			<hr/> 19
		<b>Third Semester</b>	
Advanced Hotel-Motel Accounting or Principles of Accounting II		HMM 202* (1) or ACC 102* (1)	3
Food Service Specialties I/ Culinary Preparation		RCF 102	3
Marketing of Hospitality Services		HMM 203* (1)	3
Humanities Elective* (3)			3
Co-op Related Class in HMM		HMM 299	1
Co-op Work in HMM		HMM 299	3
			<hr/> 16
		<b>Fourth Semester</b>	
Hotel-Motel Financial Management		HMM 204* (1)	3
Labor-Management Relations		MAN 278	3
Math/Science Elective* (3)			3
Co-op Related Class in HMM		HMM 299	1
Co-op Work in HMM		HMM 299	3
Business and Professional Communication		SPE 120	3
			<hr/> 16



**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirements.  
 \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.  
 \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities and Math/ Science electives.

## Restaurant, Culinary and Food Management Options:

### Restaurant Management Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Mathematics of Business	BUS 051	3
Hospitality Management-Law	HMM 111	3
Human Relations in Business and Industry	MAN 110	3
Introduction to Restaurant and Food Service	RCF 101	3
Co-op Related Class in RCF	RCF 199	1
Co-op Work in RCF	RCF 199	3
		16

### Culinary and Food Management Basic Certificate For Direct Employment

Required Courses		Cr. Hrs.
Supervision	MAN 122	3
Introduction to Restaurant and Food Service	RCF 101	3
Food Service Specialties I/ Culinary Preparation	RCF 102*(1)	3
Food Service Specialties II/ Baking	RCF 103*(1)	3
Co-op Related Class in RCF	RCF 199	1
Co-op Work in RCF	RCF 199	3
		16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

### Restaurant, Culinary and Food Management Associate of Applied Science Degree For Direct Employment

Required Courses (65)		First Semester	Cr. Hrs.
Restaurant Sanitation and Operations	FFI 101*(1)		3
Restaurant Cash Register Operations and Inventory Control	FFI 102*(1)		3
Writing Fundamentals or Practical Communication or Writing I	WRT 100 or WRT 150 or WRT 101		3
Introduction to Restaurant and Food Service	RCF 101		3
Co-op Related Class in RCF	RCF 199		1
Co-op Work in RCF	RCF 199		3
Reading Requirement*(2)			16
		<b>Second Semester</b>	
Hotel-Motel Accounting	HMM 102		3
Hospitality Management-Law	HMM 111		3
Human Relations in Business and Industry	MAN 110		3
Food Service Specialties I/ Culinary Preparation	RCF 102*(1)		3
Co-op Related Class in RCF	RCF 199		1
Co-op Work in RCF	RCF 199		3
			16
		<b>Third Semester</b>	
Mathematics of Business	BUS 051		3
Supervision	MAN 122		3
Food Service Specialties II/ Baking	RCF 103*(1)		3
Humanities Elective*(3)			3
Co-op Related Class in RCF	RCF 299		1
Co-op Work in RCF	RCF 299		3
			16
		<b>Fourth Semester</b>	
General Biology I	LSC 103		4
Food Service Specialties III/ Garde-Manger	RCF 104*(1)		3
Business & Prof. Communication	SPE 120		3
Electives*(4)			3
Co-op Related Class in RCF	RCF 299		1
Co-op Work in RCF	RCF 299		3
			17

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirements.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.
- \* (4) Choose one of the following electives:
 

Tax Accounting	ACC 204
Personnel Management	MAN 276
Labor/Management Relations	MAN 278
Business Organization and Management	MAN 280
Advanced Techniques in Garde Manger	RCF 105
Advanced Techniques in Gourmet Dining	RCF 106

**Fast Food Industry Option:****Fast Food Industry****Basic Certificate****For Direct Employment**

Required Courses		Cr. Hrs.
Human Relations in Business and Industry	MAN 110	3
Introductory Mathematics	MTH 060	3
Restaurant Sanitation and Operations	FFI 101* (1)	3
Restaurant Cash Register Operations and Inventory Control	FFI 102* (1)	3
Co-op Related Class in FFI	FFI 199	1
Co-op Work in FFI	FFI 199	3
		16

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirements.

**Travel-Tourism Operations Options:****Travel Agent****Basic Certificate****For Direct Employment**

Required Courses		Cr. Hrs.
Math (based on placement exam)	MTH	3
Principles of Travel-Tourism Industry	TVL 101* (1)	3
Travel Agent Methods and Procedures	TVL 102* (1)	3
Cultural Geography	ESC 103	4
Co-op Related Class in TVL	TVL 199	1
Co-op Work in TVL	TVL 199	3
		17

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirements.

**Travel-Tour Agency Manager****Advanced Certificate****For Direct Employment**

Required Courses		Cr. Hrs.
Basic Certificate Requirements		17
Hotel-Motel Accounting	HMM 102* (1)	3
Marketing of Hospitality Services	HMM 203* (1)	3
Travel-Tour Agency Management	TVL 201	3
Current Issues and Problems in Travel-Tourism	TVL 202	3
Writing Course	WRT 100 or 101 or 150	3
Co-op Related Class in TVL	TVL 299	1
Co-op Work in TVL	TVL 299	3
		36

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

**Hospitality-Tourism Sales and Marketing Application  
Basic Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Students entering this program need a minimum of one year of experience working in the Hospitality-Tourism industry.		
Hospitality-Tourism Sales and Marketing Application	HOS 211*(1)	3
Advanced Hospitality Sales and Marketing Application	HOS 212*(1)	3
Co-op Related Class in HMM	HMM 299	1
Co-op Work in HMM	HMM 299C	3
Catering and Banquet Sales and Management	RCF 201*(1)	3
Tour Group Conducting and Managing	TVL 211*(1)	3
		<hr/> 16

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirements.

**Housekeeping Departments/Hospitality Industry Options:**

**Housekeeping-Executive  
Basic Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Executive Housekeeping I	HSK 150*(1)	3
Executive Housekeeping II	HSK 151*(1)	3
Practical Communication	WRT 150	3
Co-op Related Class in HSK	HSK 199	1
Co-op Work in HSK	HSK 199	3
		<hr/> 13

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Housekeeping-Executive  
Advanced Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Basic Certificate Requirements		13
Introduction to Microeconomics	ECO 100	3
Supervision	MAN 122	3
Human Relations in Business and Industry	MAN 110	3
Electives*(1)		3
Math (based on placement exam)		3
Co-op Related Class in HSK	HSK 299	1
Co-op Work in HSK	HSK 299	3
		<hr/> 32

**Notes:**

\*(1) Electives to be chosen from PSY 100, MAN 280.

## Institutional Food Service

The institutional food services certificate programs have been designed in cooperation with the institutional food services industries in the Tucson area. A curriculum has been established to develop skills for new entrants into the food industry and to enhance skills of those persons currently involved in institutional food preparation. The program certificate options utilize the career-ladder concept which means that a student may smoothly progress from the basic certificate requiring 20 credit hours to the advanced certificate requiring 18 additional hours for a program total of 38 credit hours. Program flexibility allows for a cooperative education specialty course to meet specific educational demands for career advancement and contains a course sequence that provides graduates a suitable background for further study in the institutional food industry. Specific skills in the curriculum include a study of the basic principles of nutrition, safety, sanitary conditions, the principles of menu preparation and quantity food production techniques, special techniques as they relate to nutrition and food related areas, analysis of purchasing and production methods in the expanded areas of the food service industry.

**Institutional Food Service  
Basic Certificate  
For Direct Employment**

<b>Required Courses (18)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Institutional Food Safety & Sanitation	IFS 100* (1)	2
Record Keeping for School Food Service	IFS 105	2
Basic Nutrition for Food Service Personnel	IFS 110* (1)	3
Quantity Food Production	IFS 115	2
Human Relations in Business & Industry	MAN 110* (1)	3
Business & Professional Communication	SPE 120	3
Math/ Science Elective* (2)		3
		<hr/> 18

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
\*(2) See General Education Requirements under the Graduation section of this catalog for Math/Science electives.

**Institutional Food Service  
Advanced Certificate  
For Direct Employment**

**Required Courses (35)**

Persons planning to apply for the advanced certificate must have completed the first semester, Basic Certificate Program (20 credit hours).

	<b>Second Semester</b>	
Menu Planning for Institutions	IFS 223* (1)	3
Special Nutritional Needs	IFS 125* (1)	3
Educating the Consumer in Foods & Nutrition	IFS 130* (1)	3
Food Purchasing	IFS 160* (1)	2
Food Service System Management	IFS 221* (1)	3
Co-op Related Class in IFS	IFS 199* (1)	1
Co-op Work in IFS	IFS 199/299* (1)	3
		<hr/> 17

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

## International Business Communication Studies

The International Business Communication Studies program awards a Basic Certificate for Direct Employment to meet the needs of business and industry by providing intensive training

- to prepare the student for a foreign or U.S. assignment/ visit, or
- to prepare the student for employment in an international department, or
- to upgrade the skills of the student currently employed in a company with international operations.

Specifically, the program is designed to maximize the student's success in the job assignment by

1. providing language training
2. providing cross cultural training in a business and/or social environment
3. providing training on living in the foreign country
4. providing culture shock and reverse culture shock training
5. providing training to develop skills in handling everyday transactions in moving goods and services from one country to another
6. providing training for hosting foreign business personnel.

The program is structured to accommodate content on any country or geographic region.

The acculturation training portion of this program may be made available to family members of the employee.

Option I trains U.S. employees for a foreign assignment or visitation. Option II trains or upgrades industry personnel in skills required for employment in an international department while Option III trains foreign personnel for a U.S. assignment or visitation.

For transcript purposes, each IBC course will show the actual foreign country/region studied.

**Option I**  
**International Business Communication Studies**  
**Basic Certificate**  
**Orientation for Foreign Assignment or Visitation**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Foreign Language I	IBC 100* (1)	4
Foreign Language II	IBC 110* (1)	4
Cultural Similarities and Differences between the United States and the Foreign Country	IBC 120* (1)	3
Living in the Foreign Country	IBC 130* (1)	3
Cultural Shock Management	IBC 150	
Cultural Shock Management—Entry	IBC 150A* (1)	1
Cultural Shock Management—Re-entry (optional)	IBC 150B* (1)	(1)
		15-16

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirements.

**Option II**  
**International Business Communication Studies**  
**Basic Certificate**  
**Direct Employment in the International Department**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Foreign Language I	IBC 100* (1)	4
Foreign Language II	IBC 110* (1)	4
Cultural Similarities and Differences between the United States and the Foreign Country	IBC 120* (1)	3
Basic Techniques of International Trade	IBC 140* (1)	3
Hosting the Foreign Business Personnel	IBC 160* (1)	1
		15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Option III**  
**International Business Communication Studies**  
**Basic Certificate**  
**Orientation to the United States**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Foreign Language I	IBC 100* (1)	4
Foreign Language II	IBC 110* (1)	4
Cultural Similarities and Differences between the United States and the Foreign Country	IBC 120* (1)	3
Living in the Foreign Country	IBC 130* (1)	3
Cultural Shock Management—Entry	IBC 150A* (1)	1
		15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Interpreter Training Program

### Sign Language Certificate

The 24-Hour Basic Sign Language Certificate is designed to offer a rudimentary introduction in American Sign Language and classes involving deafness. Students completing this certificate will gain an overview of a communication mode utilized by many deaf individuals. The coursework also provides information relating history, education and community aspects of deafness and American Sign Language.

The primary focus of this certificate is for individuals preparing for and already employed in industry, business and public service who have daily contact with the general public. While this coursework will not qualify an individual as an interpreter it will enhance his/her ability to provide services to many deaf individuals through basic communication skills.

## Sign Language Basic Certificate

Required Courses (24)	First Semester	Cr. Hrs.
American Sign Language I	SLG 101*(1)	4
Community and the Exceptional Person	SLG 100*(1)	3
Fingerspelling	SLG 105*(1)	2
The Nature of Language	ANT 215	3
		12
	Second Semester	
American Sign Language II	SLG 102*(1)	4
History of Deafness	SLG 120*(1)	3
Reading 100 Series	REA 100	4
Spelling	REA 071	1
		12
	<b>Total</b>	24

### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Interpreter Training Program

The curriculum provides both theoretical and practical preparation for graduates to provide quality interpreting services for deaf consumers and hiring agencies.

The total program consists of four semesters of classes totaling a minimum of 60 credit hours to complete the associate of Applied Arts Degree in Interpreting. The program includes a minimum of 53 credit hours of campus lecture, 4 credit hours of laboratory study and 3 credit hours of practicum study in the community. Students graduating from this program will be eligible to meet the requirements of the Arizona Registry of Interpreters for the Deaf, State Rating Board.

### Acceptance Into the Program:

In addition to meeting general requirements for admission to Pima County Community College, the applicant must:

- Complete an Interpreter Training Program Application packet.
- Reading Competency:
  - Program entry—demonstrate a minimum reading competency at the 10th grade level.
  - Program exit—demonstrate reading competency at REA 112 level or above.
- Successfully complete or show an equivalency of:
  - SLG 102 - Intermediate American Sign Language course
  - SLG 105 - Fingerspelling
  - REA 071 - Spelling

- Receive approval by the Interpreter Training Program selection committee.

### General Requirements:

Minimum of 60 credit hours.

Work in residence: 31 hours in major coursework.

Restrictions: Students will be allowed to transfer in 8 hours of Sign Language credit towards completion of the program.

## Interpreter Training Program Associate of Applied Arts Degree For Direct Employment

Required Courses (60-64)	First Semester	Cr. Hrs.
American Sign Language III	SLG 201*(1)	4
Stress Management	HDE 130	2
Introduction to Oral Communication	SPE 102	3
Community & the Exceptional Person	SLG 100*(1)	3
Humanities (electives)*(1)		3-4
Reading Requirement*(2)		
		15-16
	Second Semester	
American Sign Language IV	SLG 202*(1)	4
Interpreting I	SLG 220*(1)	3
Practicum	SLG 240*(1)	3
History of Deafness	SLG 120	3
Humanities (electives)*(3)		3-4
		16-17
	Third Semester	
American Sign Language V	SLG 203*(1)	3
Principles of Etiology and Audiology	SLG 150*(1)	3
Interpreting II	SLG 250*(1)	3
Introduction to Psychology	PSY 100	3
Math/Science elective*(4)		3-4
		15-16
	Fourth Semester	
Psycho-Social Aspects of Deafness	SLG 180*(1)	3
Oral Interpreting	SLG 260*(1)	3
Reverse "Sign to Voice"	SLG 270*(1)	3
Interpreting III	SLG 280*(1)	3
Math/Science elective*(4)		3-4
		15-16



**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) Humanities electives: Art History; Humanities I, II, Literature, Music, Philosophy
- \* (4) For math/science electives see General Education Requirements under the Graduation section of this catalog.

## Landscape Technician Program

The Landscape Technician program is a new occupational program leading to an Advanced Certificate or to an Associate of Applied Science Degree. The career ladder concept built into the certificate and degree curriculum prepares the student for direct employment in the landscape industry at one of two levels of competence. The certificate student will have a fundamental knowledge of the landscape industry, as well as specific competencies in plant identification, plant pathology, and the effect of soils on plants. The degree student will have gained the knowledge listed above, and in addition, will learn landscape maintenance and design, irrigation design and installation, and landscape management systems. Both the certificate and degree students will also have fulfilled general education requirements, have spent some time in cooperative education, and will have selected certain additional landscape electives to fulfill his/her specific interests.

### Landscape Technician Program Advanced Certificate

Required Courses (39)	First Semester	Cr. Hrs.
Fundamentals of Chemistry I	CHM 110	4
Technical Math I	MTH 110*(1)	3
Botany I	LSC 220*(1)	4
Landscape Contracting: Today & Tomorrow	LTP 100*(1)	3
Reading	REA 100	4
		18
	<b>Second Semester</b>	
Soils: Plant Fertility	LTP 130*(1)	4
Technical Math II	MTH 120	3
Plant Pathology, Pests & Controls	LTP 120*(1)	4
Practical Communications	WRT 150*(1)	3
Plant Usage and Identification	LTP 160*(1)	3
		17

**Summer**

Co-op Related Class in LTP	LTP 199*(1)	1
Co-op Work in LTP	LTP 199*(1)	3

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

### Landscape Technician Program Associate of Applied Science Degree

The two semesters of the Advanced Certificate Program are the first two semesters of the Associate of Applied Science Degree Program.

Required Courses (70)	Third Semester	Cr. Hrs.
Landscape Maintenance	LTP 230*(1)	3
Introduction to Psychology I	PSY 100	3
Basic Landscape Design	LTP 260	3
Social Science Elective*(2)		3
Reading Requirement*(3)		
Irrigation Design	LTP 250*(1)	3
		15
	<b>Fourth Semester</b>	
Humanities I	HUM 110	4
Landscape Management Systems	LTP 200*(1)	3
Irrigation Installation	LTP 210*(1)	3
Business & Professional Communication	SPE 120*(1)	3
Electives*(4)		3
		16
<b>Total Credits</b>		
General Education		23
Core		37
Co-op		4
Electives		6
		70

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirements
- \* (2) See General Education Requirements under the Graduation section of this catalog for Social Science elective.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Electives:  
Landscape Equipment Repair and Maintenance, LTP 150\*(1)  
Interior Plantscape Design/Maintenance, LTP 215\*(1)  
Nursery Operations and Maintenance, LTP 240\*(1)

# Legal Assistant

The Legal Assistant Program will offer to the student, upon successful completion of all coursework, an Associate of Applied Science degree. The coursework will include general education and law related courses, legal assistant core courses, and 9 credit hours in one of the four legal specialty areas.

The core and legal specialty courses are designed around practical work experience in order for a student to have entry level skills as a legal assistant upon completion of the program. The program will also prepare a student to write the Certified Legal Assistant Certification Examination.

The National Association of Legal Assistants adopted the following definition of a legal assistant:

"Under the supervision of a lawyer, the legal assistant shall apply knowledge of law and legal procedures in rendering direct assistance to lawyers and clients, design, develop and modify procedures, techniques, services and processes; prepare and interpret legal documents; detail procedures for practicing in certain fields of law; research, select, assess, compile and use information from the law library and other references; and analyze and handle procedural problems that involve independent decisions."

Although the list of legal assistant duties is endless, the positions are included in numerous businesses, corporations and agencies. Some of these include:

- Law firms
- Public and private corporations
- Financial institutions
- Title and escrow companies
- All levels of government agencies

It is generally accepted that a legal assistant may perform any task delegated and supervised by a lawyer. A legal assistant cannot accept a case, set a fee, give legal advice, or appear in court.

## Legal Assistant Associate of Applied Science Degree For Direct Entry

Required Courses* (1)		Cr. Hrs.
Writing I	WRT 101	3
Human Relations	MAN 110	3
Business Law I & II	BUS 200 & 201	6
Accounting I & II	AQC 101 & 102	6
American National Government & Politics	POL 110	3

Business and Professional Communications	SPE 120	3
Math or Science* (2) or Logic Elective		6
Humanities Elective* (2)		3
General Elective (select from list)		3
Introduction to Legal Assistant Careers	LAS 101* (3)	3
Legal Systems & Procedures	LAS 102* (3)	3
Legal Research	LAS 103* (3)	3
Judgment/Analysis/Ethics	LAS 104* (3)	3
Discovery & Trial Prep	LAS 202* (3)	3
Civil and Criminal Evidence	LAS 106* (3)	3
Electives (Choose one Specialty Area)		9
Legal Elective - To be selected from any of the specialty areas		3
Reading Requirement* (4)		
		66

### Notes:

- \* (1) Students may receive additional credits by completing LAS 250, Legal Assistant Internship.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Math/ Science and Humanities electives.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

### Electives—Specialty Area

Course Title		Cr. Hrs.
<b>Criminal</b>		
Criminal Law	AJS 109	3
Criminal Trial Procedures I	LAS 206	3
Criminal Trial Procedures II	LAS 207	3
<b>Litigation</b>		
Commercial Litigation	LAS 201	3
Legal Elective—Select from LAS specialty courses	3	
Personal Injury, Malpractice, Products Liability, Complex Litigation	LAS 203	3

**Probate**

Estate Planning & Taxation	FIN 238	3
Probate Procedures: Wills, Trusts and Estates	LAS 204	3
Asset Analysis, Collection, Management & Distribution	LAS 205	3

**Business**

Corporate Law Procedures	LAS 105	3
Real Estate Legal Procedures	LAS 107/ RLS 107	3
Bankruptcy Procedures	LAS 209	3

**General Electives**

Labor Management Relations	MAN 278	3
Money and Banking	ECO 210	3
Business Organization and Management	MAN 280	3
Spanish (any course)	SPA	4
Medical Law and Ethics	HCE 140	3
Introduction to Civil Rights Practices	SOC 202	3
Political & Legal Aspects of Drug Use	SSE 127	3
Immigration Law & Practices	POL 050	3
Minority Groups and the Political Process	POL 140	3
Real Estate Law	RLS 201	3
Financial Institutions	FIN 212	3
Child Abuse Intervention and Protection	AJS 146	3
Organized Crime Investigation	AJS 220	3
Mortgage Loan Servicing	FIN 221	3
State & Local Government	POL 111	3
Psychology (any course)	PSY	3
Introduction to Computers	CSC 100	3

## Liberal Arts and Sciences

The Liberal Arts and Sciences program is designed to meet the educational needs of students who wish a broad educational approach to a degree program. Included among the many areas in which students may major are behavioral and social sciences, humanities, languages, literature, mathematics, natural sciences, and writing.

Students are urged to see an advisor in order to select courses required by the college or university to which they plan to transfer, as well as to determine specific recommendations for subject areas in which they may be interested in majoring. Liberal Arts students should have their proposed major and minor subjects selected upon transfer to the four-year institution of their choice.

After successful completion of this program, students may then be eligible to transfer into upper class levels at their selected college or university.

### Liberal Arts or Sciences (General) Associate of Arts or Sciences Degree For Transfer

Required Courses		Cr. Hrs.
Writing I-II	WRT 101*(1), 102*(1)	6
Humanities Electives*(1)*(2)		8-10
Foreign Language*(1)*(3)		16
Social Sciences*(1)*(4)*(8)		9
Sciences*(1)*(5)		8-9
Math	MTH 135 or 150 or higher*(1)	3
Transferable Electives*(1)		11-13
Physical Education Activity Courses*(1)*(6)		2
Reading Requirement*(7)		
		63-68

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirements.

\*(2) Choose one of the following options:

- Humanities I and II HUM 110, 111 8
- Humanities I or II and 6 units from Option C 10
- Not less than 9 units from the following 3 groups, with no more than 6 units from any one group:
  - DRA 240, 241
  - PHI 101, 130
  - ART 130, 131, MUS 151

\*(3) Fulfilled by 4 semesters (2 years) of any one foreign language or equivalent. Bilingual or international students should consult an advisor concerning this requirement.

- \* (4) Fulfilled by 9 units in behavioral or social sciences, with 6 units in one subject and 3 units in a second subject, chosen from the following: anthropology, cultural geography, economics, history, political science, psychology or sociology.
- \* (5) Choose one of the following options:
  - a. Two semesters (8 units) of a single lab science.
  - b. Combination of 9 units of which at least 3 units must be in Life Science and 3 units must be in Physical Science (AST, CHM, ESC, PHY).
- \* (6) Students should consult the catalog of the institution to which they plan to transfer for possible exemptions.
- \* (7) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (8) Students must also complete one of the following courses: ANT-100, 110, 210, 141, 121; HIS-113, 114, 127. This course may be also be included as one of the social science requirements.

## Life Sciences

Life Sciences offers an associate of science degree for transfer in these areas:

Biology	Pre-Medical Technology and Microbiology
Pre-Agriculture	Pre-Pharmacy
Pre-Dental	Pre-Veterinary
Pre-Medical	

Students who plan to enter these fields should have finished two years of high school algebra, one year of geometry and, preferably, one year of trigonometry. Students who have not had these courses should complete them at Pima.

Students who enter the Life Science program must take the math placement test in the Math-Science Alternative Learning Center.

The student should meet with a Life Science advisor to plan courses.

Students who want coursework in Pre-Dental Hygiene, Pre-Forestry, Pre-Physical Therapy and Pre-Optometry can also be advised in course selection.

The Associate of American Medical Colleges and the Council of Medical Education of the American medical Association sets minimum requirements for admission to medical school. The Council on Dental Education of the American Dental Association sets requirements for admission to dental school.

Most successful applicants to medical school have a bachelor's degree although the minimum stated requirements are less. Medical associations strongly urge students to get a broad, general education which includes the social or behavioral sciences and humanities as well as studies in the sciences.

The American Veterinary Medical Association sets minimum standards for admission to veterinary school. Students are generally not considered for admission to veterinary school unless they have finished sixty semester credits of pre-professional credit.

Graduate veterinarian careers include private practice in animal clinics, college instruction, veterinary practice in the Agricultural Research Service or the U.S. Department of Agriculture, Livestock Management and Veterinary Microbiology and Pathology.

Students who plan to transfer to an upper division school to complete their pre-professional requirements should contact their chosen school for specific required courses.

## Biology Pre-Dental Pre-Medical Pre-Veterinary

### Associate of Science Degree For Transfer

<b>Suggested Courses (67-71)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Analytic Geometry & Calculus I* (1) or Topics in Calculus	MTH 180 MTH 175	3
Humanities Elective* (2)		3-4
General Chemistry I	CHM 120	5
Human Origins and Prehistory	ANT 100	3
Reading Requirement* (4)		
		<hr/> 17-18
	<b>Second Semester</b>	
Writing II	WRT 102* (5)	3
Analytic Geometry & Calculus II or Introductory Statistics* (1)	MTH 185* (5) MTH 210* (5)	3
General Chemistry II	CHM 121	5
Organismic Biology I	LSC 205	4
Social Sciences Elective* (3)		3
		<hr/> 18

Third Semester		
Humanities Elective* (2)		3-4
Analytic Geometry & Calculus III* (1) or Physics* (6) or Foreign Language	MTH 215* (5)	
Organismic Biology I	LSC 206* (5)	4-5
Organic Chemistry I	CHM 240	4
		5
		16-18
Fourth Semester		
General Genetics	LSC 210* (5)	4
Organic Chemistry II	CHM 241* (5)	5
Physics* (6) or Foreign Language		4-5
Transfer Elective* (7)		3
		16-17

#### Notes:

- \* (1) Students may choose Mathematics sequence 180, 185, 215, or 175, 210.
- \* (2) The baccalaureate requirement is 8 units in humanities field; i.e., philosophy, humanities, or literature.
- \* (3) See General Education Requirements under the Graduation section of this catalog for Social Science electives.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (5) Core Courses: D grades do not fulfill graduation requirement.
- \* (6) Students may choose Physics 121, 122 or Physics 131, 132 or a Foreign Language.
- \* (7) Students in pre-Dental, Pre-Medical and Pre-Veterinary programs should consult the catalog of the school to which they plan to apply. Students are advised that a maximum of 72 hours of community college credit may be transferred to universities.

## Pre-Agriculture

Modern agriculture is a basic and complex industry with a wide range of career choices. The program in agriculture is designed to meet the needs of students by joining a broad knowledge of agriculture with elements of general education. Upon finishing a pre-agriculture program a student might wish to pursue one of the fields of study listed at a four-year school.

Agricultural Communications	General Agriculture
Agricultural Economics	Horticulture
Agricultural Education	Landscape Architecture
Agri-Mechanics & Irrigation	Natural Resources Recreation
Agronomy	Nutritional Science*
Animal Health Science	Plant Pathology
Animal Sciences	Plant Science
Dietetics*	Range Management
Entomology	Soil & Water Science
Fisheries Science	Watershed Management
Food Science*	Wildlife Ecology

\* Check other sections of catalog for further information on these areas.

### Pre-Agriculture Associate of Science Degree For Transfer

Suggested Courses (69-71)	First Semester	Cr. Hrs.
Writing I	WRT 101	3
College Algebra	MTH 150	3
General Chemistry I	CHM 120	5
Introductory Geology I	ESC 120* (1)	4
Transfer Elective		3
Reading Requirement* (2)		
		18
	Second Semester	
Writing II	WRT 102	3
General Chemistry II	CHM 121* (1)	5
Introduction to Oral Communication	SPE 102	3
Trigonometry	MTH 155* (1)	3
Transfer Elective		3
		17
	Third Semester	
Organismic Biology II	LSC 206* (1)	4
Introductory Physics I	PHY 121* (1)	5
Technical Communications	WRT 254* (1)	3
Humanities Elective* (3)		3-4
Human Origins and Prehistory	ANT 100	3
		18-19

<b>Fourth Semester</b>		
Organismic Biology I or Botany I	LSC 205	4
Humanities Elective* (3)	LSC 220* (1)	3-4
Social Sciences Elective* (4)		3
Introduction to Microeconomics	ECO 100* (1)	3
Transfer Elective		3
		<hr/> 16-17

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) The baccalaureate requirement is 8 units in humanities field; i.e., philosophy, humanities, or literature. See General Education Requirements under the Graduation section of this catalog for humanities electives.
- \* (4) See General Education Requirements under the Graduation section of this catalog for social sciences electives.

## Pre-Medical Technology and Microbiology

Students who plan to pursue a course of study which leads to a medical technology degree and/or certificate should consider the courses which follow. Exact requirements of the school which grants the degree may vary and students should check with the school to which they plan to transfer. A background of high school algebra, biology, and chemistry is recommended.

### Pre-Medical Technology and Microbiology Associate of Science Degree For Transfer

<b>Suggested Courses (67-69)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
College Algebra	MTH 150	3
General Chemistry I	CHM 120	5
Social Science Elective* (1)		3
Microbiology I	LSC 207* (2)	4
Reading Requirement* (3)		
		<hr/> 18

<b>Second Semester</b>		
Writing II	WRT 102* (2)	3
Trigonometry	MTH 155	3
General Chemistry II	CHM 121	5
Human Anatomy/Physiology I* (4)	LSC 120	4
Humanities Elective* (1)		3-4
		<hr/> 18-19

<b>Third Semester</b>		
Introductory Statistics	MTH 210* (2)	3
Organic Chemistry I	CHM 240	4
Introductory Physics I	PHY 121	5
Human Anatomy/Physiology II* (4)	LSC 121* (2)	4
		<hr/> 16

<b>Fourth Semester</b>		
Organic Chemistry II	CHM 241* (2)	4
Introductory Physics II	PHY 122* (2)	5
Social Science Elective* (1)		3
Humanities Elective* (1)		3-4
		<hr/> 15-16

**Notes:**

- \* (1) See General Education Requirements under the Graduation section of this catalog for Social Science and Humanities electives.
- \* (2) Core Courses: D grades do not fulfill graduation requirements.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Not required for microbiology majors. Micro majors might substitute a foreign language for LSC 120, 121.

## Pre-Pharmacy

As one of the basic health careers, pharmacy offers a wide range of choices to the student. Career choices include community pharmacy (retail, independent, and chain pharmacies) and institutional pharmacy (hospital), the Public Health Service, Indian Health Service, armed forces, and manufacturing quality control.

The graduate pharmacist is also prepared to pursue further study leading to advanced degrees in the pharmaceutical and related biomedical sciences.

A five-year program became required for the pharmacy degree in 1960. Schools of pharmacy vary in requiring one or two years of pre-pharmacy before being admitted. The student should contact the school of his choice for exact pre-pharmacy requirements.



**Pre-Pharmacy  
Associate of Science Degree  
For Transfer**

<b>Suggested Courses (70-76)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Mathematics* (1)		3
General Chemistry I	CHM 120	5
Social Science Elective* (2)		3
Introduction to Microeconomics	ECO 100	3
Reading Requirement* (3)		
		17
	<b>Second Semester</b>	
Writing II	WRT 102* (4)	3
Topics in Calculus	MTH 175	3
General Chemistry II	CHM 121	5
Human Anatomy/Physiology I* (5)	LSC 120* (4)	4
Humanities Elective* (6)		3-6
		18-21
	<b>Third Semester</b>	
Organic Chemistry I	CHM 240	4
Introductory Physics I	PHY 121	5
Introductory Statistics	MTH 210	3
Microbiology I* (7)	LSC 207	4
Humanities Elective* (6)		3-6
		19-22
	<b>Fourth Semester* (7)</b>	
Organic Chemistry II	CHM 241	4
Introductory Physics II	PHY 122	5
Microbiology II* (4)	LSC 208	4
Social Science Elective* (2)		3
		16

**Notes:**

- \* (1) MTH 150 (College Algebra) and MTH 155 (Trigonometry) are recommended for those who do not have credit for them already.
- \* (2) Six units from introductory courses in the social sciences such as psychology, sociology, anthropology, speech, and political science.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Core Courses: D grades do not fulfill graduation requirement.
- \* (5) Transfer students may substitute two semesters of General Biology (LSC 103-104) for Human Anatomy and Physiology I.
- \* (6) HUM 110 and 111 or two of the following courses: ART 130, ART 131, MUS 151, PHI 101, and PHI 130.

- \* (7) Micr. 110 (1 semester, 5 cr. hrs.) at the University of Arizona will substitute for both semesters of LSC 207 and LSC 208.
- \* (8) Chem. 322 and 323 (3 cr. hrs.) should be taken at the University of Arizona during the fourth semester.

## Machine Tool Technology

The machine tool programs offer a broad range of techniques used in metals manufacturing. These may include machine shop, welding and sheet metal. Support courses are also offered in manufacturing processes, quality control, metallurgy, drafting and numerical control. A two-year degree program is offered as well as basic certificate and technical certificate programs.

A person who majors in machine tool practices may find Cooperative Education offers an ideal way of gaining more actual work experience while attending classes.

### Machine Shop Fundamentals Basic Certificate For Direct Employment

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Machine Shop for Technicians I-II	MAC 110* (1), 120* (1)	8
Technical Math I-II	MTH 110, 120	6
Blueprint Reading & Sketching	DFT 101	4
Basic Metallurgy	MAC 130* (1)	3
		21

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

### Machinist's Standard Certificate Technical Certificate For Direct Employment

<b>Required Courses</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Machine Shop for Technicians I-II	MAC 110* (1), 120* (1)	8
Jig & Fixture Designing I-II	MAC 210* (1), 220* (1)	8
Technical Math I-II	MTH 110, 120	6
Basic Metallurgy	MAC 130* (1)	3
Physical Metallurgy	MAC 135* (1)	3
Technical Communications	WRT 154* (2) or	
Bus. & Prof. Communications	SPE 120	3
Human Relations in Business	MAN 110	3
Technical Drafting I	DFT 150	4
		38

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirement.

\* (2) WRT 101 & 102 may be taken for transfer credit in place of WRT 100 & WRT 154/SPE 120.

**Machine Tool Technology  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (68)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Machine Shop for Technicians I	MAC 110* (1)	4
Technical Math I	MTH 110	3
Writing Fundamentals	WRT 154* (3) or	3
Basic Metallurgy	MAC 130* (1)	3
Blueprint Reading & Sketching	DFT 101	4
Reading Requirement* (2)		
		17
	<b>Second Semester</b>	
Machine Shop for Technicians II	MAC 120* (1)	4
Technical Math II	MTH 120	3
Technical Communications	WRT 154* (3) or	
Bus. & Prof Communications	SPE 120	3
Physical Metallurgy	MAC 135* (1)	3
Technical Drafting I	DFT 150	4
		17
	<b>Third Semester</b>	
Jig & Fixture Designing I	MAC 210* (1)	4
Human Relations in Business	MAN 110	3
Technical Physics I	PHY 101	3
Technical Drafting II	DFT 151	4
Humanities, Elective* (4)		3
		17
	<b>Fourth Semester</b>	
Jig & Fixture Designing II	MAC 220* (1)	4
Introduction to Numerical Control	MAC 250* (1)	4
Combination Welding	WLD 110	3
Technical Physics II	PHY 102	3
Manufacturing Concepts	MAC 225* (1)	3
		17

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirements

\* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\* (3) WRT 101 & 102 may be taken for transfer credit in place of WRT 100 & WRT 154/SPE 120.

\* (4) See General Education Requirements under the Graduation section of this catalog for humanities elective.

# Mathematics

**Mathematics  
Associate of Arts Degree  
For Transfer**

<b>Suggested Courses (65)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101* (1)	3
Anal. Geometry & Calculus I	MTH 180* (1)	3
Finite Mathematics	MTH 170* (1)	3
Elementary French I (or German)	FRE 110* (1)	4
Social Science Elective* (2)	GER 110* (1)	3
Reading Requirement* (3)		
		16
	<b>Second Semester</b>	
Writing II	WRT 102* (1)	3
Anal. Geometry & Calculus II	MTH 185* (1)	3
Fortran IV Programming	CSC 140* (1)	3
Elementary French II (or German)	FRE 111* (1)	4
Social Science Elective* (2)	GER 111* (1)	3
		16
	<b>Third Semester</b>	
Anal. Geometry & Calculus III	MTH 215* (1)	4
Introductory Physics with Calculus I	PHY 131* (1)	5
Intermediate French I (or German)	FRE 210* (1)	4
Humanities Elective* (2)	GER 210* (1)	4
		17
	<b>Fourth Semester</b>	
Linear Algebra & Diff. Equations	MTH 220* (1)	4
Introductory Physics with Calculus II	PHY 132* (1)	5
Intermediate French II (or German)	FRE 211* (1)	4
Social Science Elective* (2)	GER 211* (1)	3
		16

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirements.

\* (2) See General Education Requirements under the Graduation section of this catalog for humanities and social science electives.

\* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Media Communications

Students majoring in Media Communications may select any of four areas of specialization. A Print Media major may elect a university transfer program in journalism or a direct employment program in print shop paste-up. Telecommunications majors may elect a university transfer program in radio-television or a direct employment program in media center technology. Majors in both print and telecommunications should expect extensive laboratory experience in newspaper or television/radio facilities. Instruction is typically practical and hands-on with equipment. Students in either university transfer program should follow the first two-year program of study required by the school which they plan to attend.

## Telecommunications Sequence

### Basic Certificate

#### For Direct Employment

<b>Suggested Semester Sequence (25)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Cinematography I	MEC 175	3
Media ADV/Public Relation	MEC 270*(1)	3
Telecommunication T.V. Production	MEC 125*(1)	3
Instructional Media Technology I	MEC 155*(1)	3
		12
	<b>Second Semester</b>	
Equipment Repair & Maintenance	MEC 145*(1)	3
Implications of Media Technology	MEC 265*(1)	3
Telecommunication T.V. Workshop	MEC 225*(1)	4
Telecommunications Production Workshop	MEC 285*(1)	3
		13

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Print Media Sequence

### Associate of Arts Degree

#### For Transfer

<b>Suggested Semester Sequence (71)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Introduction to Media Communication	MEC 102*(4)	3
Writing I	WRT 101	3
Foreign Language		4
Social Science Elective*(1)		3
Elective*(2)		3
Reading Requirement*(3)		
		16

Intro to Reporting and Media Writing  
Writing II  
Foreign Language  
Social Science Elective\*(1)  
Humanities I

## Second Semester

MEC 101*(4)	3
WRT 102	3
	4
	3
HUM 110	4
	17

## Third Semester

MEC 230*(4)	3
	4
	4
	3
	3
	17

## Fourth Semester

MEC 240*(4)	3
	4
	4
	3
HUM 111	4
	3
	21

#### Notes:

\*(1) See General Education Requirements under the Graduation section of this catalog for general education requirements.

\*(2) Media communications majors are expected to be able to type and OED-111 is suggested.

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(4) Core Courses: D grades do not fulfill graduation requirement.

\*(5) Suggested electives:

Advertising	MKT 125	3
Photography I	ART 140	3
Public Relations	GEB 084	3
Photojournalism	MEC 280	3
Journalism Workshop	MEC 170	3
Broadcast News Writing	MEC 235	3

**Print Media Sequence**  
**Associate of Applied Science Degree**  
**For Direct Employment**

<b>Suggested Semester Sequence (62)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Survey of Media Communication	MEC 102* (3)	3
Intro to Reporting and Media Writing	MEC 101* (3)	3
Writing I	WRT 101	3
Science or Math Elective* (1)		3
Reading Requirement* (2)		
		12
	<b>Second Semester</b>	
Copy Editing and Design	MEC 240* (3)	3
Graphic Technology I	GRA 101* (3)	3
Writing II	WRT 102	3
Social Science Elective* (1)		3
Humanities I	HUM 110	4
		16
	<b>Third Semester</b>	
Graphic Technology II	GRA 102* (3)	3
Introduction to Computers	CSC 100* (3)	3
Science or Math Elective* (1)		4
Co-op Related Class in MEC	MEC 199* (3)	1
Co-op Work in MEC	MEC 199* (3)	2
Elective* (4)		3
		16
	<b>Fourth Semester</b>	
Offset Presswork	GRA 202* (3)	3
Co-op Related Class in MEC	MEC 299* (3)	1
Co-op Work in MEC	MEC 299* (3)	2
Elective* (4)		12
		18

**Notes:**

- \* (1) See General Education Requirements under the Graduation section of this catalog for general education requirements.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) Suggested electives:
 

Introduction to Business	BUS 100	3
Newspaper Graphics	MEC 190	1
Journalism Workshop	MEC 170	3
Photojournalism	MEC 280	3

**Telecommunications Sequence**  
**Associate of Arts Degree**  
**For Transfer**

<b>Suggested Semester Sequence (66)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Survey of Media Communication	MEC 102* (3)	3
Intro to Reporting and Media Writing	MEC 101* (3)	3
Writing I	WRT 101	3
Foreign Language		4
Social Science Elective* (1)		3
Reading Requirement* (2)		
		16
	<b>Second Semester</b>	
Broadcast News Writing	MEC 235	3
Writing II	WRT 102	3
Foreign Language		4
Social Science Elective* (1)		3
Humanities I	HUM 110	4
		17
	<b>Third Semester</b>	
Basic Audio Production Elective	MEC 275	3
Foreign Language		4
Science or Math Elective* (1)		4
Social Science Elective* (1)		4
		15
	<b>Fourth Semester</b>	
Telecommunication-TV Production	MEC 125* (3)	3
Foreign Language		4
Science or Math Elective* (1)		4
Social Science Elective* (1)		3
Humanities II	HUM 111	4
		18

**Notes:**

- \* (1) See General Education Requirements under the Graduation section of this catalog for general education requirements.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) Suggested electives:
 

Advertising	MKT 125	3
Public Relations	GEB 084	3
Photojournalism	MEC 280	3
Cinematography	MEC 175	3
Telecommunications Performance Workshop	MEC 185	3

**Telecommunications Sequence  
Associate of Applied Science Degree  
For Direct Employment**

<b>Suggested Semester Sequence (63)</b>		
	<b>First Semester</b>	<b>Cr. Hrs.</b>
Media Advertising & Public Relations	MEC 270	3
Instructional Media Technology I	MEC 155*(3)	3
Writing I	WRT 101	3
Telecommunication-TV Production	MEC 125*(3)	3
Science or Math Elective*(1)		3
Reading Requirement*(2)		
		15
	<b>Second Semester</b>	
Basic Audio Production	MEC 275	3
Instructional Media Technology II	MEC 255*(3)	3
Writing II	WRT 102	3
Social Science Elective*(1)		3
Humanities I	HUM 110	4
		16
	<b>Third Semester</b>	
Equipment Repair & Maintenances	MEC 145*(3)	3
Introduction to Computers	CSC 100*(3)	3
Telecommunication T.V. Workshop	MEC 225*(3)	4
Science or Math Elective*(1)		4
Co-op Related Class in MEC	MEC 199*(3)	1
Co-op Work in MEC	MEC 199*(3)	2
		15
	<b>Fourth Semester</b>	
Implications of Media Technology	MEC 265*(3)	3
Co-op Related Class in MEC	MEC 299*(3)	1
Co-op Work in MEC	MEC 299*(3)	2
Telecommunications Production Workshop	MEC 285*(3)	3
Art	ART	3
Elective*(4)		7
		17

**Notes:**

- \*(1) See General Education Requirements under the Graduation section of this catalog for general education requirements.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) Core Courses: D grades do not fulfill graduation requirement.
- \*(4) Suggested electives:
 

Advertising	MKT 125	3
Telecommunications Performance Workshop	MEC 185	3

## Microelectronic Technician Program

The Microelectronic Technician Program is an occupational program leading to a Basic Certificate (one semester), an Advanced Certificate (one year) and/or an Associate of Applied Science Degree (two years). The career ladder concept of the certificates and the degree curriculum prepares the student for direct employment in the microelectronic industry at one of three levels of competence. The certificated student will have a fundamental knowledge of the microelectronics industry, as well as general competency in writing, chemistry, mathematics, drafting, and electrical circuits. The degree student will have gained the knowledge listed above and in addition, will have specific knowledge of photolithographic processes, physics, computer programming, management, thick and thin film processing, quality control and reliability, and microelectronic packaging. Both the certificate and degree students will have spent considerable time in laboratory experiences and will have selected certain microelectronic electives to fulfill his/her specific interests.

**Microelectronic Technician  
Basic Certificate**

<b>Required Courses (15)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I or Practical Communications	WRT 101 or WRT 150	3
Electronics Math I or Algebra II	MTH 115*(1) or MTH 130*(1)	3
Fundamentals of Chemistry or General Chemistry I	CHM 110*(1) or CHM 120*(1)	4
Introduction to Microelectronics	MRE 100*(1)	3
Basic DC Circuit Analysis	ETR 101*(1)	2
		15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

### Microelectronic Technician Advanced Certificate

Required Courses (32-34)	Second Semester	Cr. Hrs.
Microelectronic Drafting	DFT 170* (1)	4
Electronics Math I or College Algebra & Trig.	MTH 125* (1) or MTH 160* (1)	3-5
Business & Prof Communications	SPE 120	3
Intro. to Microelectronic Materials	MRE 150* (1)	3
Intro. to Microelectronic Processing Equipment	MRE 160* (1)	4
		17-19

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

### Microelectronic Technician Associate of Applied Science Degree

Required Courses (65-68)	Third Semester	Cr. Hrs.
Writing II or Technical Communications	WRT 102 or WRT 154	3
Photolithographic Process	MRE 200* (1)	3
Microelectronics Packaging	MRE 220* (1)	3
Introductory Physics I or Electronic Industrial Physics	PHY 121* (1) PHY 150* (1)	4-5
Electronic Industrial Chemistry	CHM 150* (1)	4
Reading Requirement* (2)		
		17-18

#### Fourth Semester

Human Relations in Business and Industry	MAN 110	3
Electronic Quality Control and Reliability	MRE 210* (1)	3
Microelectronics Circuit Fabrication	MRE 230* (1)	4
Humanities Elective* (3)		3
Fortran IV Programming or Programming in Basic	CSC 140* (1) or CSC 180* (1)	3
		16

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
 \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.  
 \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

## Military Science

The first goal of the Army and Air Force ROTC programs is to furnish leaders suitable for commissioning as Reserve Officers. The secondary goals are to develop self-discipline, integrity, a sense of duty and leadership ability.

ROTC is offered to full-time students at Pima Community College by the Military Science Department at the University of Arizona. Although students enroll in their ROTC classes at Pima, classes are held at the Old Main Building on the University of Arizona campus.

First year students should take classes in the semester sequence listed. Second year students who have not taken these classes in their first year may combine the first and third semesters of ROTC in the fall and the second and fourth semesters in the spring thus gaining in one year the 8 units required to enter the advanced ROTC program upon transfer to the University of Arizona.

Students are under no military obligation during their first two years in the program.

A uniform deposit fee of \$25 will be paid with the student's normal registration fees. The fee receipt will be taken to the ROTC supply clerk, Bear Down Gym, University of Arizona campus, so that a uniform can be issued.

Upon return of the uniform to the supply clerk at the end of the semester, the student fee receipt will be signed and the student's \$25 will be refunded. Refunds are at the West Campus only.

Students who complete the first two years of the program and continue their ROTC training receive a tax-free subsistence pay of \$100 per month during their junior and senior years at four year colleges.

### Air Force ROTC

Required Courses (8)	First Semester	Cr. Hrs.
The U.S. Air Force Today I	MLA 101	2
	<b>Second Semester</b>	
The U.S. Air Force Today II	MLA 102	2
	<b>Third Semester</b>	
U.S. Air Force History I	MLA 203	2
	<b>Fourth Semester</b>	
U.S. Air Force History II	MLA 204	2
		8



## Army ROTC

Required Courses (8)	First Semester	Cr. Hrs.
Introduction to ROTC	MSC 101	2
	<b>Second Semester</b>	
Defense Establishment in National Security	MSC 102	2
	<b>Third Semester</b>	
American Military History	MSC 203	2
	<b>Fourth Semester</b>	
Military Map Reading & Tactics	MSC 204	2
		8

## Music

The associate of arts degree offers the first two years of courses in music often required by four-year colleges. Arizona's three universities also require that all students who transfer their applied work be examined. *Because of different or specific degree requirements each student must meet with the music faculty for advice about programs. Students also should follow the first two year study requirements of the four-year school to which they plan to transfer.*

Electives should be selected to meet general education and/or departmental requirements at four-year colleges to which transfer is planned. *Faculty advisors must approve electives in the program of study.*

### Music

#### Associate of Arts Degree For Transfer

Required Courses (68)	First Semester	Cr. Hrs.
The Structure of Music I	MUS 125*(1)	3
Aural Perception I	MUS 127*(1)	1
Band or	MUS 120*(1)	
Chorale or	MUS 130*(1)	
College Singers (SATB)	MUS 131*(1)	3
Applied Music/Private Inst.	MUS 145*(1)	2
Piano Class I	MUS 141*(1)	1
Writing I	WRT 101	3
Math/Science Elective*(2)		4
Reading Requirement*(3)		
		17

The Structure of Music II  
Aural Perception II  
Band or  
Chorale or  
College Singers (SATB)  
Applied Music/Private Inst.  
Piano Class II  
Writing II  
Math/Science Elective\*(2)

### Second Semester

MUS 126*(1)	3
MUS 128*(1)	1
MUS 120*(1)	
MUS 130*(1)	
MUS 131*(1)	3
MUS 146*(1)	2
MUS 142*(1)	1
WRT 102	3
	4
	17

### Third Semester

The Structure of Music III  
Aural Perception III  
History and Lit. of Music I  
Applied Music/Private Inst.  
Piano Class III  
Social Science Elective\*(2)

MUS 225*(1)	3
MUS 227*(1)	1
MUS 201*(1)	3
MUS 247*(1)	2
MUS 143*(1)	1
	7
	17

### Fourth Semester

The Structure of Music IV  
Aural Perception IV  
History and Lit. of Music II  
Applied Music/Private Inst.  
Piano Class IV  
Social Science Elective\*(2)  
Elective  
Humanities Elective\*(2)

MUS 226*(1)	3
MUS 228*(1)	1
MUS 202*(1)	3
MUS 248*(1)	2
MUS 144*(1)	1
	3
	2
	2
	17

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for Math/Science, Social Science and Humanities electives.
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.



# Nursing Careers

## Nursing Assistant

This program provides the basic health care skills students can utilize as nursing assistants in hospitals, long-term facilities and other health care agencies. Graduates are prepared to give patient care under the direct supervision of licensed health personnel. Students who satisfactorily complete this curriculum will receive a Nursing Assistant Basic Certificate.

Nursing assistant training also is provided under the Allied Health Services program.

### Acceptance into Program:

- Completion of Pima Community College acceptance requirements.
- Completion of a special application for the Nursing Assistant program.
- Completion of placement examinations in mathematics and reading comprehension. (Note: Applicants must place at the eighth grade level or better in reading comprehension.)
- Interview by the campus Allied Health Service Review Committee or a committee member.
- A physical examination, to include T.B. screening, is required upon acceptance into the program.

### General Requirements:

- Total credits: 12 semester hours
- Successful completion of all academic and clinical program requirements.

### Nursing Assistant

#### Basic Certificate\* (1)

#### For Direct Employment

Required Courses		Lec.	Lab	Cr. Hrs.	
Principles of Anatomy & Physiology	LSC 102*(2)	3	+	3	4
Introduction to Health Care	HCA 154*(2)	3	+	0	3
Skills for Allied Health Services	HCA 150*(2)	2	+	9	5

12

### Notes:

\*(1) Nursing assistant graduates interested in preparing for the practical nurse or associate degree nursing programs should consult with their nursing advisor.

\*(2) Core Courses: D grades do not fulfill graduation requirement.

## Associate Degree Nursing

This curriculum provides the theoretical and practical preparation for graduates to give quality care and to offer this care to the health consumer with some degree of independence under the supervision of a more experienced registered nurse. The program consists of four semesters on campus and in affiliated hospitals and community agencies. Nursing courses must be taken in sequence as each course builds upon the previous one. All core courses in each semester must be completed before progressing to the next semester. Students satisfactorily completing this curriculum will graduate with an associate of applied science degree in nursing. Graduates of the program will be eligible to take the National Council Licensure Examination (NCLEX) for licensure as a Registered Nurse.

### Acceptance into Program:

- Completion of college (PCC) and Associate Degree Nursing applications.
- One year of high school chemistry or its equivalent (CHM 110, PCC) completed within the past five years with a grade of "C" or better.
- Documented reading competency at the level of REA 112 or better\* (1).
- Math 065 with a grade of "C" or better, or successful challenge for credit through the math department.
- Approval by selections committee.
- Approval of transfer credit according to college policy. (see PCC catalog)

### General Requirements:

- Total credit: 65-66 credit hours.
- Nursing Major: 38 credit hours.
- General Education Courses: 27-28 credit hours.

### Minimal Grade Achievement:

Students **must** receive a "C" or better in all core courses.

### Course Sequence:

All core courses in each semester must be completed before progressing to the next semester.

### Associate Degree Nursing

#### Associate of Applied Science Degree\* (1)

#### For Direct Employment

Required Courses (65-66)	First Sem.	Lec.	Lab	Cr. Hrs.
Anatomy/Physiology I	LSC 120*(2)	3 + 3	4	
Writing I	WRT 101	3 + 0	3	
Fundamentals of Nursing*(3)	NRS 170*(2)	4 + 12	4	
Intro to Medical-Surgical Nursing*(3)	NRS 171*(2)	4 + 12	4	
Reading Requirement*(4)				

15

<b>Second Sem.</b>				
Anatomy/Physiology II	LSC 121*(2)	3	+	3
Writing II	WRT 102	3	+	0
Medical-Surgical Nursing	NRS 172*(2)	5	+	15
Intermediate Medical-Surgical Nursing	NRS 173*(2)	5	+	15
				17
<b>Third Sem.</b>				
Microbiology I	LSC 207*(2)	3	+	4
Intro. to Psychology I	PSY 100*(2)	3	+	0
Pediatric Nursing	NRS 280*(2)	5	+	15
Obstetrical Nursing	NRS 281*(2)	5	+	15
				17
<b>Fourth Sem.</b>				
Humanities I*(5)	HUM	3-4	+	0
Social Science Elective*(5)		3	+	0
Advanced Medical-Surgical Nursing	NRS 282*(2)	5	+	15
Psychiatric Nursing	NRS 283*(2)	5	+	15
				16-17

#### Notes:

- \*(1) See General Education requirements for graduation for AAS degree.
- \*(2) Core Courses: D grades do not fulfill graduation requirements.
- \*(3) Examination(s) for advanced placement available to LPN's.
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(5) See General Education Requirements under the Graduation section of this catalog for the Humanities and Social Science electives.

## Practical Nursing

This curriculum provides the theoretical and practical preparation to qualify graduates for immediate employment as practical nurses in hospitals, clinics and medical offices.

The graduate is prepared to give quality nursing care as defined by the Arizona State Board of Nursing, and works under the direct supervision of the registered nurse or physician.

The program consists of two semesters on campus and in affiliated hospitals. Nursing courses must be taken in sequence as each course builds upon the previous one. Required general education courses in each semester must be completed or taken concurrently with the nursing course. Students having satisfactorily completed this curriculum will graduate with an advanced certificate from Pima Community College and be eligible to take the State Board examination for licensure as an L.P.N.

### Acceptance into Program

- Completion of Pima Community College acceptance requirements.
- Completion of a special application for the practical nurse program.
- Receipt of placement examination results in mathematics and reading (minimum requirement at the 12th grade reading level and 70 per cent in math test).
- Approval and recommendation by the campus Allied Health Services Review Committee.

### General Requirements:

- Total credit: 37 credit hours.
- Work in residence: minimum 17 credit hours of major (NRS) courses to be completed in residence.
- Physical examination to include T.B. screening to be completed upon acceptance into program.
- The student must complete with success all program requirements in theory, skills and clinicals.

### Practical Nursing Advanced Certificate For Direct Employment

Required Courses (37)	First Sem.	Lec.	Lab	Cr. Hrs.
Principle Anatomy/ Physiology	LSC 102*(1)	3	3	4
Introduction to Health Care	HCA 154*(1)	3	0	3
Introduction to Pharmacology	HCA 155*(1)	3	0	3
Practical Nursing I	NRS 070*(1)	4	12	8
		13	15	18

<b>Second Sem.</b>				
Survey of Human Diseases	LSC 106*(1)	3	3	4
Writing I or Practical Communications	WRT 101	3	0	3
Introduction to Psychology I or Intro to Sociology	WRT 150	(3)	0	
Practical Nursing II	PSY 100	3	0	
	SOC 100	(3)	0	3
	NRS 072*(1)	4	15	9
		13	18	19
		31		

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Office Education

Office Education in the secretarial and clerical fields offers a variety of courses and programs. Two-year programs which lead to an associate of applied science degree are given in these areas: Records Management, Administrative Assistant, Executive Secretary, General Secretary, Legal Secretary and Medical Secretary. One year advanced certificate programs for clerk-typist, receptionist and records management are available. Bilingual secretary certificate and degree programs are offered.

The office occupations curriculum gives training in shorthand, typewriting, business and management subjects and in operating office machines. General education is also included.

**Clerk-Typist**

**Advanced Certificate  
For Direct Employment**

<b>Required Courses (34)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Typing II	OED 112	3
Mathematics of Business	BUS 051	3
Practical Accounting Procedures	ACC 050	3
Business English	OED 151*(1)	3
Human Relations in Business	MAN 110	3
		15

<b>Second Semester</b>		
Calculating Machines	OED 121*(1)	2
Word Processing	OED 221*(1)	4
Office Procedures	OED 271*(1)	4
Business Communications	OED 251*(1)	3
Typing III	OED 211*(1)	3
Records Management: Filing Systems	OED 132*(1)	3
		19

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Receptionist (Medical, Legal, General)  
Advanced Certificate  
For Direct Employment**

<b>Required Courses (31)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Business English	OED 151*(1)	3
Typing II	OED 112*(1)	3
Mathematics of Business	BUS 051	3
Records Management: Filing Systems	OED 132*(1)	3
Elective*(2)		3
		15
<b>Second Semester</b>		
Practical Accounting Procedures or Business Communications	ACC 050	3
Word Processing	OED 251*(1)	4
Calculating Machines	OED 221*(1)	4
Human Relations in Business	OED 121*(1)	2
Office Procedures	MAN 110	3
	OED 271	4
		16

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) For medical receptionist, the elective should be Medical Office Procedures (OED 161). For legal receptionist, the elective should be Legal Terms (OED 141).

**Administrative Assistant  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (65-66)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Business English	OED 151*(1)	3
Typing II	OED 112	3
Mathematics of Business	BUS 051	3
Business & Professional Communication	SPE 120	3
Reading Requirement* (2) or Elective		3-4
		<hr/> 15-16
	<b>Second Semester</b>	
Typing III	OED 211*(1)	3
Records Management: Filing Systems	OED 132*(1)	3
Human Relations in Business	MAN 110	3
Introduction to Computers	CSC 100	3
Business Communications	OED 251*(1)	3
		<hr/> 15
	<b>Third Semester</b>	
Business Law I	BUS 200	3
Calculating Machines	OED 121*(1)	2
Supervision	MAN 122	3
Principles of Accounting I	ACC 101*(1)	3
Office Procedures	OED 271*(1)	4
Introduction to Microeconomics	ECO 100	3
		<hr/> 18
	<b>Fourth Semester</b>	
Business Law II	BUS 201	3
Principles of Accounting II	ACC 102	3
Word Processing	OED 221*(1)	4
Business Organization & Management	MAN 280*(1)	3
Humanities Elective* (3)		4
		<hr/> 17

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirements.

\* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\* (3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

**Records Management  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
American Government	POL 110	3
Principles of Accounting I	ACC 101*(1)	3
Introduction to Business	BUS 100	3
Introduction to Computers	CSC 100*(1)	3
Records Management: Development of a Program	OED 131*(1)	3
Reading Requirement* (2)		<hr/> 15
	<b>Second Semester</b>	
Introduction to Microeconomics	ECO 100	3
Human Relations in Business and Industry	MAN 110	3
Business English	OED 151*(1)	3
Records Management: Filing Systems	OED 132*(1)	3
Mathematics of Business or Accounting II	BUS 051 or ACC 102	3
		<hr/> 15
	<b>Third Semester</b>	
Business Communications	OED 251*(1)	3
Business Law I	BUS 200	3
COBOL Programming	CSC 160	3
Personnel Management	MAN 276	3
Records Management: Forms Management	OED 231*(1)	3
Business Seminar I	BUS 295	1
		<hr/> 16
	<b>Fourth Semester</b>	
Business Law II	BUS 201	3
Co-op Related Class in OED	OED 199	1
Co-op Work in OED	OED 199	3
Records Management: Supervision	OED 232*(1)	3
Humanities Elective* (3)		4
		<hr/> 14

**Notes:**

\* (1) Core Courses: D grades do not fulfill graduation requirement.

\* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\* (3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.



**Records Management  
Certificate  
For Direct Employment**

**Required Courses (30 units)**

One year certificate program would consist of semesters one and two of the two-year program for direct employment.

**General Secretary  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (65)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Business English	OED 151*(1)	3
Shorthand I	OED 101	3
Typing I	OED 111	3
Mathematics of Business	BUS 051	3
Elective*(2)		3
Reading Requirement*(3)		
		15
	<b>Second Semester</b>	
Shorthand II	OED 102*(1)	3
Typing II	OED 112	3
Calculating Machines	OED 121*(1)	2
Records Management: Filing Systems	OED 132*(1)	3
Word Processing	OED 221*(1)	4
		15
	<b>Third Semester</b>	
Typing III	OED 211*(1)	3
Shorthand III	OED 201	3
Office Procedures	OED 271*(1)	4
Practical Accounting Procedures or Principles of Accounting I	ACC 050 or ACC 101	3
Introduction to Computers or Introduction to Business	CSC 100 or BUS 100	3
Human Relations in Business	MAN 110	3
		19
	<b>Fourth Semester</b>	
Business Law I	BUS 200	3
Business Communications	OED 251*(1)	3
Elective*(2)		6
Humanities Elective*(4)		3-4
		15-16

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) Electives should be selected with the assistance of an OED advisor from the following courses:
 

Shorthand IV	OED 202	(3)
Co-op Related Class in OED	OED 199	(1)
Co-op Work in OED	OED 199	(2)
Records Management: Development of a Program	OED 131	(3)
Records Management: Supervision	OED 232	(3)
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

**Executive, Legal, Medical Secretary  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60-62)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Business English	OED 151*(1)	3
Shorthand II	OED 102*(1)	3
Typing II	OED 112	3
Mathematics of Business	BUS 051	3
Elective		3
Reading Requirement*(2)		
		15
	<b>Second Semester</b>	
Business Communications	OED 251*(1)	3
Shorthand III	OED 201	3
Typing III	OED 211*(1)	3
Human Relations in Business	MAN 110	3
Practical Accounting Procedures or Principles of Accounting I	ACC 050 or ACC 101	3
		15
	<b>Third Semester</b>	
Word Processing	OED 221*(1)	4
Calculating Machines	OED 121*(1)	2
Business Law I	BUS 200	3
Option 1*(3)		3-4
Option 2*(3)		3
		15-16

Fourth Semester			
Records Management:			
Filing Systems	OED 132*(1)	3	
Humanities Elective*(4)		3-4	
Option 3*(3)		3	
Option 4*(3)		3	
Option 5*(3)		3	
		<hr/>	15-16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) Students interested in a secretarial specialization should choose appropriate courses from the three options given to Executive, Legal and Medical Secretary—

Executive Secretary			Units
Option			
1	Office Procedures	OED 271*(1)	(4)
2	Introduction to Business or Introduction to Computers	BUS 100 CSC 100	(3)
3	Shorthand IV or Principles of Accounting II	OED 202 ACC 102	(3)
4-5	Electives		(3)

Legal Secretary			
Option			
1	Legal Terms	OED 141	(3)
2	Legal Secretarial Procedures I	OED 142	(3)
3	Legal Secretarial Procedures II	OED 242	(3)
4	Business Law II or Criminal Law	BUS 201 AJS 109	(3)
5	Shorthand IV or Office Procedures	OED 202 OED 271	(3-4)

Medical Secretary			
Option			
1	Medical Office Proc.	OED 161	(3)
2	Medical Terms I	OED 162	(3)
3	Medical Transcription	OED 263	(3)
4	Medical Terms II	OED 262	(3)
5	Electives		(3)

- \*(4) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

**Bilingual Secretary  
Basic Certificate  
For Direct Employment**

Required Courses*(1)		Cr. Hrs.
Typing II	OED 112*(2)	3
Correspondencia Comercial*(3)	OED 252*(2)	2
Prácticas de Oficina*(3)	OED 271*(2)	4
Business English	OED 151*(2)	3
Spanish for Native Speakers I*(3) or Intermediate Spanish I*(3)	SPA 101 SPA 210	<hr/> 4
		16

**Notes:**

- \*(1) Spanish II is a prerequisite to Spanish 210. Typing I or equivalent is a prerequisite to Typing II. Fluency in reading and writing Spanish and English is a prerequisite to Commercial Correspondence and Prácticas de Oficina. Consult instructor for placement.
- \*(2) Core Courses: D grades do not fulfill graduation requirement.
- \*(3) Taught in Spanish and English.

**Bilingual Secretary  
Advanced Certificate  
For Direct Employment**

Required Courses (35)*(1)		Cr. Hrs.
Typing II	OED 112	3
Correspondencia Comercial*(2)	OED 252*(3)	2
Prácticas de Oficina*(2)	OED 271*(3)	4
Business English	OED 151*(3)	3
Español inten. para estud. de habla Hispana I*(2) or Intermediate Spanish I*(2)	SPA 201 SPA 210	<hr/> 4
		16

Plus the Following:

Mathematics of Business	BUS 051	3
Shorthand II	OED 102*(3)	3
Business Communications	OED 251*(3)	3
Typing III	OED 211*(3)	3
Literatura Creativa I*(2)	SPA 205	3
Español inten. para estud. de habla Hispana II*(2) or Intermediate Spanish II*(2)	SPA 202 SPA 211	<hr/> 4

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**Notes:**

- \* (1) Shorthand I is a prerequisite for Shorthand II. A certain proficiency in reading and writing Spanish and English is a prerequisite for OED 252, Correspondencia Comercial (Commercial Correspondence) and OED 271, Prácticas de Oficina (Office Procedures). Consult instructor for placement
- \* (2) Taught in Spanish and English.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.

**Bilingual Secretary  
Associate in Applied Science Degree  
For Direct Employment**

<b>Required Courses (62)* (1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Typing II	OED 112* (2)	3
Shorthand I	OED 101	3
Business English	OED 151* (2)	3
Español inten. para estud. de Haba Hispana I* (3)	SPA 201	4
Math of Business	BUS 051	3
Reading Requirement* (4)		
		16
	<b>Second Semester</b>	
Calculating Machines	OED 121* (2)	2
Shorthand II	OED 102* (2)	3
Business Communications	OED 251* (2)	3
Practical Accounting Procedures or Principles of Accounting I	ACC 050 or ACC 101	3
Intermediate Spanish II* (3) or Español inten. para estud. de habla Hispana II* (3)	SPA 202* (2)	4
		15
	<b>Third Semester</b>	
Human Relations in Business	MAN 110	3
Record Management: Filing Systems	OED 132* (2)	2
Correspondencia Comercial* (3)	OED 252* (2)	2
Shorthand III	OED 201	3
Literatura Creativa I	SPA 205	3
Humanities Elective* (5)		4
		16

**Fourth Semester**

Word Processing	OED 221	4
Prácticas de Oficina or Office Procedures	OED 271* (2)	4
Introducción a Negocios or Introduction to Business	BUS 100	3
Spanish Elective* (6)		3
Elective* (7)		3

15

**Notes:**

- \* (1) Prerequisites for the program are Typing I or equivalent skill and Spanish III or equivalent Spanish proficiency.
- \* (2) Core Courses: D grades do not fulfill graduation requirement.
- \* (3) Taught in Spanish and English.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (5) See General Education Requirements under the Graduation section of this catalog for Humanities electives.
- \* (6) Highly recommended Spanish elective: SPA 225, SPA 226, SPA 240, or any SPA 200 series.
- \* (7) Electives should be selected with the assistance of an OED advisor from the following courses:

Typing III	OED 211	(3)
Shorthand IV	OED 202	(3)
Co-op Related Class in OED	OED 199	(1)
Co-op Work in OED	OED 199	(2)
Records Management: Development of a Program	OED 131	(3)
Records Management: Supervision	OED 232	(3)

# Optical Laboratory Technology and Ophthalmic Dispensing Technology

This program provides the theory and practice to prepare students for jobs. These jobs may be as an optical laboratory technician or as an ophthalmic dispenser and/or a contact lens technician in private offices and clinics. Other jobs may be found as private practitioners, optical laboratory managers, ophthalmic salesmen, and ophthalmic research technicians. The program consists of two years of theory and practice. 240 hours are to be spent in an externship during the last half of the second year. Those who complete the program will receive an associate of applied science degree in Ophthalmic Dispensing Technology from Pima Community College. For self employment in Arizona, the graduate must finish 12 calendar months of apprenticeship to sit for the state board exam.

## Acceptance into Program:

- Completion of college and health sciences acceptance requirements.
- One year of math (including algebra or geometry).
- Receipt of placement examination results in math and reading comprehension.

## General Requirements:

- Total credit: 63-64 credit hours for ophthalmic dispensing.
- Work in residence: ophthalmic dispensing—minimum 38 credit hours of major (ODT) and related courses to be completed in residence.

## Restriction:

- Correspondence study: ophthalmic dispensing—maximum 6 credit hours.
- Extension study: ophthalmic dispensing—maximum 22 credit hours (including correspondence study).

## Minimal Grade Achievement:

- "C" level

## Ophthalmic Dispensing Technology Associate of Applied Science Degree For Direct Employment

Required Courses (64-65)	First Sem.	Lec.	Lab.	Cr. Hrs.
Writing I or Practical Communications	WRT 101			
Algebra I or Algebra II	WRT 150 MTH 070 or MTH 130	3	+ 0	3
Fundamental Physics	PHY 105* (1)	3	+ 3	4
Optical Orientation I	ODT 051* (1)	5	+ 3	6
Reading Requirement* (2)				16
<b>Second Sem.</b>				
Writing II or Technical Communications	WRT 102			
Human Relations in Business & Industry	WRT 154	3	+ 0	3
Humanities Elective* (3)	MAN 110	3	+ 0	3
Optical Orientation II		3-4	+ 0	3-4
Optical Laboratory	ODT 052* (1)	3	+ 4	4
	ODT 053* (1)	1	+ 6	3
				16-17
<b>Third Sem.</b>				
Optical Dispensing I	ODT 054* (1)	4	+ 6	6
Contact Lenses I	ODT 055* (1)	4	+ 3	5
Ophthalmic Assistant	ODT 056* (1)	2	+ 3	3
Small Bus. Management	MAN 124	3	+ 0	3
				17
<b>Fourth Sem.</b>				
Contact Lenses II	ODT 057* (1)	4	+ 3	5
Optical Dispensing II	ODT 058* (1)	4	+ 0	4
Ophthalmic Seminar	ODT 059* (1)	2	+ 0	2
Co-op Related Class in ODT	ODT 299* (1)	1	+ 0	1
Co-op Work in ODT	ODT 299* (1)	0	+ 15	3
				15

## Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for humanities elective.

# Physical Education

Physical education at Pima College is based on the philosophy of leisure education for life. Physical education fulfills its leisure obligation through the avenue of skill development. It is suggested that students wishing to enroll in physical education courses should consult with a faculty member for specific information. Options available to students are: service activity classes, special interest classes, and teaching majors and minors. Students considering the teaching program should become familiar with the catalog of the senior college to which they intend to transfer.

Some courses may require a special fee and/or a special style of dress to insure safety while participating. It is the responsibility of the student to have in the department office a record of a current valid medical examination, demonstrating acceptable health standards dated prior to enrollment in physical education classes. Health insurance is necessary, and available during registration.

## Physical Education Associate of Arts Degree For Transfer

Required Courses (67-75)	First Semester	Cr. Hrs.
Writing	WRT 101	3
Introduction to Psychology	PSY 100	3
Introduction to Leisure Education *(1)	PED 139	3
Pro-Activities *(2)		2-4
Folk & Square Dance	PED 144*(3)	2
Math*(4)		3
		16-18
	<b>Second Semester</b>	
Writing II	WRT 102	3
First Aid	REC 121*(3)	2
History of Physical Education	PED 149*(3)	2
Motor Development	PED 142	2
Elementary School Physical Education *(1)	PED 130	3
Pro-Activities *(2)		2-4
Social Science Elective *(5)		3
		17-19

	<b>Third Semester</b>	
Humanities I	HUM 110	4
U.S. History I or U.S. History II	HIS 141	
Human Anatomy & Physiology I	HIS 142	3
Reading Requirement*(6)	LSC 120	4
Pro-Activities *(2)		4
		2-4
		17-19
	<b>Fourth Semester</b>	
Humanities II	HUM 111	4
National & State Constitutions	POL 112	3
Sports Officiating	PED 145*(3)	2
Designed Exercise	PED 146*(3)	2
Human Anatomy & Physiology II	LSC 121*(3)	4
Pro-Activities*(2)		4
		2-4
		17-19

### Notes:

- \*(1) Highly recommended elective. Additional recommended electives:  
Child Growth & Development, ECE 117  
Nutrition, FSN 114  
Introduction to Health Science, HED 136  
Foundations of Athletic Training, PED 125  
Facilities for Physical Education & Recreation, PED 120
- \*(2) All of the following Pro-Activity classes\*(3) are required. Each Physical Education major should enroll in 4 sections each semester (PED 101-109, 112-116).  
Wrestling (Men) Soccer  
Volleyball Basketball  
Self-Defense Tennis  
Baseball (Men) Badminton  
(Women if they want) Softball  
Modern Dance (Women) Track & Field  
(Men if they want)
- \*(3) Core Courses: D grades do not fulfill graduation requirement.
- \*(4) Choose one of the following Math courses:  
Algebra II, MTH 130  
Survey of Math Thought, MTH 135  
Math for Elementary Education Majors, MTH 140
- \*(5) Choose one Social Science elective from the following:  
Introduction to Sociology, SOC 100  
Introduction to Cultural Anthropology, ANT 110
- \*(6) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Physics

## Physics Associate of Science Degree For Transfer

<b>Suggested Courses (63-65)* (1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Anal. Geometry & Calculus I	MTH 180* (2)	3
Introductory Mechanics	PHY 210* (2)	5
Fortran IV Programming	CSC 140	3
Social Science Elective* (3)		3
Reading Requirement* (4)		
		<hr/> 17
	<b>Second Semester</b>	
Writing II	WRT 102	3
Anal. Geometry & Calculus II	MTH 185* (2)	3
Introduction to Waves & Heat* (5)	PHY 221* (2)	4
General Chemistry I	CHM 120* (2)	4
Social Science Elective* (3)		3
		<hr/> 17
	<b>Third Semester</b>	
Anal. Geometry & Calculus III	MTH 215* (2)	4
Introductory Electricity & Magnetism* (5)	PHY 216* (2)	5
General Chemistry II	CHM 121* (2)	4
Humanities Elective* (3)		3-4
Physical Education	PED	1
		<hr/> 17-18
	<b>Fourth Semester</b>	
Linear Algebra & Diff. Equations	MTH 220* (2)	4
Introduction to Modern Physics	PHY 230* (2)	4
Elementary German I	GER 110* (2)	4
Humanities Elective* (3)		3-4
Physical Education	PED	1
		<hr/> 16-17

### Notes:

- \*(1) The courses suggested meet University of Arizona requirements for the first two years of a bachelor of science degree.
- \*(2) Core Courses: D grades do not fulfill graduation requirement.
- \*(3) For course electives in humanities and social sciences consult the catalog of the college or university you plan to enter.
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(5) Students may take PHY 216 before PHY 221 if they have completed MTH 185.

# Postal Service Management

The Postal Service Management certificate and degree program has been designed in cooperation with the Tucson Management Sectional Center (MSC) United States Postal Service. A curriculum has been established to develop and enhance skills of persons presently employed by the Postal Service. The program certificate and degree options utilize the career-ladder concept. This means that a student may smoothly progress from the basic certificate requiring 16 hours to the advanced certificate requiring an additional 18 hours and then to the associate of applied science degree which requires an additional 33 hours for a program total of 67 credit hours. Program courses include a study of the Postal Service history and organization, labor management relations, employee services, mail processing, finance, delivery and collection, customer service and postal problem analysis.

## Postal Service Management Basic Certificate For Direct Employment

<b>Required Courses (16)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I or Practical Communications	WRT 101* (1) or WRT 150* (1)	3
Principles of Accounting I	ACC 101	3
Postal History & Organization	PSM 100	3
Reading	REA 100	4
Mathematics of Business* (2)	BUS 051* (1)	3
		<hr/> 16

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Prerequisite: MTH 060



**Postal Service Management  
Advanced Certificate  
For Direct Employment**

Persons planning to apply for the advanced certificate must have completed the first semester basic certificate program.

<b>Required Courses (34)</b>	<b>Second Semester</b>	<b>Cr. Hrs.</b>
Writing II or	WRT 102*(1) or	
Technical Communications	WRT 154*(1)	3
Principles of Accounting II*(2)	ACC 102	3
Human Relations in		
Business and Industry	MAN 110*(1)	3
Postal Service Labor-Management	PSM 120*(1)	3
Postal Employee Services	PSM 130	3
Mail Processing I	PSM 140*(1)	3
		<hr/> 18

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) Prerequisite: ACC 101

**Postal Service Management  
Associate of Applied Science Degree**

The two semesters of the advanced certificate program are the first two semesters of the associate of applied science degree program.

<b>Required Courses (67)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Introduction to Macroeconomics	ECO 101	3
Business & Professional		
Communication	SPE 120*(1)	3
Supervision	MAN 122*(1)	3
Postal Service Finance	PSM 200*(1)	3
Mail Processing II*(2)	PSM 240*(1)	3
Humanities Elective*(3)		3
Reading Requirement*(4)		
		<hr/> 18
	<b>Fourth Semester</b>	
Introduction to Computers	CSC 100	3
Business Organization and		
Management	MAN 280*(1)	3
Postal Service Delivery & Collection or	PSM 250*(1)	3
Management of Small Post Offices	PSM 280*(1)	3
Postal Problems Analysis	PSM 260*(1)	3
Postal Customer Services or	PSM 270*(1)	
Mailroom Practices and		
Techniques	PSM 210	3
		<hr/> 15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) Prerequisite: PSM 140

\*(3) See General Education Requirements under the Graduation section of this catalog for humanities elective.

\*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Public Administration

The Public Administration transfer program is for students who are interested in jobs in departments or agencies of federal, state, and municipal (city, town) governments. This program is also appropriate for students desiring careers in the planning and implementation of national, state, or local health policies, programs and services (e.g. hospital administration, management of public or volunteer health agencies and medical care services).

Students who want to get an associate of science degree in Corrections or Criminal Justice should see the catalog section marked Administration of Justice.

**Public Administration  
Associate of Science Degree  
For Transfer**

<b>Required Courses (68-70)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Math/Science Elective*(1)		3-4
American National Government	POL 110*(2)	3
Social Science Elective or		
Math*(3)		3
Business & Professional		
Communication	SPE 120	3
Reading Requirement*(4)		
		<hr/> 15-16
	<b>Second Semester</b>	
Writing II	WRT 102	3
Math/Science Elective*(1)		3-4
Finite Mathematics	MTH 170	3
American State & Local		
Governments	POL 111*(2)	3
Social Science Elective		3
Introduction to Public		
Administration	PAD 105*(2)	3
		<hr/> 18-19

<b>Third Semester</b>		
Principles of Accounting I	ACC 101* (2)	3
Introduction to Microeconomics	ECO 100	3
Topics in Calculus	MTH 175	3
Humanities or Foreign Language* (6)		4
Introduction to the Analysis of Data for Decision Making	PAD 204* (2)	3
		16
<b>Fourth Semester</b>		
Accounting for Government Agencies	ACC 173* (2)	3
Introduction to Computers	CSC 100	3
Introduction to Macroeconomics	ECO 101	3
Statistical Methods in Economics and Business I	BUS 205	3
Elective (see advisor)		3
Humanities or Foreign Language* (6)		4
		19

**Notes:**

- \* (1) Fulfilled by 2 semesters of natural science. The natural science courses may be selected from the following: (Although not required, students may enroll in laboratories and use lab units as free electives, unless otherwise specified.) AST 101, 102 (111 and 112 are labs); CHM 101, 102, or CHM 111, 112; 110, 111; ESC 101, 102; and LSC 103, 104. In the case of the following courses, labs are required: ESC 120, 121; LSC 207, 208; and PHY 121, 122.
- \* (2) Core Courses: D grades do not fulfill graduation requirement.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) Students who haven't already completed College Algebra (MTH 150) need to do so. The prerequisite for MTH 150 is MTH 130, or two years of algebra. Math placement tests are administered during registration. Students wanting transfer to the BPA College of the UA should place heavy emphasis on mathematics.
- \* (5) Fulfilled by either 2 semesters (8 units) of a single foreign language or Humanities I and II (HUM 110, 111), or other selected Humanities electives. See an advisor for information concerning these electives.

## Public Transportation Maintenance Technology

The program will provide training in diagnostics, troubleshooting, and rebuilding in eight (8) areas of maintenance on public transportation vehicles. Areas included are electrical systems, air conditioning systems, diesel engine basics and overhaul, automatic transmissions, rear ends and differentials, brake systems, air systems, and front end alignment.

Cooperative education has been incorporated as an integral portion of the program for students currently employed in public transportation. Such students will be able to use their on-the-job experience to meet the laboratory requirement for cooperative education credit.

### Public Transportation Maintenance Basic Certificate

Required Courses	First Semester	Cr. Hrs.
Applied Electrical Systems	PTM 101* (1)	4
Brake Systems	PTM 102* (1)	3
Air Systems	PTM 103* (1)	3
Diesel Engine Basics	PTM 104* (1)	3
Human Relations in Business & Industry	MAN 110	3
		16

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

### Public Transportation Maintenance Technical Certificate

Required Courses	Second Semester	Cr. Hrs.
Basic Certificate Requirements		16
Air Conditioning Systems	PTM 105* (1)	4
Automatic Transmissions		
VH & VS	PTM 106* (1)	4
Rear Ends & Differentials	PTM 203* (1)	3
Co-op Related Class in PTM	PTM 199	1
Co-op Work in PTM	PTM 199	2
Practical Communications	WRT 150	3
Mathematics (Based on Placement Exam)	MTH	3
		36

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.

## Public Transportation Maintenance Associate of Applied Science Degree

Required Courses		Cr. Hrs.
Technical Certificate Requirements		36
<b>Third &amp; Fourth Semesters</b>		
Automatic Transmissions V-730	PTM 201*(1)	4
Diesel Engine Overhaul	PTM 202*(1)	3
Front End Alignment and Steering Gears	PTM 204*(1)	3
Technical Physics I	PHY 101	3
Co-op Related Class in PTM	PTM 299	1
Co-op Work in PTM	PTM 299	2
Technical Communication	WRT 154	3
Humanities and Fine Arts Elective*(2)		3-4
Social and Behavioral Science Elective*(2)		3
Reading Requirement*(3)		
		61-62

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
 \*(2) See General Education Requirements under the Graduation section of this catalog for Humanities, Fine Arts, Social Science, and Behavioral Science electives.  
 \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Radiologic Technology

Theory and practice are provided to train graduates for immediate job openings as radiologic technologists in hospitals, clinics, and medical offices or for transfer into special four-year programs.

### Program Description:

The total program is made up of seven semesters consisting of lectures and clinical education. Graduates will receive an associate of applied science degree in Radiologic Technology and will be able to apply for the certification examination of the American Registry of Radiologic Technologists.

### Acceptance into Program:

- Completion of College and Radiologic Technology program applications and acceptance requirements.
- High school diploma or G.E.D. certificate. Submission of high school transcripts and college credits of all schools attended including Pima Community College District transcript (if applicable).
- One year of high school chemistry or its equivalent (CHM 110 at Pima Community College) completed within the last five years with a grade of "C" or better.
- One year of high school algebra or its equivalent (MTH 070 at Pima Community College) completed within the last five years with a grade of "C" or better.
- Documented reading competency at the level of REA 112 or higher.
- An interview with a Radiologic Technology program advisor.
- Evaluation and acceptance by West Campus Allied Health Programs Selections Committee.
- The deadline date is March 1 for all application materials to be submitted to the Admissions Secretary for Allied Health Programs.

### Advising:

Individual applicants are required to schedule an appointment with a Radiologic Technology advisor.

### General Requirements:

- Total Credits: 91-92 semester hours

### Minimal Grade Achievement:

Students must receive a "C" grade or better in all core courses each semester in order to progress to the next semester.

### Radiologic Technology Associate of Applied Science Degree For Direct Employment\*(1)

Required Courses (90-91)	First Sem.	Lec	Lab	Cr. Hrs.
Writing I	WRT 101	3 + 0		3
Humanities Elective*(2)	HUM	3-4 + 0		3-4
Algebra II	MTH 130	3 + 0		3
Human Anatomy & Physiology I	LSC 120*(3)	3 + 3		4
Radiologic Fundamentals	RAD 071*(3)	3 + 3		4
Reading Requirement*(4)				

17-18

<b>Second Sem.</b>					
Survey of Human Diseases	LSC 106	3	+	0	3
Human Anatomy & Physiology II	LSC 121*(3)	3	+	3	4
Rad. Processing & Technology	RAD 072*(3)	3	+	3	4
Rad. Positioning I	RAD 073*(3)	3	+	3	4
					<hr/> 15
<b>Third Sem.</b>					
Writing II	WRT 102	3	+	0	3
Rad. Positioning II	RAD 081*(3)	3	+	3	4
Medical Imaging Physics	RAD 082*(3)	3	+	3	4
Clinical Education I	RAD 083*(3)	0	+	6	2
Radiation Biology and Therapy	RAD 084*(3)	3	+	0	3
					<hr/> 16
<b>Fourth Sem.</b>					
Introduction to Psychology I	PSY 100	3	+	0	3
Rad. Positioning III	RAD 085*(3)	3	+	3	4
Clinical Education II	RAD 086*(3)	0	+	6	2
Medical Imaging Systems	RAD 088*(3)	3	+	3	4
Introduction to Computers	CSC 100	3	+	0	3
					<hr/> 16
<b>Fifth Sem. (Summer)</b>					
Clinical Education III	RAD 091*(3)	0	+	24	8
<b>Sixth Sem.</b>					
Clinical Seminar I	RAD 092*(3)	1	+	0	1
Clinical Education IV	RAD 093*(3)	0	+	24	8
					<hr/> 9
<b>Seventh Sem.</b>					
Clinical Seminar II	RAD 094*(3)	1	+	0	1
Clinical Education V	RAD 095*(3)	0	+	24	8
					<hr/> 9

### Notes:

- \*(1) 91 credit hours needed to graduate.
- \*(2) See General Education Requirements under the Graduation section of this catalog for humanities electives.
- \*(3) Core Courses: D grades do not fulfill graduation requirement.
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Real Estate

The Real Estate program is designed to fulfill industry needs in the Tucson area. There are basically two program options; one in Sales/Brokerage which includes a two-year associate of applied science degree, and basic and advanced certificates; the second option offers a basic and an advanced certificate in Real Estate Escrow.

### Real Estate Sales/Brokerage

This real estate option prepares persons to handle the sales of private residences, apartment buildings, industrial and commercial property and unimproved land. Students also are prepared in finance, real-property management, advertising, appraising, site developing, urban renewal, public housing and rehabilitation of property.

Training in real estate is offered through a one-semester basic and a two-semester advanced certificate program, and also a two-year associate of applied science degree program.

The basic certificate program, intended for the selling agent, qualifies students to take the state licensing exam. Persons interested in becoming brokers should take the advanced certificate program. However, three years of experience in real estate also is required to take the state license examination in brokerage. The two-year program provides for additional growth, development and specialization in the real estate field. The real estate degree and certificate programs are job oriented. Persons interested in a four-year degree should follow the first two-year course requirements of the university they plan to attend when selecting courses at Pima.

**Real Estate Sales/Brokerage  
Basic Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Principles of Accounting I	ACC 101	3
Business Law I	BUS 200	3
Math (based on placement test)	MTH	3
Writing I or Practical Communications	WRT 101 WRT 150	3
Real Estate Principles	RLS 101*(1)	3
		<hr/> 15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Real Estate Sales/Brokerage  
Advanced Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Basic Certificate Requirements		15
Real Estate Finance	FIN 205*(1)	3
Salesmanship	MKT 113	3
Real Estate Practices	RLS 102	3
Real Estate Law	RLS 201*(1)	3
Business & Professional Communication	SPE 120	3
		<hr/> 30

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Real Estate Sales/Brokerage  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (60)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Principles of Accounting I	ACC 101*(1)	3
Real Estate Principles	RLS 101*(1)	3
Math (based on placement test)	MTH	3
Writing I or Practical Communications	WRT 101 WRT 150	3
Elective* (2)		3
Reading Requirement* (3)		
		<hr/> 15

Business Law I  
Introduction to Microeconomics  
Business & Professional  
Communication  
Real Estate Practices  
Salesmanship

**Second Semester**

BUS 200	3
ECO 100	3
SPE 120	3
RLS 102	3
MKT 113*(1)	3
<hr/> 15	

**Third Semester**

Introduction to Macroeconomics	ECO 101	3
Real Estate Finance	FIN 205*(1)	3
Human Relations in Business	MAN 110	3
Humanities Elective* (4)		3
Elective* (2)		3
		<hr/> 15

**Fourth Semester**

Small Business Management or Principles of Accounting II	MAN 124 ACC 102	3
Real Estate Law	RLS 201*(1)	3
Real Estate Appraisals	RLS 202*(1)	3
Elective* (5)		3
Elective* (2)		3
		<hr/> 15

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) Electives should be chosen from courses above the 100 level which are related to real estate industry.

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(4) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

\*(5) Electives should be selected from history, humanities, psychology, sociology, philosophy, political science or anthropology.

## Real Estate Escrow

This program option is designed for persons preparing for employment as escrow agents, officers, or supervisors. It also provides professional education for those currently employed.

### Real Estate Escrow Basic Certificate for Direct Employment

		<b>Cr. Hrs.</b>
Escrow Principles	RLS 120*(1)	3
Escrow Practices	RLS 121*(1)	3
Real Estate Principles	RLS 101*(1)	3
Principles of Accounting I or Mathematics of Business	ACC 101 BUS 051	3
Elective*(2)		3
		<hr/> 15

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirements.  
\*(2) Recommended by advisor to satisfy individual student requirements.

### Real Estate Escrow Advanced Certificate For Direct Employment

		<b>Cr. Hrs.</b>
Basic Certificate Requirements		15
Escrow Problems	RLS 210*(1)	3
Real Estate Law	RLS 201	3
Real Estate Finance	FIN 205	3
Electives*(2)		3
Writing (based on placement exam)		3
		<hr/> 30

#### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
\*(2) Recommended by advisor to satisfy individual student requirements.

## Recreation

Recreation, or the use of leisure time, is one of the fastest growing phases of life. With more interest in recreation there is a need for trained recreation personnel. Training should be in both the technical aspects of the field and in leadership. Recreation programs at PCC are divided into three areas:

- 1) recreation leader
- 2) natural resource recreation
- 3) pre-professional transfer program

Students in the program will be able to enter careers as a recreation aide, park aide, activity specialist, facility manager, or natural resource technician. With more education and recreation experience, the student will be able to apply for careers of greater responsibility. Students who plan careers with state, municipal, or federal agencies will have to take civil service examinations.

### Recreation Leader Associate of Applied Science Degree For Direct Employment

<b>Required Courses (62-72)*(1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Mathematics of Business	BUS 051	3
Introduction to Parks & Recreation	REC 101*(2)	3
Group Leadership	REC 102*(2)	2
Recreational Games	REC 119*(2)	2
Math/Science Elective*(3)		3
Reading Requirement*(4)		
		<hr/> 16
	<b>Second Semester</b>	
Writing II or Technical Communications	WRT 102 WRT 154	3
Outdoor Recreation-Education	REC 115*(2)	3
Survival	REC 118*(2)	2
Ecology	LSC 150	3
Recreational Arts & Crafts	REC 051*(2)	3
Social Science Elective*(3)		3
		<hr/> 18



<b>Third Semester</b>		
Recreation Administration & Finance	REC 103*(2)	3
Program Planning & Organization	REC 114*(2)	3
Facilities for Physical Education and Recreation	PED 120	2
First Aid	REC 121*(2)	2
Sports Officiating	PED 145	2
Business & Professional Communications	SPE 120	3
		<hr/> 15
<b>Fourth Semester</b>		
Recreation for Special Groups	REC 116*(2)	3
Folk and Square Dance	PED 144	2
Child Development	ECE 117	3
Public Relations & Communigraphics	REC 074	3
Conservation of Natural Resources	LSC 170	3
Humanities Elective*(3)		3
		<hr/> 17

**Notes:**

- \*(1) Total units needed to graduate -63
- \*(2) Core Courses: D grades do not fulfill graduation requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities, Social Science & Math/Science Electives
- \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

**Natural Resource Recreation Technician  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (61-63)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Mathematics of Business	BUS 051	3
Introduction to Parks & Recreation	REC 101*(1)	3
Ecology I	LSC 150	4
Math/Science elective*(3)		3
Reading Requirement*(2)		
		<hr/> 16

<b>Second Semester</b>		
Writing II or Technical Communications	WRT 102 or WRT 154	3
Human Relations	MAN 110	3
Business & Professional Communications	SPE 120	3
Outdoor Recreation-Education	REC 115*(1)	3
Survival	REC 118*(1)	2
Humanities Electives*(3)		3
		<hr/> 17

<b>Third Semester</b>		
Recreation Administration & Finance	REC 103*(1)	3
First Aid	REC 121*(1)	2
Survey of Western Flora	LSC 171	3
Geology of Western U.S.	ESC 110	3
Group Leadership	REC 102*(1)	2
Program Planning & Organization	REC 114*(1)	3
		<hr/> 15

<b>Fourth Semester</b>		
Public Relations & Communigraphics	REC 074*(1)	3
Conservation of Natural Resources	LSC 170	3
Western Vertebrates	LSC 172	3
Co-op Related Class in REC	REC 199	1
Co-op Work in REC	REC 199	2
Electives		1-3
		<hr/> 13-15

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Humanities, Social Science & Math/Science Electives

**Recreation Education  
Associate of Arts Degree  
For Transfer\* (1)**

<b>Required Courses (62-72)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Algebra II	MTH 130	3
Social Science Elective* (2)		3
Science elective* (2)		4
Intro. to Parks & Recreation	REC 101* (3)	3
PE Activity	PED	1
Reading Requirement* (4)		
		<hr/> 17
	<b>Second Semester</b>	
Writing II	WRT 102	3
Science Elective* (2)		4
Social Science Elective* (2)		3
Group Leadership	REC 102* (3)	2
First Aid	REC 121* (3)	2
PE Activity	PED	1
		<hr/> 15
	<b>Third Semester</b>	
Humanities I	HUM 110	4
Social Science Elective* (2)		3
Writing Elective		3
Survival	REC 118* (3)	2
Elective		3
		<hr/> 15
	<b>Fourth Semester</b>	
Humanities II	HUM 111	4
Social Science Elective* (2)		3
Business & Professional		
Communication	SPE 120	3
Recreational Games	REC 119* (3)	2
Elective		3
		<hr/> 15

**Notes:**

- \* (1) Total units needed to graduate -62-64
- \* (2) See General Education Requirements under the Graduation section of this catalog for Humanities, Social Science & Math/Science Electives
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

## Respiratory Therapy

Respiratory Therapy is a health science specialty which deals with the treatment, management, and care of patients with deficiencies and abnormalities associated with respiration and circulation. It is the therapeutic use of medical gases and their administering devices, environmental control, humidity and aerosols, inhaled medications, ventilator management, chest physiotherapy and rehabilitation, airway management, and cardiopulmonary resuscitation. Respiratory Therapy also employs a variety of techniques used in the diagnosis, monitoring, and treatment of patients with cardiopulmonary disorders.

Following the physician's orders, respiratory therapy personnel must work closely with other members of the health care team including physicians, nurses, physical therapists, and other health technologists.

Following completion of this AMA-approved program, the graduate is qualified for immediate employment, may apply for entry into an internship or baccalaureate program, and can apply for registration through the National Board for Respiratory Care (NBRC). The Registered Respiratory Therapist (RRT) usually works in hospitals, clinics, or laboratories. Employment also exists within commercial companies in sales or within contract service agencies. The registered therapist may choose to work strictly as a clinician, or perhaps in other areas such as management, medical research, or education in the hospital, college, or university setting.

This program gives the theory and practice to prepare students for jobs as respiratory therapists. It also prepares for transfer into four year programs.

The program consists of five semesters of professional (RTH) and support courses. Students who are accepted into the program and complete all required courses will be scheduled to enter the hospital portion of their program beginning with the third semester.

Graduates will receive either an associate of applied science degree or an advanced certificate in Respiratory Therapy.

**Requirements for Acceptance into the Associate Degree Curriculum:**

- Receipt of high school and college level (if applicable) transcripts
- Completion of Pima College and Respiratory Therapy program applications
- Completion of one year of high school chemistry or CHM 110 or its equivalent
- Receipt of placement examination results in math and reading comprehension\* (1)
- Personal pre-admission conference with program faculty
- Approval by selections committee

**Requirements for Acceptance into the Advanced Certificate Program:**

- Completion of Pima College and Respiratory Therapy program applications
- Students wishing to obtain the advanced certificate must have completed the following courses or their equivalent:
  - a. Chemistry 111 including lab
  - b. Math 070
  - c. Principles of Human Anatomy and Physiology, LSC 102, including lab
  - d. LSC 117 or 3 cr. hrs. of microbiology
  - e. PSY 100
  - f. WRT 101 and 102 or 150
- Receipt of high school and college transcripts
- Personal pre-admission conference with program faculty
- Approval by selections committee

**Academic Requirements:****Certificate program—49 credit hours of Respiratory Therapy coursework.\* (2)**

Associate Degree program—76-77 credit hours

- Work in residence: minimum of 45 credit hours of major (RTH) courses to be completed in residence
- Correspondence and extension study: as arranged by the program chairman

**Minimum Grade Achievement:**

"C" level

- Applicants must demonstrate reading comprehension at the level of REA 112 or higher for program acceptance.\* (1)

**Respiratory Therapy****Associate of Applied Science Degree  
For Direct Employment\* (2)**

Required Courses (76-77)	First Sem.	Lec	Lab	Cr. Hrs.
Principles of Human Anatomy & Physiology	LSC 102* (3)	3	3	4
Algebra I	MTH 070* (3)	3		3
Fund. Chemistry II	CHM 111* (3)	4	3	5
Writing I	WRT 101	3	0	3
Intro to Respiratory Therapy	RTH 071* (3)	3	3	4
Reading Requirement* (1)				
				19

Second Sem.				
Writing II or Technical Communications	WRT 102			
Communicable Diseases	WRT 154	3	0	3
Pharmacology for Respiratory Therapists	LSC 117* (3)	3	0	3
Basic Therapeutics in Respiratory Care	RTH 073* (3)	3	0	3
Respiratory Physiology	RTH 083* (3)	4	3	5
	RTH 082* (3)	4	0	4
				18

**Third Sem.**

Intro. to Psychology I	PSY 100* (3)	3	0	3
Critical Care Therapeutics	RTH 084* (3)	4	3	5
Diagnostic Studies	RTH 085* (3)	3	1	3
Cardiorespiratory Disorders I	RTH 086* (3)	3	0	3
Clinical Procedures I	RTH 091* (3)	0	16	4
				18

**Fourth Sem.**

Advanced & Specialty Therapeutics	RTH 087* (3)	4	3	5
Cardiorespiratory Disorders II	RTH 089* (3)	3	0	3
Clinical Procedures II	RTH 092* (3)	0	24	6
Humanities Elective* (4)		3-4	0	3-4
				17-18

**Fifth Sem.**

Clinical Procedures III	RTH 093* (3)	0	16	4
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**Notes:**

- \* (1) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (2) Students wishing to obtain an advanced certificate need only to complete the requirements for acceptance into the advanced certificate program and 49 credit hours of respiratory therapy coursework.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

# Sheet Metal

Students are taught under conditions much the same as found in industry in a fully equipped sheet metal lab. They learn to compute size layout and to build duct work for use in air conditioning installations. The students are also taught how to adapt to other areas of the sheet metal industry.

A person who majors in this program may find Cooperative Education offers an ideal way of gaining more actual work experience while attending classes. See a Cooperative Education teacher/coordinator for details.

## Fundamentals of Sheet Metal Fabrication

### Basic Certificate

#### For Direct Employment

Required Courses		Cr. Hrs.
Sheet Metal I-II	SML 110*(1), 120*(1)	8
Sheet Metal Pattern Layout I	SML 130*(1)	3
Technical Math I-II	MTH 110, 120	6
Technical Drafting I	DFT 150	4
Human Relations in Business	MAN 110	3
		24

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Sheet Metal Layout and Fabrication

### Technical Certificate

#### For Direct Employment

Required Courses		Cr. Hrs.
Sheet Metal I-II	SML 110*(1), 120*(1)	8
Architectural Sheet Metal	SML 220*(1)	3
Sheet Metal Pattern Layout I-III	SML 130*(1), 135*(1)	9
Technical Math I-II	MTH 110, 120	6
Technical Drafting I	DFT 150	4
Practical Communications	WRT 150	3
Technical Communications	WRT 154	3
Human Relations in Business	MAN 110	3
Air Conditioning Fundamentals	ACD 101	3
Combination Welding	WLD 110	3
		45

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

## Air Conditioning and Sheet Metal Technology

### Associate of Applied Science Degree

#### For Direct Employment

Required Courses (76)		First Semester	Cr. Hrs.
Air Conditioning Fundamentals		ACD 101*(1)	3
Air Conditioning Phase I		ACD 120*(1)	4
Technical Math I		MTH 110	3
Sheet Metal I		SML 110*(1)	4
Technical Drafting I		DFT 150	4
Reading Requirement*(2)			18
		Second Semester	
Sheet Metal Pattern Layout I		SML 130*(1)	3
Air Conditioning Phase II		ACD 125*(1)	4
Technical Math II		MTH 120	3
Sheet Metal II		SML 120*(1)	4
Practical Communications		WRT 150	3
Combination Welding		WLD 110	3
			20
		Third Semester	
Air Conditioning Phase III		ACD 210*(1)	4
Human Relations in Business		MAN 110	3
Technical Physics I		PHY 101	3
Sheet Metal Pattern Layout II		SML 135*(1)	3
Technical Communications		WRT 154	3
Air Conditioning Estimating I		ACD 250	3
			19
		Fourth Semester	
Air Conditioning Phase IV		ACD 220*(1)	4
Sheet Metal Pattern Layout III		SML 210*(1)	3
Architectural Sheet Metal		SML 220*(1)	3
Air Conditioning Estimating II		ACD 260	3
Technical Physics II		PHY 102	3
Humanities Elective*(3)			3
			19

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(3) See General Education Requirements under the Graduation section of this catalog for Humanities electives.

## Social Services

The Social Services program prepares students for jobs in many community service agencies and lays a foundation for continuing education in the helping professions or related services/business occupations. This skill and knowledge base will qualify the student for entry-level employment in areas that deal with mental health, welfare, child care, education, retardation counseling, outreach, and client advocacy. Agencies which offer jobs are funded by city, county, and state governments, religious groups, private non-profit organizations, and neighborhood groups.

The associate degree graduate is a member of the human services team. There is a strong effort by members of this team to approach social problems on a more human and individual basis on the local and national levels.

The social services skill and knowledge base includes working with clients, handling initial interviews, collecting data, making home visits, making recommendations for staff action, outreach and advocacy, and easing communication channels between the professional worker and the client. In addition the skill/knowledge base includes identification and referral use to community resources, recognizing power bases in the community, application of models for social change, and ability to appropriately utilize agency resources in serving clients.

Social Services offers a variety of study programs to meet the vocational and educational needs of students. There are two degree programs available: a two-year Associate of Applied Science for Direct Employment and a two-year Associate of Arts for Transfer to a university. With either degree program a Substance Abuse Subspecialty is available. Students who plan to transfer to four-year schools can meet the first and second year requirements at Pima Community College but must check the first two-year requirements of the school they plan to attend.

In addition to the Associate Degree program, two Basic Certificates are offered. These certificates are designed as a second major for individuals in other Associate degree programs or skill building for those individuals already employed in industry, business, and human services. While this coursework will not directly qualify individuals for employment it will enhance understanding of Social Services or Substance Abuse. The Basic Certificate in Social Services provides the core skills and understanding of social welfare, agencies, groups, and assisting those in need on a one-to-one basis. The Basic Certificate in Substance Abuse provides the core understanding of drug and alcohol use, abuse, treatment, modalities, and legal aspects of mind-altering substances in society. Those interested in pursuing either certificate are encouraged to explore obtaining the Associate's degree appropriate to his/her interest.

The Substance Abuse Subspecialty within the Social Services program includes units on various treatment modes, including the physiological and psychological effects of drugs and alcohol, current legislation and legal aspects of the drug situation in this country, case management of clients, and other topics important to counselor functions.

The various study programs require that students receive up to eight units of field experience in a social service agency as part of the study process during the second year. The courses should be taken in sequence.

### Social Services Basic Certificate

Required Courses (18)	First Semester	Cr. Hrs.
Introduction to Social Welfare	SSE 133* (1)	3
Casework Methods I	SSE 134* (1)	3
Group Work	SSE 135* (1)	3
Community Organization & Development	SSE 216* (1)	3
Casework Methods II	SSE 234* (1)	3
Group Technique Applications	SSE 237* (1)	3
		18

#### Notes:

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Social Services  
Substance Abuse  
Basic Certificate**

<b>Required Courses (18)</b>		<b>Cr. Hrs.</b>
Introduction to Social Welfare	SSE 133*(1)	3
Casework Methods I	SSE 134*(1)	3
Drugs in American Society	SSE 115*(1)	3
Political and Legal Aspects of Drug Use	SSE 127*(1)	3
Introduction to Alcohol Abuse	SSE 116*(1)	3
Treatment of the Drug Abuser	SSE 218*(1)	3
		<hr/> 18

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

**Social Services  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (61)</b>		<b>Cr. Hrs.</b>
<b>First Semester</b>		
Introduction to Social Welfare	SSE 133*(1)	3
Writing I	WRT 101	3
Introduction to Psychology I	PSY 100	3
Electives* (2)		3
Group Work	SSE 135*(1)	3
Reading Requirement* (3)		
		<hr/> 15
<b>Second Semester</b>		
Casework Methods I* (4)	SSE 134*(1)	3
Writing II	WRT 102	3
Introduction to Sociology	SOC 100	3
Electives* (2)		6
		<hr/> 15
<b>Third Semester</b>		
Casework Methods II* (4)	SSE 234*(1)	3
Group Technique Applications	SSE 237*(1)*(7)	3
Oral Communication	SPE 102	3
Electives* (2)		6
		<hr/> 15

**Fourth Semester**

Community Organization and Development	SSE 216*(1)	3
Electives* (2)		6
Social Service Elective* (6)		3
Co-op Related Class in SSE* (5)	SSE 199	1
Co-op Work in SSE* (5)	SSE 199	3
		<hr/> 16

**Notes:**

\*(1) Core Courses: D grades do not fulfill graduation requirement.

\*(2) To meet General Education requirements using the 24 hours of electives, a student must take 3 hours of humanities and 6 hours of math/science electives. See General Education Requirements under the Graduation section of this catalog.

\*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

\*(4) SSE 134 is prerequisite for SSE 234.

\*(5) SSE 199 (Co-op related class and work) are required for students seeking the Associate of Applied Science Degree for direct employment. It is recommended for transfer students. It is not required or recommended for the basic certificate for direct employment.

\*(6) A course must have the SSE prefix in order to be considered for a Social Services elective.

\*(7) SSE 135 is a prerequisite for SSE 237.

**Social Services  
Associate of Arts Degree  
For Transfer**

<b>Required Courses (61)</b>		<b>Cr. Hrs.</b>
<b>First Semester</b>		
Introduction to Social Welfare	SSE 133*(1)	3
Writing I	WRT 101	3
Introduction to Psychology I	PSY 100	3
Electives* (2)		3
Group Work	SSE 135*(1)	3
Reading Requirement* (3)		
		<hr/> 15
<b>Second Semester</b>		
Casework Methods I* (4)	SSE 134*(1)	3
Writing II	WRT 102	3
Introduction to Sociology	SOC 100	3
Electives* (2)		6
		<hr/> 15



<b>Third Semester</b>		
Group Technique Application	SSE 237*(1)*(7)	3
Oral Communication	SPE 102	3
Casework Methods II*(4)	SSE 234*(1)	3
Electives*(2)		6
		<hr/> 15
<b>Fourth Semester</b>		
Community Organization and Development	SSE 216*(1)	3
Electives*(2)		6
Social Service Elective*(5)		3
Co-op Related in SSE*(6)	SSE 199	1
Co-op Work in SSE*(6)	SSE 199	3
		<hr/> 16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Within the 24 hours of electives, you must take 8 hours of humanities and fine arts, 3 additional hours of social and behavioral sciences and 8 hours of science and/or mathematics. Please talk to an advisor to insure you are taking the correct courses for the university of your choice. (See General Education Requirements under the Graduation section of this catalog for general education requirements.)
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(4) SSE 134 is prerequisite to SSE 234.
- \*(5) A course must have the SSE prefix in order to be considered a Social Services elective.
- \*(6) SSE 199 (Co-op Related Class and Co-op Work in SSE) are required for students seeking the Associate of Applied Science Degree for direct employment. It is recommended for transfer students. It is not required or recommended for the basic certificate for direct employment.
- \*(7) SSE 135 is a prerequisite for SSE 237.

**Social Services (Substance Abuse Subspecialty)  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (73)*(1)</b>		
	<b>First Semester</b>	<b>Cr. Hrs.</b>
Introduction to Social Welfare	SSE 133*(2)	3
Writing I	WRT 101	3
Introduction to Psychology I	PSY 100	3
Electives*(3)		3
Drugs in American Society	SSE 115*(2)	3
Group Work	SSE 135*(2)	3
Reading Requirement*(4)		<hr/> 18
<b>Second Semester</b>		
Casework Methods I*(5)	SSE 134*(2)	3
Writing II	WRT 102	3
Introduction to Sociology	SOC 100	3
Electives*(3)		6
Political and Legal Aspects of Drug Use	SSE 127*(2)	3
		<hr/> 18
<b>Third Semester</b>		
Group Technique Application	SSE 237*(2)*(8)	3
Oral Communication	SPE 102	3
Casework Methods II*(5)	SSE 234*(2)	3
Electives*(3)		6
Treatment of the Drug Abuse	SSE 218*(2)	3
		<hr/> 18
<b>Fourth Semester</b>		
Community Organization and Development	SSE 216*(2)	3
Electives*(3)		6
Social Service Elective*(6)		3
Introduction to Alcohol Abuse	SSE 116*(2)	3
Co-op Related in SSE*(7)	SSE 199	1
Co-op Work in SSE*(7)	SSE 199	3
		<hr/> 29

# Notes:

- \* (1) Some of the Substance Abuse Subspecialty courses and the Social Services electives may be offered only one semester a year.
  - \* (2) Core Courses: D grades do not fulfill graduation requirement.
  - \* (3) To meet General Education requirements use the 24 hours of elective to include: 3 hours of humanities/ fine arts, 6 hours of math/ science.  
See General Education Requirements under the Graduation section of this catalog. Suggested Electives (not necessarily for transfer). There are many courses at Pima that would be helpful to students in Social Services. The following are just a few:
- |                                       |         | <b>Cr. Hrs.</b> |
|---------------------------------------|---------|-----------------|
| Social Gerontology I                  | SOC 166 | 3               |
| Social Gerontology II                 | SOC 167 | 3               |
| Topics in Community Involvement       | SOC 298 | 3               |
| Crisis Intervention—                  |         |                 |
| Theory Techniques                     | SSE 236 | 3               |
| Introduction to Health Science        | HED 136 | 3               |
| History and Culture                   |         |                 |
| of the Mexican-American               | HIS 127 | 3               |
| Introduction to Public Admin.         | PAD 105 | 3               |
| American National Government          |         |                 |
| & Politics                            | POL 110 | 3               |
| American State & Local                |         |                 |
| Government & Politics                 | POL 111 | 3               |
| Introduction to Cultural Anthropology | ANT 110 | 3               |
| Crime & Delinquency                   | AJS 225 | 3               |
| Juvenile Justice Procedures           | AJS 212 | 3               |
| Current U.S. Social Problems          | SOC 101 | 3               |
| Drugs in American Society             | SSE 115 | 3               |
| Introduction to Social Psychology     | PSY 102 | 3               |
| Police Community & Human Relations    | AJS 210 | 3               |
| Intro. to Administration of           |         |                 |
| Justice Systems                       | AJS 101 | 3               |
| Understanding Children                | ECE 116 | 3               |
- \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
  - \* (5) SSE 134 is prerequisite to SSE 234.
  - \* (6) A course must have the SSE prefix in order to be considered a Social Services elective.
  - \* (7) SSE 199 (Co-op Related Class and Co-op Work) are required for students seeking the Associate of Applied Science Degree for direct employment. It is recommended for transfer students. It is not required or recommended for the basic certificate for direct employment.
  - \* (8) SSE 135 is a prerequisite for SSE 237.

## Social Services (Substance Abuse Subspecialty) Associate of Arts Degree For Transfer\* (1)

<b>Required Courses (73)* (2)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Introduction to Social Welfare	SSE 133* (3)	3
Writing I	WRT 101	3
Introduction to Psychology I	PSY 100	3
Electives* (4)		3
Drugs in American Society	SSE 115	3
Group Work	SSE 135* (3)	3
Reading Requirement* (5)		
		18
	<b>Second Semester</b>	
Casework Methods I* (6)	SSE 134* (3)	3
Writing II	WRT 102	3
Introduction to Sociology	SOC 100	3
Electives* (4)		6
Political and Legal Aspects of Drug Use	SSE 127	3
		18
	<b>Third Semester</b>	
Group Technique Applications	SSE 237* (3)* (9)	3
Oral Communication	SPE 102	3
Casework Methods II* (6)	SSE 234* (3)	3
Electives* (4)		6
Treatment of the Drug Abuser	SSE 218	3
		18
	<b>Fourth Semester</b>	
Community Organization and Development	SSE 216* (3)	3
Electives* (4)		6
Social Service Elective* (7)		3
Introduction to		
Alcohol Abuse	SSE 116	3
Co-op Related in SSE* (8)	SSE 199	1
Co-op Work in SSE* (8)	SSE 199	3
		19

# Notes:

- \* (1) University Transfer Programs:  
Students interested in relating their social services studies at Pima Community College to a baccalaureate (four-year) program in Arizona could consider transferring into one of the following:  
U of A—College of Business and Public Administration (with one of the majors in public administration);  
College of Education (with major in rehabilitation);  
College of Liberal Arts (with major in sociology or psychology);  
ASU—School of Social work, Undergraduate Program  
NAU—College of Public and Environmental Service (with one of the majors in sociology).  
In each case, the student considering transfer must check the specific lower division (freshman-sophomore) catalog requirements at the institution being considered, and then identify equivalent courses offered at Pima Community college. An advisor in Social Services can assist students in this.
- \* (2) Some of the Substance Abuse Subspecialty courses and the Social Services electives may be offered only one semester a year.
- \* (3) Core Courses: D grades do not fulfill graduation requirement.
- \* (4) To meet General Education requirements, use the 24 hours of electives to include: 3 more credit hours of social and behavioral science; 8 hours of humanities/ fine arts; 8 hours of math/ science. See General Education Requirements under the Graduation section of this catalog.  
Suggested Electives (not necessarily for transfer)  
There are many courses at Pima that would be helpful to students in Social Services. The following are just a few:

		Cr. Hrs.
Social Gerontology I	SOC 166	3
Social Gerontology II	SOC 167	3
Topics in Community Involvement	SOC 298	3
Group Technique Applications	SSE 237	3
Crisis Intervention—		
Theory Techniques	SSE 236	3
Introduction to Health Science	HED 136	3
History and Culture		
of the Mexican-American	HIS 127	3
Introduction to Public Admin.	PAD 105	3
American National Government		
& Politics	POL 110	3
American State & Local		
Government & Politics	POL 111	3
Introduction to Cultural Anthropology	ANT 110	3
Crime & Delinquency	AJS 225	3
Juvenile Justice Procedures	AJS 212	3
Current U.S. Social Problems	SOC 101	3
Drugs in American Society	SSE 115	3
Introduction to Social Psychology	PSY 102	3
Police Community & Human Relations	AJS 210	3
Intro. to Administration of		
Justice Systems	AJS 101	3
Understanding Children	ECE 116	3
* (5) See General Education Requirements under the Graduation section of this catalog for the reading requirement.		
* (6) SSE 134 is prerequisite to SSE 234.		
* (7) A course must have the SSE prefix in order to be considered a Social Services elective.		
* (8) SSE 199 (Coop related class and work) are required for students seeking the Associate of Applied Science Degree for direct employment. It is recommended for transfer students. It is not required or recommended for the basic certificate for direct employment.		
* (9) SSE 135 is a prerequisite for SSE 237.		

# Solar Technician Program

## Energy and Conservation Basic Certificate For Direct Employment

Required Courses (18-19)		Cr. Hrs.
The Sun and Solar Energy	SET 100*(1)	3
Solar Energy Fundamentals	SET 101*(1)	3
Energy Conservation	SET 201*(1)	3
Solar and Energy Assessment	SET 202*(1)	3
Air Conditioning Fundamentals	ACD 101	3
Elective*(2)		3-4
		18-19

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
 \*(2) Choose the elective from one of the following: SML-110, DFT-112, CSC-100, ETR-112

## Energy and Conservation Installer Option Advanced Certificate For Direct Employment

Required Courses (33)		Cr. Hrs.
The Sun and Solar Energy	SET 100*(1)	3
Solar Energy Fundamentals	SET 101*(1)	3
Solar Design and Installation	SET 102*(1)	4
Solar Maintenance and Repair	SET 103*(1)	4
Uniform Plumbing Code & Application	SET 105*(1)	3
Sheet Metal I	SML 110	4
Air Conditioning Fundamentals	ACD 101	3
Applied Career Mathematics	MAC 103	3
Practical Communications or Writing (based on placement exam)	WRT 150	3
Fund. of Elect-Mech Blueprint	DFT 112	3
		33

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

## Energy And Conservation Solar Technician Option Associate of Applied Science Degree For Direct Employment

Required Courses (67-69)		Cr. Hrs.
The Sun and Solar Energy	SET 100*(1)	3
Solar Energy Fundamentals	SET 101*(1)	3
Solar Design and Installation	SET 102*(1)	4
Solar Maintenance and Repair	SET 103*(1)	4
Uniform Solar, Building & Electrical Code	SET 104*(1)	3
Uniform Plumbing Code & Application	SET 105*(1)	3
Energy Conservation	SET 201*(1)	3
Solar and Energy Assessment	SET 202*(1)	3
Electronics for Technical Careers	ETR 112	3
Fund. of Elect-Mech Blueprint	DFT 112	3
Air Conditioning Fundamentals	ACD 101	3
Applied Career Mathematics	MAC 103	3
Sheet Metal I	SML 110	4
Air Conditioning Phase I	ACD 120	4
Technical Physics	PHY 101	3
Elective*(2)		3-4
Practical Communications or Writing (based on placement exam)	WRT 150	3
Technical Communication or Second Writing course in sequence	WRT 154	3
Mathematics*(3)	MTH	3
Humanities Elective*(3)		3-4
Social Science Elective*(3)		3
Reading Requirement*(4)		
		67-69

### Notes:

- \*(1) Core Courses: D grades do not fulfill graduation requirement.  
 \*(2) Choose the elective from the following: CSC-100, ACD course, SML course, WLD-110.  
 \*(3) See General Education Requirements under the Graduation section of this catalog for Math/ Science, Social Science and Humanities electives.  
 \*(4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.

# Speech

The two-year degree program helps students to prepare for careers that require personal contact with the public: business, law, education, politics, public relations, sales and religion. Those who plan to transfer to a four-year college will find that the program has courses often required of a speech major in the first four semesters of study. Students must check the exact requirements of the college to which they plan to transfer.

The goal of the speech program is to improve skills in public address, interpersonal and group communication, and to increase an understanding of how communication takes place in social and career settings.

## Speech Associate of Arts Degree For Transfer

Suggested Semester Sequence (70)	First Semester	Cr. Hrs.
Introduction to Oral Communication	SPE 102*(1)	3
Forensics	SPE 125*(1)	1
Writing I	WRT 101	3
Foreign Language		4
Science/Math Elective*(2)		4
Elective		3
Reading Requirement*(3)		18
	<b>Second Semester</b>	
Public Speaking	SPE 110*(1)	3
Writing II	WRT 102	3
Foreign Language		4
Science/Math Elective*(2)		4
Introduction to Logic as a suggested elective	PHI 120	3
	<b>Third Semester</b>	
Voice and Diction	SPE 105*(1)	2
Humanities Elective*(4)		3-4
Introduction to Psychology I	PSY 100	3
Foreign Language		4
Introduction to Cultural Anthropology	ANT 110	3
		15-16

	Fourth Semester	
Oral Interpretation of Literature	SPE 136*(1)	3
Humanities Elective*(4)		3-4
Introduction to Psychology II	PSY 101	3
Foreign Language		4
Elective		3
		16-17

### Notes:

- \* (1) Core Courses: D grades do not fulfill graduation requirement.
- \* (2) See General Education Requirements under the Graduation section of this catalog for Science/Math electives.
- \* (3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \* (4) For course elective, consult the catalog of the college to which you plan to transfer.

## Training for Special Education Program

Paraprofessionals in the Training for Special Education programs need a general understanding of special children and of specific training in teaching techniques for special children. The specific objectives for the Training for Special Education programs are to:

1. Train paraprofessionals in the various handicapping conditions.
2. Train paraprofessionals to recognize high risk children and to refer them to appropriate personnel.
3. Train paraprofessionals in assessment and prescriptive diagnostic procedures.
4. Train paraprofessionals to use appropriate teaching techniques.
5. Train paraprofessionals about programs and services of community agencies working with handicapped children.

### Training for Special Education Basic Certificate For Direct Employment

Required Courses (16)	First Semester	Cr. Hrs.
Writing*(1)		3
Teaching Techniques	ECE 126*(2)	3
Behavior Modification Techniques for Special Education I	TSE 132	3
Introduction to Psychology I	PSY 100*(2)	3
American Sign Language I	SLG 101	4
		16

**Notes:**

- \* (1) Minimum writing competency level, WRT 101.  
 \* (2) Core Courses: D grades to not fulfill graduation requirement.

**Training for Special Education  
 Advanced Certificate  
 For Direct Employment**

Persons planning to apply for the advanced certificate must have completed the first semester basic certificate program.

Required Courses (34)	Second Semester	Cr. Hrs.
Understanding Children	ECE 116	3
Special Speech & Language Techniques* (2)	TSE 142* (1)	3
Techniques for Teaching Multiple Handicapped	TSE 130* (1)	3
Practicum	TSE 190* (1)	3
Math/Science Elective* (3)		3
Behavior Modification Techniques for Special Education II	TSE 150	3
		18

**Notes:**

- \* (1) Core Courses: D grades do not fulfill graduation requirement.  
 \* (2) Selected in consultation with a program advisor.  
 \* (3) See General Education Requirements under the Graduation section of this catalog for Math/Science elective.

**Training for Special Education  
 Associate of Applied Science Degree**

The first semester basic certificate and the second semester advanced certificate courses are to be completed prior to entering the associate of applied science degree in Training for Special Education. The third and fourth semesters are as follows:

Required Courses (64-65)	Third Semester	Cr. Hrs.
Communication Skills for Children	ECE 110* (1)	3
Math* (1)		3
Assessment, Instructional & Motivational Techniques	TSE 236* (2)	3
Characteristics of Learning Disabilities I	TSE 238* (2)	3
Humanities Elective* (3)		3-4
Reading Requirement* (4)		
		15-16

**Fourth Semester**

Writing* (5)		3
Characteristics of Learning Disabilities II	TSE 239* (2)	3
Techniques for Teaching Mentally Handicapped	TSE 240* (2)	3
Classroom Communication Skills	TSE 250* (2)	3
Practicum	TSE 290* (2)	3
		15

**Notes:**

- \* (1) Minimum math competency level, MTH 070  
 \* (2) Core Courses: D grades do not fulfill graduation requirement.  
 \* (3) See General Education Requirements under the Graduation section of this catalog for Math/Science and Humanities electives.  
 \* (4) See General Education Requirements under the Graduation section of this catalog for the reading requirement.  
 \* (5) Writing competency level, WRT 102\* (1)  
 \* (6) Selected in consultation with a program advisor.

## Transportation and Traffic Management Program

The diverse field of transportation and traffic management is one of the most dynamic in modern society. Our businesses, our government and our private lives are dependent upon the efficient movement of people and goods.

**Transportation and Traffic Management**

The transportation certificate and degree programs have been designed in cooperation with the major shippers of commodities, representatives of all available carrier modes, the Tucson Transportation Club, Tucson Movers Association, and Delta Nu Alpha Transportation Fraternity. A curriculum has been established to develop skills for new entrants to the transportation industry and to enhance the skills of persons currently involved in transportation.

The program certificate and degree options utilize the career ladder concept. This means that a student may smoothly progress from the basic certificate, requiring 18 credit hours, to the advanced certificate, requiring 18 additional hours and then to the associate of applied science degree which requires an additional 35 hours for a program total of 71 credit hours. Program flexibility allows credit for cooperative education and specialty courses to meet specific educational demands for career advancement and contains a course sequence that provides graduates a suitable background for further study in the transportation industry.



**Transportation and Traffic Management  
Basic Certificate  
For Direct Employment**

<b>Required Courses (18)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Fundamentals of Transportation	TTM 101*(1)	3
Economics of Transportation	TTM 102*(1)	3
Mathematics of Business	BUS 051*(1)	3
Introduction to Computers	CSC 100*(1)	3
Typing I	OED 111	3
Introduction to Business	BUS 100	3
		<hr/> 18

**Transportation and Traffic Management  
Advanced Certificate  
For Direct Employment**

<b>Required Courses (36)</b>	<b>Second Semester</b>	<b>Cr. Hrs.</b>
Intro to Microeconomics	ECO 100	3
Rates and Tariffs	TTM 104*(1)	3
Marketing	BUS 111*(1)	3
Writing I or Practical Communications	WRT 101*(1) WRT 150*(1)	3 3
Elective		3
Principles of Accounting	ACC 101	3
		<hr/> 18

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) MAN 122 or cooperative training.

**Transportation and Traffic Management  
Associate of Applied Science Degree  
For Direct Employment**

The two semesters of the advanced certificate program are the first two semesters of the associate of applied science degree program.

<b>Required Courses (71)</b>	<b>Third Semester</b>	<b>Cr. Hrs.</b>
Basic Techniques of International Trade	IBC 140	3
Business Law I	BUS 200	3
Humanities I	HUM 110	4
Principles of Accounting II	ACC 102	3
Bus. & Prof. Communication	SPE 120	3
Principles of Air Transportation	TTM 201*(1)	3
Reading Requirement* (2)		<hr/> 19
	<b>Fourth Semester</b>	
Humanities II	HUM 111	4
Business Finance	FIN 213	3
Social Science Elective *(3)		3
Principles of Motor Transportation	TTM 202*(1)	3
Physical Distribution Management	TTM 204*(1)	3
		<hr/> 16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for Social Science electives.

## Wastewater Technology

The Wastewater Technology certificate and degree programs offer courses which train students to become skilled wastewater plant operators and maintenance personnel. These operators will be able to work and communicate directly with engineers, chemists, and supervisory personnel. At the present, the State of Arizona, through the Department of Health Services, Bureau of Water Quality Control, certifies operators for jobs through grade level exams. This program covers both the technical and practical areas needed to help prepare the student to take exams at grade levels I, II, III, and IV.

**Wastewater Technology  
Basic Certificate  
For Direct Employment**

Required Courses		Cr. Hrs.
Introduction to Water & Wastewater Technology	WWT 101*(1)	3
Small Treatment Plants	WWT 103*(1)	1
Quality Monitoring	WWT 105*(1)	1
Hydraulics of Water	WWT 107*(1)	2
Technical Mathematics I	MTH 110*(1)	3
Practical Communications	WRT 150	3
Co-op Related Class in WWT	WWT 199*(1)	1
Co-op Work in WWT	WWT 199*(1)	2
		16

**Notes:**

\*(1) Core Course: D grades do not fulfill graduation requirement.

**Wastewater Technology  
Advanced Certificate  
For Direct Employment**

Required Courses		Cr. Hrs.
Basic Certificate Requirements		16
Sewerage System Maintenance	WWT 110*(1)	1
Chemical Control Processes	WWT 112*(1)	1
Wastewater Plant Safety	WWT 114*(1)	1
Intermediate Biological Wastewater Treatment	WWT 115*(1)	3
Applied Chemistry in Water & Wastewater	WWT 203*(1)	2
Technical Communications	WRT 154*(1)	3
Supervision	MAN 122*(1)	3
Co-op Related Class in WWT	WWT 199*(1)	1
Co-op Work in WWT	WWT 199*(1)	2
		33

**Notes:**

\*(1) Core Course: D grades do not fulfill graduation requirement.

**Wastewater Technology  
Associate of Applied Science Degree  
For Direct Employment**

Required Courses (68)	First Semester	Cr. Hrs.
Introduction to Water & Wastewater Technology	WWT 101*(1)	3
Small Treatment Plants	WWT 103*(1)	1
Quality Monitoring	WWT 105*(1)	1
Hydraulics of Water	WWT 107*(1)	2
Technical Mathematics I	MTH 110*(1)	3
Practical Communications	WRT 150	3
Co-op Related Class in WWT	WWT 199*(1)	1
Co-op Work in WWT	WWT 199*(1)	2
Reading Requirement* (2)		16

**Second Semester**

Sewerage System Maintenance	WWT 110*(1)	1
Chemical Control Processes	WWT 112*(1)	1
Wastewater Plant Safety	WWT 114*(1)	1
Intermediate Biological Wastewater Treatment	WWT 115*(1)	3
Technical Communications	WRT 154*(1)	3
Supervision	MAN 122*(1)	3
Co-op Related Class in WWT	WWT 199*(1)	1
Co-op Work in WWT	WWT 199*(1)	2
Humanities Elective* (3)		3
		18

**Third Semester**

Advanced Biological Wastewater Treatment	WWT 201*(1)	3
Applied Chemistry in Water and Wastewater	WWT 203*(1)	2
Wastewater Collection Systems	WWT 209*(1)	3
Applied Chemical & Microbiological Analysis	WWT 215*(1)	3
Technical Mathematics II	MTH 120	3
Co-op Related Class in WWT	WWT 299*(1)	1
Co-op Work in WWT	WWT 299*(1)	2
		17

<b>Fourth Semester</b>		
Wastewater Treatment Processes	WWT 205* (1)	2
Wastewater Hydraulics	WWT 220* (1)	3
Physical-Chemical Sewage Treatment	WWT 225	3
Wastewater Treatment Plant & Collection System Design & Construction	WWT 235* (1)	3
Human Relations in Business and Industry	MAN 110* (1)	3
Co-op Related Class in WWT	WWT 299* (1)	1
Co-op Work in WWT	WWT 299* (1)	2
		<hr/> 17

**Notes:**

- \*(1) Core Course: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(3) See General Education Requirements under the Graduation section of this catalog for humanities electives.

## Welding

This program is conducted in a new building designed for welding instruction. Students are taught in classroom and lab areas like those found in industry.

Welding students may find Cooperative Education a way of gaining work experience while attending classes. See a Cooperative Education teacher-coordinator for details.

### Welding Basic Certificate For Direct Employment

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Oxyacetylene Welding	WLD 150* (1)	4
Arc Welding	WLD 160* (1)	4
Technical Drafting I	DFT 150	4
Mathematics* (2)	MTH	3
Basic Metallurgy	MAC 130	3
Blueprint Reading	WLD 115* (1)	3
		<hr/> 21

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Three credit hours of math with proficiency at MTH 060 level or higher.

### Ornamental Iron Basic Certificate For Direct Employment

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Oxyacetylene Welding	WLD 150* (1)	4
Arc Welding	WLD 160* (1)	4
Introductory Math or higher	DFT 150	3
Blueprint Reading	WLD 115* (1)	3
Ornamental Iron	WLD 170* (1)	4
		<hr/> 18

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.

### Welding Technical Certificate For Direct Employment

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Oxyacetylene Welding	WLD 150* (1)	4
Arc Welding	WLD 160* (1)	4
Pipe Welding	WLD 250* (1)	4
Inert Gas Welding	WLD 260* (1)	4
Technical Drafting I	DFT 150	4
Mathematics* (2)	MTH	6
Basic Metallurgy	MAC 130	3
Physical Metallurgy	MAC 135	3
Blueprint Reading	WLD 115* (1)	3
Practical Communications	WRT 150	3
Human Relations in Business	MAN 110	3
Machine Shop for Technicians I	MAC 110	4
Sheet Metal Pattern Layout I	SML 130	3
		<hr/> 48

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Six credit hours of math with proficiency at MTH 110 level or higher.

**Metal Fabrication  
Technical Certificate  
For Direct Employment**

<b>Required Courses</b>		<b>Cr. Hrs.</b>
Oxyacetylene Welding	WLD 150*(1)	4
Arc Welding	WLD 160*(1)	4
Pipe Welding	WLD 250*(1)	4
Inert Gas Welding	WLD 260*(1)	4
Technical Mathematics I	MTH 110	3
Blueprint Reading	WLD 115*(1)	3
Practical Communications	WRT 150	3
Human Relations in Business	MAN 110	3
Machine Shop for Technicians I	MAC 110	4
Sheet Metal Pattern Layout I	SML 130	3
Ornamental Iron	WLD 170*(1)	4
Metal Fabrication I	WLD 180*(1)	4
Metal Fabrication II	WLD 240*(1)	4
		<hr/> 47

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Six credit hours of math with proficiency at MTH 110 level or higher.

**Welding  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (69)</b>		<b>Cr. Hrs.</b>
Oxyacetylene Welding	WLD 150*(1)	4
Basic Metallurgy	MAC 130	3
Blueprint Reading	WLD 115*(1)	3
Mathematics*(2)	MTH	3
Human Relations in Business	MAN 110	3
Reading Requirement*(3)		
		<hr/> 16

Arc Welding  
Physical Metallurgy  
Technical Drafting I  
Mathematics\*(2)  
Sheet Metal Pattern Layout I

**Second Semester**

WLD 160*(1)	4
MAC 135	3
DFT 150	4
MTH	3
SML 130	3
<hr/>	
	17

**Third Semester**

Pipe Welding	WLD 250*(1)	4
Mathematics*(2)	MTH	3
Machine Shop for Technicians I	MAC 110	4
Sheet Metal Pattern Layout II	SML 135	3
Practical Communications	WRT 150	3
Humanities Elective*(4)		3
		<hr/>
		20

**Fourth Semester**

Inert Gas Welding	WLD 260*(1)	4
Technical Physics I	PHY 101	3
Sheet Metal Pattern Layout III	SML 210	3
Air Conditioning Estimating I	ACD 250	3
Technical Communications	WRT 154	3
		<hr/>
		16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Three credit hours each semester for a total of nine credit hours of math with proficiency at the MTH 120 level or higher.
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement.
- \*(4) See General Education Requirements under the Graduation section of this catalog for humanities electives.

## Youth Care

The program will offer an advanced certificate, an associate of applied science degree, and an associate of arts degree. Within these options enough flexibility will exist for the student to choose from several specific competency areas through which to increase individual skills. The program will offer a balance between core and general education requirements. It will offer a balance between academic instruction and supervised field experience. Students within this program will be closely supervised by faculty advisors.

**Youth Care  
Advanced Certificate  
For Direct Employment**

<b>(33 units required)</b>		<b>Cr. Hrs.</b>
Introduction to Youth Care	YCA 163*(1)	3
Effective Parenthood	ECE 114*(1)	3
Casework Methods II	SSE 234*(1)	3
Group Work	SSE 235*(1)	3
Youth Care Methods	YCA 263*(1)	3
Field Experience*(2)	YCA 290*(1)	3
Reading Requirement*(3)	REA	4
Writing I or Practical Communications	WRT 101 WRT 150	3
Speech Elective		3
First Aid	REC 121	2
Math/Science Elective*(4)		3-4
Total Units Required		33-34

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) Field Experience must be taken in the second semester.
- \*(3) See General Education Requirements under the Graduation section of this catalog for the reading requirement. Four units of electives may be substituted for this requirement if the student can demonstrate competency required for satisfactory course completion of the REA 100 series.
- \*(4) Math/Science elective must be chosen from any MTH course or CHM 110 or LSC 120.

**Youth Care  
Associate of Applied Science Degree  
For Direct Employment**

<b>Required Courses (61-63)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Introduction to Youth Care	YCA 163*(1)	3
Human Development or Child Development	ECE 107*(1) ECE 117*(1)	3
Writing I or Practical Communications	WRT 101 WRT 150	3
Introduction to Psychology	PSY 100	3
Reading Requirement*(2)		12

Writing II or  
Technical Communications  
Effective Parenthood or  
Child Abuse Intervention  
& Prevention  
Casework Methods II  
Field Experience  
Speech Elective  
Youth Care Methods

**Second Semester**

WRT 102	
WRT 154	3
ECE 114*(1)	
AJS 146*(1)	3
SSE 234*(1)	3
YCA 290	3
YCA 263*(1)	3
	18

**Third Semester**

Juvenile Justice Procedures  
Group Work  
Humanities I  
Math/Science Elective\*(3)  
Elective

AJS 212*(1)	3
SSE 235*(1)	3
HUM 110	4
	3-4
	3
	16-17

**Fourth Semester**

Issues in Youth Care  
Co-op Related Class in YCA  
Co-op Work in YCA  
Math/Science Elective\*(3)  
Social Science Elective\*(4)  
Electives\*(5)

YCA 264*(1)	3
YCA 299	1
YCA 299	2
	3-4
	3
	3
	15-16

**Notes:**

- \*(1) Core Courses: D grades do not fulfill graduation requirement.
- \*(2) See General Education Requirements under the Graduation section of this catalog for the reading requirement. Four units of electives may be substituted for this requirement if the student can demonstrate competency required for satisfactory course of the REA 100 series.
- \*(3) Math/Science elective must be chosen from any MTH course or CHM 110 or LSC 120.
- \*(4) Satisfied from Sociology, Psychology or Anthropology.

**\* (5) Recommended Electives:**

Program Planning & Organization	REC 114	3
First Aid	REC 121	2
Food Study	FSN 113	3
Introduction to Behavior Modification	PSY 104	3
Crisis Intervention	SSE 236	3
Drugs in American Society	SSE 115	3
Introduction to Social Welfare	SSE 133	3
Normal Personality I	PSY 103	3
Introduction to Alcohol Abuse	SSE 116	3
Child Abuse Intervention and Protection	AJS 146	3
Understanding Children	ECE 116	3
Conversational Spanish I	SPA 050	4
Crime and Delinquency	AJS 260	3

**Youth Care Rehabilitation  
Transfer Option  
Associate of Arts Degree**

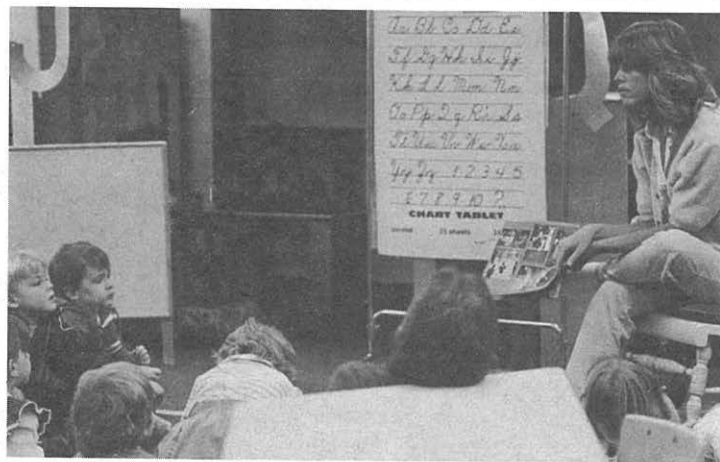
<b>Required Courses (67)* (1)</b>	<b>First Semester</b>	<b>Cr. Hrs.</b>
Writing I	WRT 101	3
Psychology I	PSY 100	3
Introduction to Youth Care	YCA 163* (2)	3
Child Development	ECE 117* (2)	3
Introduction to Speech or Business/Professional Communication	SPE 102 or SPE 120	3
Reading Requirement* (3)		15
	<b>Second Semester</b>	
Writing II	WRT 102	3
Psychology II	PSY 101	3
Math Elective* (4)	MTH	3
YCA Field Experience	YCA 290	3
Casework Methods II	SSE 234* (2)	3
Child Abuse: Intervention & Prevention or Effective Parenthood	AJS 146* (2) or ECE 114* (2)	3
		18

	<b>Third Semester</b>	
Behavior Modification	PSY 104	3
Humanities or option* (5)		4
Human Anatomy and Phys. I* (6)	LSC 120	4
Group Work	SSE 235* (2)	3
Youth Care Methods	YCA 263* (2)	3
		17
	<b>Fourth Semester</b>	
Social Science elective* (7)		3
Humanities or option* (5)		4
Human Anatomy & Phys. II* (6)	LSC 121	4
Issues in Youth Care	YCA 264* (2)	3
Juvenile Justice Procedures	AJS 212* (2)	3
		17

**Notes:**

- \* (1) These courses are required. Their arrangement by semester as specified below is not required. The student should be careful, however, to satisfy any prerequisites before taking a more advanced course. See an advisor.
- \* (2) Core Courses: D grades do not fulfill graduation requirement.
- \* (3) A strong reading background is helpful in this program. Students are required to achieve a minimum score of 12th grade reading proficiency as determined by the reading department in order to receive an AA degree in this program. The student is urged to take the reading test at the beginning of the program and to correct any reading deficiency early in the program.
- \* (4) In order to count as a transferable course, this math elective must be Algebra II, MTH 130, or above. The student is urged to take this course if it was not taken in high school. Algebra II (MTH 130) will be helpful as a background course for upper division statistical methods course.
- \* (5) See General Education Requirements under the Graduation section of this catalog for description of acceptable Humanities options.
- \* (6) Prior to taking LSC 120, 121, students should either have had Chemistry in high school or taken Fundamentals of Chemistry (CHM 110) at either Pima or another college. The student is urged to correct any deficiency in this area during this semester. See General Education Requirements under the Graduation section of this catalog. Students who are transferring to the Rehabilitation program at the U of A must take LSC 120 & LSC 121. Students transferring to other programs may substitute 2 semester (8 units) of another transferrable science.
- \* (7) Require 3 units from Anthropology, Psychology, or Sociology, in addition to PSY 100 and 101. Choose transferable courses. See an advisor.

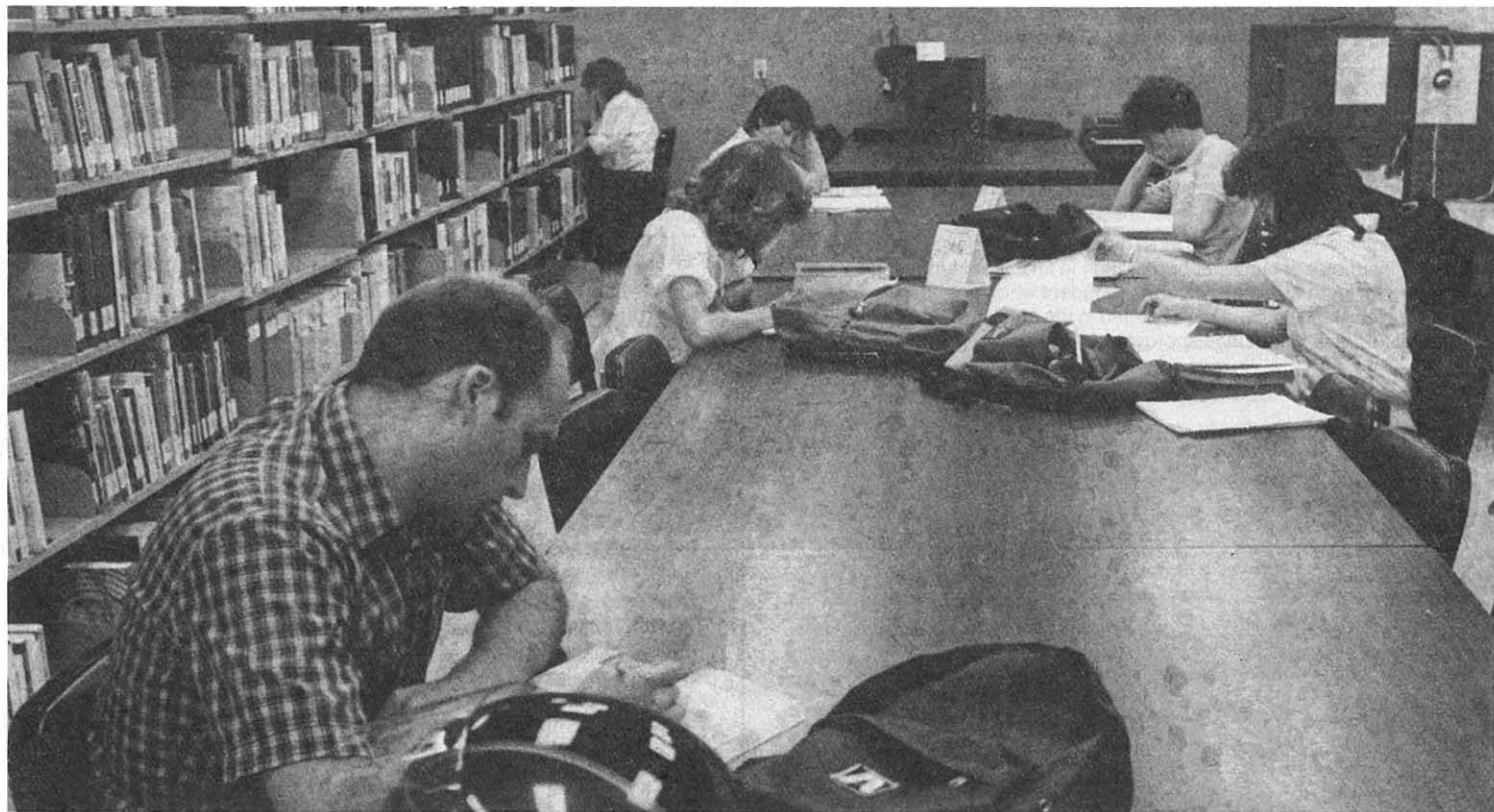






## Courses

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## COURSE NUMBERING SYSTEM AND PREREQUISITES

In general, courses numbered from 001-099 are those unique to the community college and are not anticipated to be transferable.

Courses numbered 100-199 generally have no prerequisite and are considered to be on the freshman level.

Courses numbered 200-299 may have prerequisites and may be considered to be on the sophomore level.

Sample course listing:

ACC	101	Principles of Accounting	3 cr. hrs.	3 periods
course prefix	course number	course title	semester hours of credit	hours of lecture &/or lab per week

When total periods per week consist of lecture and laboratory periods, the number of each is designated in parentheses: 6 periods (3 lec., 3 lab).

A student registering for a course must meet the prerequisites or otherwise satisfy the instructor of his or her preparation to take the course. After notification, an instructor may withdraw a student who does not have the proper prerequisites for the class as stated in the catalog. All prerequisites may be waived with instructor's approval.

## ACCOUNTING

### ACC 050 Practical Accounting Procedures /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

A practical approach to the study of accounting for office, sales and small business personnel. The basic accounting cycle, the use of special journals, procedures for controlling cash, and payroll accounting. Accounting systems and procedures for small businesses are stressed.

### ACC 101 Financial Accounting I /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Introduction to financial accounting. The basic accounting model, the measurement processes involved, and the data classifications and technology which are essential to the interpretation and effective use of financial statements. Emphasis on the communication of financial information.

### ACC 101 Contabilidad Financiera /3 cr. hrs./3 periods (3 lec.)

□ Requisito: Ninguno.

Introducción a la Contabilidad Financiera con énfasis especialmente en la comunicación de la información financiera relevante a los grupos interesados, el sistema básico de Contabilidad, el proceso de evaluación y la clasificación y terminología que son tan esenciales para la interpretación y uso efectivo de los estados financieros.

### ACC 102 Managerial Accounting /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: ACC 101.

Introduction to managerial accounting. Includes full cost, differential and responsibility accounting. Emphasis on criteria and tools for planning, directing day-to-day operations, and controlling.

### ACC 173 Accounting for Government Agencies /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

An overview of accounting practices in government agencies and other large institutions for employees having no accounting background. Includes conventional accounting principles and conventional fund accounting.

### ACC 200 Accounting Practice on the Microcomputer /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: ACC 050 or 101.

Fundamentals of commercial accounting programs used on microcomputers. Includes use of general ledger, accounts receivable, accounts payable and payroll accounting systems. Hands-on experience is emphasized.

### ACC 201 Intermediate Accounting I /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: ACC 102.

Accounting theory and practice applicable to current assets, fixed assets, liabilities, sources and application of funds For those who plan to specialize in accounting.

**ACC 202 Intermediate Accounting II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Accounting theory and practice applicable to corporate net worth accounts, investments, reserves and income. For those who plan to specialize in accounting.

**ACC 203 Cost Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 102.

Interpretation, use and analysis of cost data for management planning, coordination and control. Emphasis on the application of theories and concepts which underlie cost accounting and budgeting.

**ACC 204 Tax Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 101.

Principles of accounting for taxes on personal income and business operations.

**ADMINISTRATION OF JUSTICE****AJS 012 Defensive Tactics /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Theory of rough-and-tumble fighting. Includes fundamentals, precautions, close-in defense and attack, control over an adversary, the armed and unarmed opponent, club maneuvers, prisoner handling and control, and physical fitness.

**AJS 071 Patrol Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 101 or concurrent enrollment or consent of instructor.

Patrol as one of the primary police operations. Includes conspicuous presence as a means of suppressing crime and preserving peace; organization and functions of police patrol; methods, techniques and responsibility in patrol operations; use of special equipment; and application of laws on arrest, search and seizure.

**AJS 101 Introduction to Administration of Justice Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

History and philosophy of administration of justice in America. Includes recapitulation of the system; identifying the various subsystems, role expectations and their interrelationships; theories of crime, punishment and rehabilitation; ethics, education and training for professionalism in the system; and career opportunities related to local criminal justice agencies.

**AJS 102 Peace Officer Certification I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Part A of basic entry level training program for reserve peace officers leading to certification by Arizona Law Enforcement Officers Advisory Council (ALEOAC) Governor's Office as limited reserve officers (LRO). Includes introduction to law enforcement, law and legal matters and police proficiency skills. For admission to program, student must comply with ALEOAC employment standards for peace officers and be sponsored by a law enforcement agency recognized by ALEOAC.

**AJS 103 Peace Officer Certification II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: AJS 102 or concurrent enrollment.

Part B of basic entry level training program for reserve peace officers leading to certification by the Arizona Law Enforcement Officers Advisory Council (ALEOAC) Governor's Office as limited reserve officers (LRO). Includes basic patrol procedures, basic traffic control, basic accident investigation and police proficiency skills. For admission to program, student must comply with ALEOAC employment standards for peace officers and be sponsored by a law enforcement agency recognized by ALEOAC.

**AJS 104 Peace Officer Certification III /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: AJS 103 or concurrent enrollment.

Part C of basic entry level training program for reserve peace officers leading to certification by the Arizona Law Enforcement Officers Advisory Council (ALEOAC) Governor's Office as limited reserve officers (LRO). Includes basic criminal investigation, basic community and police relations, records, reports and police proficiency skills. For admission to program, students must comply with ALEOAC employment standards for peace officers and be sponsored by a law enforcement agency recognized by ALEOAC.

**AJS 105 Survey of Microcomputer Uses /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Overview of microcomputer uses with emphasis on software. Not for programming or engineering majors. Includes use of computers as tools in business, the home, education and the social and natural sciences. Also includes application software evaluation. (Same as CSC 105, ARC 105 and BUS 105.)

**AJS 106 Traffic Safety Functions—Vehicle Code /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Traffic law enforcement and the police officer's role in overseeing the movement of vehicles and pedestrians. Includes fundamentals of accident investigation and reporting, traffic court procedures and public education for traffic safety against a background of Arizona law.

**AJS 109 Criminal Law /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Historical development and philosophy of law and constitutional provisions. Includes definitions, classifications of crime and their application to the system of administration of justice, legal research, study of case law, methodology and concepts of law as a social force.

**AJS 115 Criminal Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 101 or concurrent enrollment or consent of instructor.

Overview of the system used in the U.S. to administer criminal cases. Includes implications for civil rights, the police process, the prosecuting attorney, the defense attorney, courts, grand jury, trial jury, coroner-medical examiner, judicial process and the trial and its aftermath.

**AJS 123 Corrections as a System /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of corrections as a system and as a part of the justice process. Includes history, theories, systems of operations in corrections, analysis of the objectives of correctional administration, relevant law and public relations.

**AJS 146 Child Abuse Intervention and Protection /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the principles and methods of dealing with child abuse. Includes the many definitions and forms of child abuse, recognition of its symptoms, family dysfunctions, the interaction with and counseling of the parental abuser, and the utilization of available community resources.

**AJS 152 Beginning Marksmanship /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Introduction to firearms. Includes moral and legal aspects of firearms, safety and range practice. (Same as REC 152.)

**AJS 163 Introduction to Youth Care /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the rights, roles and responsibilities of a youth care specialist in the supervision and treatment of children in 24-hour care outside the home, e.g., in detention, residential facilities for youth and foster care. Includes the concept of youth care work, understanding the child's behavior, communication skills, problem solving, effective discipline, interviewing and counseling skills, and structuring recreation and creative programs. (Same as YCA 163.)

**AJS 201 Rules of Evidence /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 109 or concurrent enrollment or consent of instructor. The origin, development, philosophy and constitutional basis of evidence. Includes constitutional and procedural considerations affecting arrest, search and seizure; degrees of evidence and rules governing admissibility; judicial decisions interpreting individual rights; and case studies.

**AJS 204 Criminal Investigation and Report Preparation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 109 or concurrent enrollment or consent of instructor. Fundamentals of modern criminal investigation. Includes procedures and skills in search and investigation, conduct at the crime scene, collection and preservation of evidence, developing sources of information, preparation of cases for court prosecution, and report-writing requirements for administration and court use.

**AJS 208 Police Administration /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 101 or consent of instructor.

Introduction to the principles of police organization, administration and service. All phases of police administration are discussed, including recruitment, training, promotion, complaints, records and communications.

**AJS 210 Police Community and Human Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 101 or concurrent enrollment.

Survey of the police officer's role in attaining and maintaining public support. Includes recognition and understanding of community problems, community action programs, methods of coping with crisis situations, ethnic and minority cultures, various environments, and crime prevention and police operations in relation to these cultures and environments.

**AJS 212 Juvenile Justice Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Analysis of the philosophy, organization, functions and jurisdiction of juvenile agencies and courts. Includes Arizona juvenile statutes, detention, court procedures and case disposition; custody and treatment of the offender; and crime prevention methods and reporting procedures applicable to juvenile offenders.

**AJS 214 Firearms /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisites: Student must be a law enforcement major and have previous firearms training.

Principles and methods of using firearms. Includes moral aspects, legal provisions, safety precautions, restrictions, combat procedures for police, and target analysis and range drill procedures. Taught on the range. Students must furnish their own pistols and ammunition.



**AJS 218 Crime Scene Technology I—Finger printing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 204 or consent of instructor.

Survey of finger printing. Includes technical terms, procedures for taking fingerprints, pattern interpretations, classification of fingerprints, and searching and filing procedures.

**AJS 220 Organized Crime Investigation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Comprehensive historical and social survey of organized crime. Includes its origin, development, modus operandi and effect upon society.

**AJS 225 Crime and Delinquency /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the nature, extent and control of crime and delinquency. Includes comparison of theoretical and practical approaches to causation, prevention, punishment and treatment; and current problems. (PSY 100 or SOC 100 recommended.)

**AJS 240 Detention Supervision Methods /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Second-year major in AJS or corrections, and AJS 101 or concurrent enrollment.

Examination of institutional procedures and staff member functions. Includes reception, classification, program assignment, security and release procedures. Emphasis on the role of the correctional officer.

**AJS 245 Treatment of the Offender: Institutional and Field /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 101 or concurrent enrollment or consent of instructor.

Survey of correctional services and treatment. Includes philosophy, history, correctional models by type and function, institutional treatment, parole operations, community based treatment and special treatment programs.

**AJS 273 Crime Scene Technology II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 218 or consent of instructor.

Advanced crime scene procedures. Includes scientific identification of evidence, crime scene recording, collecting and preserving evidence and police photography.

**AJS 276 Criminalistics—Evidence and the Laboratory /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 204 or consent of instructor.

Examination of the criminalistics field. Includes documents, ballistics, polygraphic techniques and comparative micrography. Concentration on the crime lab.

**AJS 277 Advanced Criminalistics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AJS 276 or consent of instructor.

Examination of firearms identification, pathology, toxicology, related matters and courtroom procedures.

**AJS 290 Administration of Justice Field Experience /3 cr. hrs./16 periods (1 lec., 15 lab)**

□ Prerequisite: Consent of instructor.

Participation in community administration of justice agencies to provide experience in the practical application of classroom instruction. Biweekly seminars are conducted to discuss theory and practice pertinent to the agency experience. May be taken two times for a maximum of six credit hours.

**AJS 299 Co-op Related Class in AJS /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in AJS 299 Co-op Work in AJS.

Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude and performance. May be taken two times for a maximum of two credit hours.

**AJS 299 Co-op Work in AJS /1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisite: Concurrent enrollment in AJS 299 Co-op Related Class in AJS or consent of instructor.

A supervised cooperative work program for second-year students in an occupation related to administration of justice. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 6 credit hours.

**ADVERTISING ART**

**ADA 101 Advertising Art I /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Basic layout procedures for the various advertising media, including direct mail, newspaper ads, magazine ads, billboards, brochures, stationery and television. Also includes a general survey of advertising art, its history, objectives, and career opportunities.

**ADA 103 Advertising Drawing I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Basic essentials of light, shading, proportion, form and perspective. Emphasis on portraying products in a realistic manner using markers.

**ADA 105 Airbrush Techniques /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Use and application of the air brush in the advertising art field.

**ADA 106 Advertising Drawing II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 103.

Application of basic drawing techniques to a variety of compositions. Includes principles of head drawing.

**ADA 110 Advertising Design I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Layout for various advertising media using size, contrast, organization and color. Emphasis on type indicating skills and the development of ideas using thumb nails, roughs and comprehensives.

**ADA 111 Production Techniques and Processes I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MTH 060 or concurrent enrollment.

Basic skills in preparing art work for printing. Inking, paste-up, type specifications, copy fitting, photo-sizing, photo-cropping, photostat making and keyline and overlay cutting for color areas.

**ADA 120 Advertising Design II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ADA 103 and 110.

Advanced layout techniques, combining product images with typography for various advertising media. Continued practice in type selection and the use of size, contrast, organization and color.

**ADA 199 Co-op Related Class in ADA /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: ADA 110, 120 and 210, and concurrent enrollment in ADA 199 Co-op Work in ADA.

Introduction to Cooperative Education (instruction which provides for success in securing and retaining a job related to advertising art). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**ADA 199 Co-op Work in ADA /2 cr. hrs./10 periods (10 lab)**

□ Prerequisites: ADA 110, 120 and 210, and concurrent enrollment in ADA 199 Co-op Related Class in ADA.

Supervised cooperative work program for first-year students in an occupation related to advertising art. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of four credit hours.

**ADA 205 Advertising Drawing III /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 106.

Advanced techniques for rendering proportions, light, shading, form and anatomy of the human figure.

**ADA 207 Advertising Drawing IV /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 205.

Application of advanced techniques to compositions featuring a variety of products. Emphasis on use of colored markers in preparing layouts.

**ADA 210 Advertising Design III /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 120.

Application of advanced techniques for the design and layout of ads, brochures, billboards, stationery, logos, direct mail, menus, posters and television commercials.

**ADA 211 Production Techniques and Processes II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ADA 111, and MTH 060 or an understanding of fractions and decimals as determined by instructor.

Continued practice and development of production skills, including two-color printing techniques. Practice in designing and producing brochures, posters, flyers, and camera-ready and keylined ads.

**ADA 212 Production Techniques and Processes III /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 211.

Continued practice and development of production skills including three- and four-color printing techniques.

**ADA 220 Advertising Design IV /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 210.

Continued practice and skill development in layout and design. Emphasis on completing a portfolio.

**ADA 220 Advertising Design IV /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ADA 210.

Continued practice and skill development in layout and design. Emphasis on completing a portfolio.

**AIR CONDITIONING****ACD 101 Principles and Psychrometrics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to air conditioning and heating. Includes principles of operation, definition of terms, and use of charts and tables pertaining to the study and calculation of air properties and controlled changes.

**ACD 120 Electricity, Circuitry and Controls /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: MTH 110, and ACD 101 or concurrent enrollment in ACD 101.

Electricity for air conditioning and heating. Includes basic electrical theory, single-phase and three-phase circuits, reading electrical schematics, testing and hookup of high voltage components and low voltage control components.

**ACD 125 Trouble-shooting and Service /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: ACD 120.

Mechanical skills needed to trouble-shoot and repair air conditioning and heating equipment. Includes hands-on practice in working with tubing, charging and dehydration of air conditioning units, measurement of temperatures and velocities of air flow, measurement of refrigerant charges, and analysis of air conditions and heating system capacities.

**ACD 199 Co-op Related Class in ACD /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in ACD 199 Co-op Work in ACD.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to air conditioning). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**ACD 199 Co-op Work in ACD /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in ACD 199 Co-op Related Class in ACD.

A supervised cooperative work program for first-year students in an occupation related to air conditioning. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**ACD 210 Commercial Refrigeration /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: ACD 125.

Advanced electrical theory for commercial refrigeration systems. Includes measurement of resistance, amperage, and voltage; calculation of horsepower and efficiencies; schematic reading; trouble-shooting; repairs; and operation of heat pumps and low temperature commercial equipment.

**ACD 220 Load Calculation and Air Distribution /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: ACD 210.

Heating and cooling requirement estimating, using textbook techniques and manual ASHRAE forms. Includes air flow requirements, duct sizing and design, and air distribution pressure balancing. **ACD 250 Estimating I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 110.

Basic principles of computing material costs from actual construction drawings through use of handbooks and formulas. Pricing of all items associated with sheet metal products and air conditioning units. FL

**ACD 299 Co-op Related Class in ACD /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: ACD 199 and concurrent enrollment in ACD 299 Co-op Work in ACD.

Continuation of ACD 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**ACD 299 Co-op Work in ACD /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: ACD 199 and concurrent enrollment in ACD 299 Co-op Related Class in ACD. Continuation of ACD 199. A supervised cooperative work program for second-year students in an occupation related to air conditioning. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**AIRCRAFT MANUFACTURING TECHNOLOGY**

**AMT 100 Aircraft Harness Assembly /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Theory and application of various bonding techniques and the production of wire bundles and their connectors. Includes engineering standards for soldering and mechanical bonding of wires, and electrical connectors utilized in the manufacturing of high performance aircraft. A laboratory develops students' skills to the standards established by the engineering department.

**AMT 110 Aircraft Sheet Metal I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Layout and fabrication of metal items for aircraft manufacturing. Includes use of hand and machine tools.

**AMT 120 Aviation Basic Electricity /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Direct and alternating current electrical systems in aircraft. Includes electron theory, common circuit design, the use of Ohm's law in understanding aircraft schematics and the basic techniques of trouble-shooting aircraft DC electrical systems.

**AMT 150 Aircraft Electrical Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: AMT 120.

Aircraft power generation, generation controls and power distribution systems. Includes trouble-shooting of aircraft systems.

**AMT 170 Basic Avionics Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Operation of currently utilized avionics equipment. Includes communications and navigation equipment, such as VHF, HF, SECAL, VOR, ADF, DME, ILS, radar, flight directors, VLF Omega, glide slope, transponders, marker beacons, and area navigation and autopilot systems.

**ANTHROPOLOGY**

**ANT 100 Human Origins and Prehistory /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of physical anthropology and archaeology with emphasis on the emergence of the human species from its origins based on our understanding of the archaeological and fossil record. (Same as ARC 100.)

**ANT 110 Introduction to Cultural Anthropology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of cultural anthropology and linguistics and introduction to the comparative study of cultures.

**ANT 121 Contemporary Indian Groups of the Southwest /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of contemporary Indian cultures of the Southwest with emphasis on Arizona.

**ANT 122 Papago History and Culture /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Where have the Papago people been, who are they, where are they going? In answering these questions, the class examines the history and culture of the Papago. (Same as HIS 122.)

**ANT 123 The Anthropology of Music and Dance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to music and dance in their cultural context. Emphasis on the American Southwest.

**ANT 127 History and Culture of the Mexican-American in the Southwest /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Who is the Mexican-American? What is his cultural heritage and what has happened to it in the United State? (Same as HIS 127.)

**ANT 128 The Mexican-American in Transition /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

What is it like to be a Mexican-American in today's society?

Problems resulting from differences in cultures, values and needs are examined through class discussion and participation in related activities in the community.

**ANT 135 Pre-Columbian Art /3 cr. hrs./3 periods (3 lec.)**

**4A survey of the art of Pre-Columbian Mexico. Students will learn to recognize major art styles and important sites. Course includes a survey of the art of the same time period in Southeastern and Southwestern America, Central America, and Peru. (Same as ART 135 and HIS 135.)**

**ANT 136 Masks /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of traditional masks and sculpture of Africa, North and South America, Asia and Oceania. Major emphasis is on style, function and meaning of the masks of the Northwest Coast Indians and of the indigenous peoples of Africa and the South Pacific. (Same as ART 136 and HIS 136.)

**ANT 141 Introduction to Southwestern Prehistory /3 cr. hrs./5 periods(2 lec., 3 lab)**

□ Prerequisite: None.

Prehistory of the American Southwest from its earliest inhabitants to European contact based on our understanding of the archaeological record. Field trips are included. (Same as ARC 141.)

**ANT 146 Culture and Personality of the Mexican-American /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A review of how the culture and personality of the Mexican-American differs from others and what it means to the individual.

**ANT 148 History of Indians of North America /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Origin and distribution of native populations of North America and the historical development and interrelations of cultures. (Same as HIS 148.)

**ANT 150 Afro-American History and Peoples /3 cr. hrs./3 periods (3lec.)**

□ Prerequisite: None.

History of Black people in American society. Their past, present and future are explored. Emphasis on their status and special problems as a minority group. (Same as HIS 150.)

**ANT 160 History and Peoples of Latin America I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The history of Latin America from the pre-Columbian period to the present with emphasis on the evolution of nationalism through the struggles of economic, cultural, political and social freedoms.  
(Same as HIS 160.)

**ANT 170 History and Peoples of Africa /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of the political and cultural history of Africa south of the Sahara  
(Same as HIS 170.)

**ANT 200 Biological Anthropology /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

The interaction of human biology and culture as found among various peoples and their environment. (Same as LSC 200.)

**ANT 210 Cultural Anthropology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ANT 110.

In-depth exploration of theories and methods used in studying and comparing cultures. Selected topics are pursued.

**ANT 215 The Nature of Language /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the basic concepts of linguistics and their implications for the study of culture and society.

**ANT 215 Esencia del lenguaje /3 cr. hrs./3 periods (3 lec.)**

□ Requisito: Ninguno.

Introducción a los conceptos básicos de la lingüística y sus implicación espasa el estudio de la cultura y la sociedad.

**ANT 225 Archaeology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the concepts and methods which archaeologists use to reconstruct human prehistory. (Same as ARC 225.)

**ANT 250 Archaeology Laboratory /3 cr. hrs./7 periods (1 lec., 6 lab)**

□ Prerequisite: None.

Laboratory experience in the curation, processing and analysis of prehistoric and historic artifacts recovered from archaeological sites.  
(Same as ARC 250.)

**ANT 275 Archaeological Field Methods /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: None.

Introduction to the techniques of archaeological mapping, excavation and recording. Includes field experience in southern Arizona. (Same as ARC 275.)

**ANT 276 Archaeological Exploration I /3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: ANT 100 or 141, and ANT 275.

Techniques and methods for recognizing, locating and recording archaeological sites. Includes fieldwork in southern Arizona. (Same as ARC 276.)

**ANT 277 Advanced Archaeological Excavation /3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: ANT 100 or 141, and ANT 275 and consent of instructor. Scientific excavation of an archaeological site. Excavation procedures, specialized equipment, recording of information and conservation of cultural resources. Includes field work in southern Arizona. (Same as ARC 277.)

**ANT 278 Archaeological Exploration II /3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: ANT 276 and consent of instructor.

Continuation of ANT 276 with emphasis on use of field instruments and selected field projects. (Same as ARC 278.)

**ANT 280 Field Projects /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: Consent of instructor.

Participation in a field project in one of the subfields of anthropology. (Same as ARC 280.)

**ANT 296 Individual Studies /1-3 cr. hrs./1-3 periods (1-3 lec)**

□ Prerequisite: Consent of instructor.

Students independently continue their development in anthropology with the help of a faculty member. May be taken three times for a maximum of nine credit hours. (Same as ARC 296.)

**ARCHAEOLOGY**

**ARC 075 Field Archaeology /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: None.

Participation in archaeological field activities. A nontechnical course with an emphasis on local field work.

**ARC 100 Human Origins and Prehistory /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of physical anthropology and archaeology with emphasis on the emergence of the human species from its origins based on our understanding of the archaeological and fossil record. (Same as ANT 100.)



**ARC 105 Survey of Microcomputer Uses /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Overview of microcomputer uses with emphasis on software. Not for programming or engineering majors. Includes use of computers as tools in business, the home, education and the social and natural sciences. Also includes application software evaluation. (Same as AJS 105, BUS 105 and CSC 105.)

**ARC 141 Introduction to Southwestern Prehistory /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Prehistory of the American Southwest from its earliest inhabitants to European contact based on our understanding of the archaeological record. Field trips are included. (Same as ANT 141).

**ARC 225 Archaeology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the concepts and methods which archaeologists use to reconstruct human prehistory. (Same as ANT 225.)

**ARC 250 Archaeology Laboratory /3 cr. hrs./7 periods (1 lec., 6 lab)**

□ Prerequisite: None.

Laboratory experience in the curation, processing and analysis of prehistoric and historic artifacts recovered from archaeological sites. (Same as ANT 250.)

**ARC 275 Archaeological Field Methods /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: None.

Introduction to the techniques of archaeological mapping, excavation and recording. Includes field experience in southern Arizona. (Same as ANT 275.)

**ARC 276 Archaeological Exploration I /3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: ARC 100 or 141 and ARC 275.

Techniques and methods for recognizing, locating and recording archaeological sites. Includes fieldwork in southern Arizona. (Same as ANT 276.)

**ARC 277 Advanced Archaeological Excavation /3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: ARC 100 or 141, and ARC 275 and consent of instructor. Scientific excavation of an archaeological site. Excavation procedures, specialized equipment, recording of information and conservation of cultural resources. Includes fieldwork in southern Arizona. (Same as ANT 277.)

**ARC 278 Archaeological Exploration II /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: ARC 276 and consent of instructor.

Continuation of ARC 276 with emphasis on use of field instruments and selected field projects (Same as ANT 278.)

**ARC 280 Field Projects /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: Consent of instructor.

Participation in a field project in one of the subfields of anthropology. (Same as ANT 280.)

**ARC 296 Individual Studies /1-3 cr. hrs./1-3 periods (1-3 lab)**

□ Prerequisite: Consent of instructor.

Students independently continue their development in archaeology with the help of a faculty member. May be taken three times for a maximum of nine credit hours. (Same as ANT 296.)

**ART**

**ART 100 Basic Design /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Introduction to the elements of visual design, such as line, shape, value, texture, volume and color. Includes skill development in organizing these elements and applying the principles of harmony, variety, balance and tension.

**ART 110 Drawing I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Introduction to drawing. Includes use of graphic media: pencil, charcoal and ink on paper. Emphasis on elements of design as applied to representational drawing. The student will have a set of finished drawings at the conclusion of the semester.

**ART 115 Color and Design /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Extension of design principles introduced in ART 100. Includes analyzing color and creating the illusions of dimension, light and transparency with color. Projects use a variety of media. Emphasis on color theory and relationships.

**ART 120 Introduction to Sculpture /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Extension of ART 100 into sculptural concepts and media. Includes study of volume, mass, and space relationships through modeling, casting, carving and construction.

**ART 130 Art and Culture I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Slide and lecture discussions of art forms of western civilization from prehistoric art through Gothic art. May be taken as a humanities elective.



**ART 131 Art and Culture II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Slide and lecture discussions of art forms from the Renaissance to the beginning of the 19th century. May be taken as a humanities elective.

**ART 132 Modern Art Survey /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Slide and lecture discussions of modern art forms as seen in the art developments of the latter 19th century and the 20th century. May be taken as a humanities elective.

**ART 135 Pre-Columbian Art /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of the art of pre-Columbian Mexico. Students will learn to recognize major art styles and important sites. Course includes a survey of the art of the same time period in Southeastern and Southwestern America, Central America, and Peru. (Same as ANT 135 and HIS 135.)

**ART 136 Masks /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of traditional masks and sculpture of Africa, North and South America, Asia and Oceania. Major emphasis is on style, function and meaning of the masks of the Northwest Coast Indians and of the indigenous peoples of Africa and the South Pacific. (Same as ANT 136 and HIS 136.)

**ART 140 Photography I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Introduction to black and white photography as an art form with a general inquiry into basic techniques of making silver images. Includes developing, printing, enlarging, aesthetic language of photography, perspective and photography as an art form. Individual and group work.

**ART 141 Photography II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 140.

Extension of ART 140. Includes use of the medium as an art form with optimum creativity, technical skill and visual finesse. Also includes portfolio and book production, field trips and research.

**ART 143 Commercial Photography /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 141.FL

Introduction to commercial fields in photography and principles and practice of photography as a business. Includes studio management, laboratory techniques, pricing, record keeping, advertising, portraiture, weddings, and industrial and aerial work.

**ART 160 Ceramics I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Introduction to ceramics, including wheel- and hand-built forms and basics of glazing.

**ART 170 Metalwork I: Jewelry /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Exploration of the basic techniques and design approaches used in the fabrication of jewelry and other metalwork. Includes construction, casting, forming, surface embellishment and other techniques.

**ART 179 Weaving I: Back-strap and Tapestry Looms /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Introduction to weaving as an art form. Students build and use their own looms. Emphasis on a variety of tapestry and texture weaves used to create fiber art.

**ART 180 Weaving I: Four-Harness Loom /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Weaving on a four-harness loom. Projects involve color, texture, pattern and the use of tabby, twill, tubular, textural and tapestry weaves in the creation of clothing and fiber art.

**ART 181 Fiber Structures /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Exploration of fiber as an art medium. Includes skill development in such techniques as paper making, basketry, crocheting, plaiting and macrame. Projects will involve sculptural form as well as two-dimensional design.

**ART 190 Leatherwork /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Examination of the various properties of leathers and skill development in the use of basic leather working tools. Projects are selected to meet individual interests and skill.

**ART 210 Drawing II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 110.

Continuation of ART 110. Emphasis on further development of imaginative and technical skills in the use of space and graphic design. Students complete the course with a portfolio of finished drawings.

**ART 211 Commercial Graphics /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Training in principles and techniques of commercial graphics. Includes composition, layout, typography, color selection and design of logos, catalogs and brochures. Emphasis on preparation for the advertising and graphics industries. (Same as DES 211.)

**ART 212 Printmaking I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Printmaking processes such as silk-screen, etching, block printing and monotypes. Students may choose to work in areas of particular interest.

**ART 213 Life Drawing /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100. (ART 110 is recommended.)

Drawing the human figure using the two-dimension concept as a graphic vehicle of expression. Students have opportunities to work in various media. Drawing proficiency is stressed.

**ART 214 Printmaking II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ART 100 and 212.

Continuation of ART 212. Advanced problems in intaglio, etching, monotypes, screen and block printing processes.

**ART 215 Painting I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 110. (ART 115 is recommended.)

Studio course in beginning oil painting. Introduction to still-life object painting, landscape and figure studies. Palette-mixing technique and stretcher bar building are also introduced.

**ART 216 Silk-screen /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 100.

Introduction to screen printing. Includes screen construction, the use of cut film, photo film, stencil making techniques, printing techniques and one-color and multicolor process work.

**ART 217 Painting II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ART 110, 115 and 215.

Continuation of ART 215. Further principles and practice of painting techniques. Includes mixed media, the art market and contemporary painting methods.

**ART 220 Sculpture II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 120.

Exploration of various methods and materials used in sculpture. Methods may include modeling, casting, metal forming, construction techniques and carving. Materials may include plaster, clay, cement, bronze, aluminum, steel, copper, wood, plastics, wax and mixed media.

**ART 230 History of Photography /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Intensive study of the history of photography as an art form and its relationship to the other arts and to society. Includes development of the technical aspects of photography, styles and movements from 1839 to contemporary schools, and important photographers.

**ART 231 History, Philosophy and Psychology of Art and Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Movements, periods, ideas and problems in art and design. Specific subjects are offered each semester in separate sections or for individual study, according to need.

**ART 260 Ceramics II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 160.

Continuation of ART 160. Further development in wheel- and hand-built forms, glazes and color blends.

**ART 261 Ceramics III /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ART 160 and 260.

Advanced study for students who demonstrate mastery of ceramics skills and principles taught in ART 160 and 260. Includes clay composition, glaze calculations and advanced design problems.

**ART 270 Metalwork II: Jewelry /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ART 100 and 170.

Jewelry design and production techniques. Includes casting, construction, cold forging and stone setting in precious and nonprecious metals.

**ART 271 Metalwork II: Smithing and Casting /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ART 170.

Design and production of aesthetic and functional objects. Includes hot and cold forging, raising, forming and casting using various metals such as copper, silver, bronze, steel, iron and aluminum.

**ART FOR PERSONAL DEVELOPMENT****APD 008-070 Art for Personal Development**

A series of non-transfer workshop and lecture courses designed to develop skill in or knowledge of various media.

**APD 008 Artesanía y tejidos /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Estudio del macramé, trabajos de punto, crochete, y borbado de tapisería. También se incluyen trabajos artísticos de masa.

**APD 009 Introduction to Freehand Sketching /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Beginning freehand sketching for interested persons with little or no previous art experience. Not intended for art majors. Not transferable.

**APD 010 Drawing /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in drawing. Not transferable.

**APD 011 Designing Home Interiors /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None

Introduction to the basic principles of interior design. Emphasis on the planning of residential interiors that will satisfy individual and family needs, values and life styles. Consumer education regarding the selection of home furnishing materials is also stressed.

**APD 012 Photography /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in photography. Not transferable.

**APD 013 Advanced Photography /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 012.

Advanced techniques for still and portrait photography. Includes advanced darkroom techniques.

**APD 014 Painting: Oil, Acrylics and Mixed Media /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Workshop designed to develop skill in oil, acrylics and mixed media painting. Not transferable.

**APD 015 Applied Sketching Techniques /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Elements of freehand drawing and advanced techniques and concepts. Includes review of fundamentals. Not intended for art majors. Not transferable.

**APD 016 Advanced Painting: Oil, Acrylics and Mixed Media /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 014

Continuation of APD 014. A studio course designed to deal with techniques and processes in painting with various media.

**APD 018 Calligraphy I /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

The classic art of lettering and the illumination and decoration of manuscripts.

**APD 019 Calligraphy II /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 018

Continuation of APD 018. Advanced techniques of the classic art of lettering and the illumination and decoration of manuscripts.

**APD 020 Ceramics /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Workshop designed to develop skill in ceramics. Not transferable.

**APD 021 Portrait and Figure Painting /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Comprehensive introduction to the fundamentals of portrait and figure painting in a choice of media. Live models, photos and sketches will be used.

**APD 022 Weaving I /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Workshop designed to develop skill in weaving. Not transferable.

**APD 023 Weaving II /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 022

On- and off-loom weaving techniques. Includes man-made and natural fibers, their characteristics and working properties.

**APD 024 Sculpture /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Workshop designed to develop skill in sculpture. Not transferable.

**APD 025 Advanced Portrait and Figure Painting /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 021.

Continuation of APD 021. The human figure and portrait painting. Drawing and painting techniques in the medium of the student's choice.

**APD 026 Silversmithing /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in silversmithing. Not transferable.

**APD 028 Stone Carving /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Methods and techniques of designing and carving in stone.

**APD 030 Introduction to Indian Arts and Crafts /2 cr.hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Examination of the evolution of American Indian art from prehistoric to modern times. Designed primarily for sales persons and serious amateur collectors. Includes the place of art in contemporary cultures, appreciation of Indian art objects and appraisal techniques.

**APD 032 Needlepoint /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None

Development of skills in needlepoint stitching and transferring designs to canvas for stitching. Includes a variety of needlepoint stitches, materials and ways to finish a project.

**APD 033 Weaving III: Fiber Art /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 023.

Continuation of APD 023. Development of skills and techniques in such fiber arts as three-dimensional weaving, sculptural form, felting, crocheting and advanced basketry, all using principles of color and design.

**APD 034 Quilting /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Principles and techniques of quilting, piecing, applique and embroidery. These techniques will be used to make a sample quilt top.

**APD 035 Beginning Illustration /3 cr.hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Basic principles and methods of illustration. Includes a wide range of subject matter and media (pencil, colored pencil, pen and ink, watercolor, designers' gouache, markers, acrylics and oils). Emphasis on composition and technique. May be repeated once for credit.

**APD 040 Introduction to Sculpture /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in sculpture. Not transferable.

**APD 040 Introducción a la escultura /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Es un seminario diseñado para desarrollar la habilidad en la escultura. No es transferible.

**APD 041 La pintura mural en Mexico /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in mural painting. Not transferable.

**APD 041 La pintura mural en México /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Es un seminario para desarrollar la habilidad en la pintura mural. No es transferible.

**APD 042 Pastelería Creativa I /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in creative baking. Not transferable.

**APD 042 Pastelería creativa I /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Seminario diseñado para desarrollar la habilidad en la pastelería creativa. No es transferible.

**APD 043 Pastelería Creativa II /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Continuation of APD 042. Workshop designed to develop further skill in creative baking. Not transferable.

**APD 043 Pastelería creativa II /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Es una continuación de APD 042. Es un seminario diseñado para desarrollar aun más la habilidad en la pastelería creativa. No es transferible.

**APD 044 Pastelería creativa III /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisitos: APD 042 y 043.

Este curso cubre mayores estilos y métodos internacionales de decoración de pasteles. Detalles de bordes, molduras y adornos se enseñan culminando por medio de una obra maestra de pastelería para exhibición.

**APD 050 Música para gozar /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in music. Not transferable.

**APD 050 Música para gozar /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Seminario diseñado para desarrollar la habilidad para la música. No es transferible.

**APD 051 Música de mariachi /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in mariachi music. Not transferable.

**APD 051 Música de mariachi /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Seminario diseñado para desarrollar la habilidad en la música de mariachi. No es transferible.

**APD 052 Baile Espanol I /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Workshop designed to develop skill in Spanish dancing. Not transferable.

**APD 052 Baile español I /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: Ninguno.

Seminario diseñado para desarrollar la habilidad en el baile español. No es transferible.

**APD 053 Baile Espanol II /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: APD 052.

Continuation of APD 052. Workshop designed to develop skill in Spanish dancing. Not transferable.

**APD 053 Baile español II /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Requisito: APD 052.

Es una continuación de APD 052. Es un seminario diseñado para desarrollar la habilidad para el baile español. No es transferible.

**APD 054 Color Photography /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Processing and printing of color negatives and color slide materials.

**APD 056 Introduction to the Mexican Charrería /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Introduction to the historical, social and cultural background of the Mexican charrería. Includes the lifestyle of the charro (skilled horseman) and his family.

**APD 056 Introducción a la charrería mexicana /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Requisito: Ninguno.

Una introducción al fondo histórico, social y cultural de la charrería mexicana. El curso también embarca los aspectos de la vida del charro y su familia.

**APD 057 The Events of the Mexican Charreada /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: None.

Introduction to the charreada so as to develop an appreciation for the events involved. Includes rules and regulations for judging a charro's (skilled horseman's) event.

**APD 057 Las competencias charras /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Requisito: Ninguno.

Dos diferentes aspectos de la charrería son presentados en una forma que los estudiantes aprenderán a apreciar los eventos. Además se cubrirán los reglamentos para calificar un evento charro.

**APD 060 Flamenco and Classical Guitar /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: None.

History, basic techniques and structure of flamenco music. Designed for beginning and advanced guitar students. Includes classical melodies and exercises for the proper coordination and development of the left and right hands.

**APD 060 Flamenco y guitarra clásica /2 cr. hrs./4 periods (1 lec., 3 lab)**

□Requisito: Ninguno.

Este curso consiste en la historia, técnicas básicas y la estructura de la música flamenca. Esta diseñada para estudiantes de guitarra, ya sean principiantes o avanzados. Incluye melodías clásicas y ejercicios para coordinación propia y el desarrollo de ambas manos.

**APD 063 Pastel Painting /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: None.

Principles and techniques of using the pastel medium in developing a painting.

**APD 064 Advanced Painting Techniques /2 cr. hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: None.

Further skill development in painting techniques and composition. Includes exploration of realism, expressionism and abstractionism.

**APD 065 Watercolor I /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: None.

Introduction to methods and basic techniques of watercolor painting. Emphasis on the development of imagination and creativity.

**APD 066 Watercolor II /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: APD 065.

Continuation of APD 065. Techniques of painting with water-based media on paper. For beginning and intermediate painters. Personal creativity, color theory and composition are stressed.

**APD 067 Watercolor III /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: APD 065.

Introduction to the fundamentals of landscape painting in water-based media of the student's choice. Includes the use of photos and sketches as starting points for creativity.

**APD 068 Watercolor IV /2 cr.hrs./4 periods (1 lec., 3 lab)**

□Prerequisite: APD 065.

Exploration of design and composition using basic and advanced techniques in water-based media. Includes the stroke technique.

**APD 070 Community Theater Dramatics /3 cr.hrs./5 periods (2 lec., 3 lab)**

□Prerequisite: None.

Fundamentals of acting and community theater production to develop the student's dramatic talent. May be taken twice for credit.

**ASTRONOMY**

**AST 050 Project Universe /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Introduction to the science of astronomy for general interest. Includes origin, characteristics and evolution of the solar system, stars, galaxies and the universe. May not be taken as a liberal arts science requirement for transfer.

**AST 051 Cosmos /3 cr. hrs./13 periods (13 lec.)**

□Prerequisite: None.

Examination of the evolution of the universe, earth, humanity and perceptions about them. Not an introductory astronomy course, but rather an interdisciplinary study of science placed in a humanistic perspective.

**AST 101 Solar System /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Descriptive and historical introduction to the science of astronomy focusing on the sun and its family of planets. Includes comets, origin of the solar system, the space program, and critiques of related pseudosciences, e.g., astrology.



**AST 102 Stars, Galaxies, Universe /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the universe beyond the solar system. Includes the nature of light, how astronomers and telescopes work, the possibilities of alien life in the universe, quasars, pulsars and black holes. Also includes the origin, nature and future of the universe.

**AST 111 Solar System Laboratory /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: None.

Laboratory for AST 101, involving exercises, star gazing sessions and field trips to planetariums and observatories.

**AST 112 Stars, Galaxies, Universe Laboratory /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: None.

Laboratory for AST 102, involving exercises, star gazing sessions and field trips to planetariums and observatories.

**AUTO BODY REPAIR****ABR 112 Auto Body Repair I /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Introduction to auto body repair. Body working tools, welding, brazing, heat shrinking and metal straightening.

**ABR 113 Auto Body Repair II /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: ABR 112.

Continuation of ABR 112. Body shop materials, body construction, bumper assemblies, body panel adjustments, repairing rust damage, body trim and glass work.

**ABR 114 Auto Body Repair III /4 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: ABR 113.

Continuation of ABR 113. Advanced techniques of straightening, replacing and reconstructing collision damaged parts of automobiles. Includes estimating costs of labor, materials and shop expenses.

**ABR 115 Automobile Painting I /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Introduction to automobile painting. Includes equipment, paint, paint products, preparation and painting techniques.

**ABR 116 Automobile Painting II /4 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: ABR 115.

Continuation of ABR 115. Advanced automobile painting. Includes painting techniques, applying metallic finishes, matching paint color, paint rub-out, detailing finishes and applying accent stripes.

**AUTOMOTIVE SERVICE REPAIR****ASR 100 Auto Service Repair: Lubrication and Cooling /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Theory of operation, diagnosis and repair of engine lubrication and cooling systems.

**ASR 102 Auto Service Repair: Brakes /3 cr. hrs./5 periods (1 lec., 4 lab)**

□ Prerequisite: None.

Theory of operation, diagnosis and repair of automotive brake systems.

**ASR 104 Auto Service Repair: Electrical Systems /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Theory of operation, diagnosis and repair of automotive electrical systems.

**ASR 106 Auto Service Repair: Tune-up /4 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: None.

Theory of operation, diagnosis and repair of ignition and carburetion systems.

**ASR 108 Auto Service Repair: Air Conditioning /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Theory of operation, diagnosis and repair of automobile air conditioning systems.

**AUTOMOTIVE TECHNOLOGY****AUT 101 Automotive Maintenance /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Techniques of routine vehicle maintenance. For those who have little or no automotive service experience.

**AUT 101 Mantenimiento de Automóviles /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Requisito: Ninguno.

Para el estudiante que no tiene ningún conocimiento o que tiene conocimientos limitados del mantenimiento de automóviles. Se enseñan las técnicas más convenientes para el mantenimiento rutinario del vehículo.

**AUT 111 Automotive Body and Fender Repair /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Fundamentals of sheet metal repair using basic metalworking tools. Instruction is limited to minor damage repair, parts replacement and alignment.



**AUT 120 Internal Combustion Engines /4 cr. hrs.**

□ Prerequisite: None.

Construction, design and operation principles of internal combustion engines. Includes removal and replacement of internal and external parts and components of several types of internal combustion engines and description of how these engines convert heat energy into mechanical energy. Also includes the part played by the lubrication, cooling and air/ fuel management system of the engines.

**AUT 122 Automotive Engine Service Repair /3 cr. hrs.**

□ Prerequisite: None.

Procedures for removing, repairing and replacing engine parts. Includes evaluation of internal and external engine parts, valve grinding and removal and replacement of camshaft crankshaft, timing chain, insert bearings and piston rings. Also includes assembling the engine to given specifications.

**AUT 124 Automotive Diesel Engine Tune-up /3 cr. hrs.**

□ Prerequisite: None.

Maintenance of automotive diesel engines. Includes tune-up, assembly and calibration of fuel injectors, and diagnosis and repair of glow plug electronic control systems.

**AUT 125 Automotive Engine Tune-Up /4 cr. hrs.**

□ Prerequisite: None.

Tune-up principles and procedures. Includes evaluating internal and external ignition and fuel system parts, performing tune-ups on four types of engines and using diagnostic and emission detecting equipment to adjust engines to given emission standards.

**AUT 126 Emission Certification Training /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Technician training for emission system adjustment using Arizona certified infrared exhaust analyzer in preparation for Arizona certification examination.

**AUT 128 Automotive Electrical Fundamentals /3 cr. hrs.**

□ Prerequisite: None.

Fundamentals of electricity as applied to automotive electrical problems. Includes use of electrical test instruments to measure voltage, current and resistance in automotive electrical system.

**AUT 129 Automotive Electrical Component Repair and Adjustment /3 cr. hrs.**

□ Prerequisite: None.

Diagnosis, repair, replacement and/or adjustment of electrical components used on the modern automobile. Includes starters, generators, distributors, computer controls, solenoids, switches and connecting wires.

**AUT 132 Automatic Transmission Removal, Replacement and In-Car Repair /4 cr. hrs.**

□ Prerequisite: None.

Removal, repair, adjustment and replacement of automatic transmissions in popular use today. Includes in-car repairs and adjustments, transmission removal, replacement and teardown. These operations are performed according to factory time limitations and specifications.

**AUT 133 Automatic Transmission Rebuilding /4 cr. hrs.**

□ Prerequisite: None.

Duties of an automatic transmission builder. Includes overhauling automatic transmissions in popular use today within a given time and to specifications.

**AUT 136 Automotive Driveline /4 cr. hrs.**

□ Prerequisite: None.

Training in automotive driveline components. Includes removal and replacement of manual transmissions and clutches and overhauling of manual transmissions, universal joints and differentials.

**AUT 138 Automotive Chassis /4 cr. hrs.**

□ Prerequisite: None.

Training in automotive chassis components. Includes wheel alignments, wheel balancing and overhaul of suspension system, manual and power steering gears and power steering pumps.

**AUT 140 Automotive Brakes /4 cr. hrs.**

□ Prerequisite: None.

Diagnosis and repair of hydraulic brake systems, both standard and power. Includes evaluating and machining brake drums and discs.

**AUT 142 Automotive Air Conditioning /3 cr. hrs.**

□ Prerequisite: None.

Diagnosis and repair of automotive air conditioning systems. Includes discharging and recharging air conditioning systems.

**AUT 199 Co-op Related Class in AUT /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in AUT 199 Co-op Work in AUT. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to automotive technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**AUT 199 Co-op Work in AUT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in AUT 199 Co-op Related Class in AUT.

A supervised cooperative work program for first-year students in an occupation related to automotive technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**AUT 200 Performance Engines /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Second-year level in automotive program or proven ability to diagnose and repair standard vehicles. (Sound math background is helpful.) Engine design theory and construction and modifications used to improve power output. Includes related drive train and suspension, and suspension modifications necessitated by increased power.

**AUT 299 Co-op Related Class in AUT /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: AUT 199 and concurrent enrollment in AUT 299 Co-op Work in AUT.

Continuation of AUT 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**AUT 299 Co-op Work in AUT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: AUT 199 and concurrent enrollment in AUT 299 Co-op Related Class in AUT.

Continuation of AUT 199. A supervised cooperative work program for second-year students in an occupation related to automotive technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**AVIATION MECHANICS****AVM 088 Preventive Maintenance for Pilots /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Aircraft preventive maintenance principles and procedures for use by pilots. Includes engine design and function, aircraft design and function, operational safety standards, federal aviation regulations and an examination of industry maintenance practices.

**AVM 220 Airframe Structures /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: 30 months of experience concurrently performing the duties of airframe and power plant maintenance, or 18 months of experience performing the duties appropriate to this rating.

Principles and techniques of maintaining, repairing and building airframe structures. Includes federal aviation regulations, aerodynamic principles, assembly and rigging, weight and balance, woodworking techniques, welding and metallurgy, fabric coverings, aircraft finishes and structural repair.

**AVM 221 Airframe Systems and Components /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: 30 months of experience concurrently performing the duties of airframe and power plant maintenance, or 18 months of experience performing the duties appropriate to this rating.

Theory of operation, repair and maintenance of various aircraft systems and components. Includes direct current electrical systems, repair and troubleshooting, hydraulic and pneumatic systems, aircraft instrumentation, communication and navigation systems, air conditioning and pressurization, fire detection and extinguishing systems, and aircraft fuel systems.

**AVM 230 Power Plant Mechanics /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: 30 months of experience concurrently performing the duties of airframe and power plant maintenance, or 18 months of experience performing the duties appropriate to this rating.

Repair and maintenance of aircraft power plants. Includes reciprocating and gas turbine engines, theory of operating construction, overhaul procedures, lubrication systems, fuel metering systems, ignition systems, propellers and engine testing.

**BUSINESS****BUS 050 Fundamentals of Tax Preparation /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Basic skills needed to prepare federal tax returns. Course designed by the Internal Revenue Service for beginners.

**BUS 051 Mathematics of Business /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic mathematical procedures as applied to business problems. Includes mark-up, payroll, and simple and compound interest.

**BUS 100 Introduction to Business /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of fundamental characteristics and functions of modern business. Business principles, marketing, record keeping, risks, and an historical review of business development, including the viewpoint of various ethnic groups.

**BUS 105 Survey of Microcomputer Uses /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Overview of microcomputer uses with emphasis on software. Not for programming or engineering majors. Includes use of computers as tools in business, the home, education and the social and natural sciences. Also includes application software evaluation. (Same as CSC 105, ARC 105 and AJS 105.)

**BUS 200 Business Law I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and sources of business law. Law of contracts, torts, agency, consumer credit protection and sales. Includes an overview of the judicial system.

**BUS 201 Business Law II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 200.

Continuation of BUS 200, including the law of personal property, real property, partnerships, corporations, government regulation of business, and environmental law.

**BUS 205 Statistical Methods in Economics and Business I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 170 or concurrent enrollment.

Introduction to statistical techniques and their application to economics and business decision making. Data structures, frequency distributions, probability, probability distributions, normal distribution, testing, hypothesis making, Chi-square distribution, regression and correlation analysis.

**BUS 206 Statistical Methods in Economics and Business II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 205.

Continuation of BUS 205. Variance, sampling, statistical quality control, Bayesian decision making, non-parametric statistics, multiple and nonlinear regression, time series and index numbers.

**BUS 295 Business Seminar I /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Laboratory portion of the Business Administration program. Credit is given for working in an approved training station. Students must work an average of 15 hours each week under supervision and will be evaluated by a supervisor and the instructor/coordinator.

**BUS 296 Business Seminar II /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Continuation of BUS 295.

## CHEMISTRY

**CHM 080 Preparation for General Chemistry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070.

Fundamentals of chemistry. Includes nomenclature, atomic structure, bonding, chemical equations, moles, stoichiometry, the periodic table, conversions, problem-solving techniques and study skills. Designed to prepare students for CHM 120.

**CHM 101 Introductory Chemistry I /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: None.

Basic chemistry and its relationship to everyday experiences. Designed to meet the needs and interests of non-science majors. Includes classification and structure of matter, basic principles of chemical reactions, and their environmental and societal impact.

**CHM 102 Introductory Chemistry II /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: CHM 101.

Continuation of CHM 101. Organic chemistry as it relates to consumer products and pollution of our environment. Includes biochemistry and physiochemistry and their relationship to medicines, drugs, health and food products.

**CHM 110 Fundamentals of Chemistry I /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: High school chemistry within the last three years.

Inorganic chemistry as a basis for the study of some life processes. Includes the classification, structure and general chemical behavior of inorganic matter. Adapted to the needs of students in allied health programs.

**CHM 111 Fundamentals of Chemistry II /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: CHM 110, high school chemistry within the last three years or consent of the instructor.

Continuation of CHM 110. Organic chemistry as the basis for the study of some important life processes. Includes the classification, structure and general chemical behavior of organic and biochemical systems. Adapted to the needs of students in nursing and other allied health programs.

**CHM 120 General Chemistry I /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisites: MTH 130 and Toledo score of 40 points or better, or completion of CHM 080 with a grade of A or B.

Basic chemistry for science majors. Includes examination of atomic structure and bonding with some historical background, fundamental chemical and scientific relationships, chemical reactions and energy, states of matter and solutions.

**CHM 121 General Chemistry II /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: CHM 120.

Continuation of CHM 120 with emphasis on certain chemical concepts such as equilibrium, kinetics, acids, bases, complexions and oxidation-reduction.

**CHM 150 Electronic Industrial Chemistry /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: MRE 100, and CHM 110 or CHM 120.

Principles of chemistry and laboratory techniques. For students interested in microelectronic technology. Includes material properties (thermal and electrical resistivity, coefficient of expansion, heat capacity, chemical reactivity and mechanical strength), use and location of published references, safety in use of materials, polymer formation, plating methods and problems, cleaning methods and clean room principles. Some materials to be studied are ceramics, glasses, solders, polymers, and materials which are required to fabricate microelectronic circuits (gold, silver, platinum, palladium, ruthenium, copper, nickel, kovar and silicon).

**CHM 196 Independent Studies in Chemistry /1-4 cr. hrs./3-12 periods (3-12 lab)**

□ Prerequisite: None.

Laboratory projects varying with students' interests and reasons for enrolling.

**CHM 240 Organic Chemistry I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: CHM 121 or consent of instructor.

Fundamentals of organic chemistry, including classification, occurrence, synthesis, analysis and reaction mechanisms of important classes of organic compounds. Alkanes, alkenes, aromatics and arenes are classes stressed.

**CHM 241 Organic Chemistry II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: CHM 240.

Continuation of CHM 240 with emphasis shifting to synthesis and the use of chemical and instrumental methods as a means of identification. The remaining classes of organic compounds are discussed.

**COMMUNICATION WORKERS TECHNOLOGY****CWT 100 Working in the Communications Systems Industry /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Overview of the telecommunications industry. Includes history, present occupations and technologies and projected trends in employment and technology.

**CWT 101 Communications Industry Tools and Equipment /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Familiarization with the tools and equipment used in the communications industry. Includes selection, use, maintenance, repair and safety.

**CWT 102 Color Code /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Use of color codes in the telecommunications industry. Includes cable color code, cable group layout, binders and core layout.

**CWT 103 Safety and Health in the Communications Industry /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Health and safety hazards of the job environment and necessary precautions. Includes introduction to the Occupational Safety and Health Act, workers' compensation and safety measures to use off the job.

**CWT 104 Communications Test Equipment /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Function and operation of test equipment for the communications industry. Includes volt-ohm meter, oscilloscope and audio frequency generator.

**CWT 110 Electronics /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Basic concepts of electronics and application of mathematical skills. Includes resistance, conductance, EMF, Ohm's Law and mathematical equations.

**CWT 112 Basic Circuit Reading /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Interpretation of electronic circuit and schematic diagrams. Includes current flow, polarity, placement of test equipment, common electronic components, series circuits and application of Ohm's Law to basic series circuits.

**CWT 120 Direct Current Fundamentals I /1 cr. hr./3 periods (2 lec., 1 lab)**

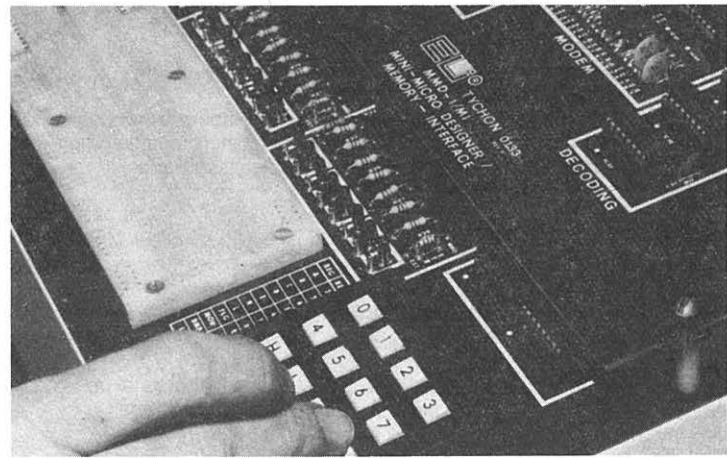
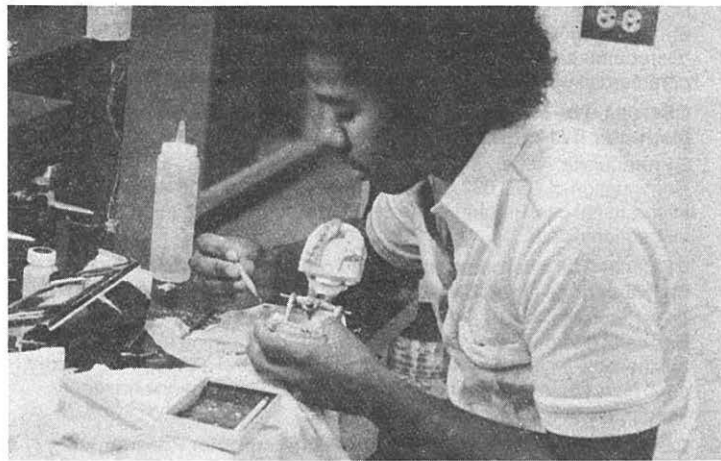
□ Prerequisites: CWT 110 and 112.

Basic direct current electronics. Includes series, parallel and series-parallel circuits; current and voltage dividers; wire gauges; fuses; circuit breakers; switches; batteries; and problem solving.

**CWT 121 Graphing and Linear Equations /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 110.

Mathematical fundamentals as a problem-solving tool in the telecommunications industry. Includes measures of central tendency, interpreting data, graphing and solving systems of linear equations.





**CWT 130 Alternating Current Fundamentals I /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 120.

Basic principles of alternating current. Includes uses of trigonometry for alternating current and magnetism, alternating current principles and applications, alternating voltage and current, and inductance, resistance, capacitance and time constants.

**CWT 140 Solid State Devices /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 130.

Overview of basic solid state devices. Includes basic digital theories and circuits, transistors, rectifiers and the characteristics of circuits in which these devices are used.

**CWT 142 Telephony Systems and Equipment I /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 130.

Basic principles and applications of telephone multiplexing techniques, carrier systems and electrical filters. Includes the basic elements of a telephone system, principles of wire transmission, telephone transmission practices, frequency division multiplex systems and the modulation and demodulation processes.

**CWT 144 Data Transmission I /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 130.

Transmission capabilities provided by new technology. Includes fiber optics, microwave, satellites and packet switching.

**CWT 150 Digital Electronics /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: CWT 140.

Fundamentals of digital electronics. Includes digital numbers, simple logic gates, binary operations, simplified logic circuits in registers, counters, light-emitting displays, analog-to-digital conversion, Boolean logic and microprocessors.

**COMPUTER SCIENCE**

**CSC 090 The Microcomputer as a Tool for Personal Records /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: None.

Basics of computer operation and simple programming for personal use. Includes keeping home records, bank statements, financial records, inventory, insurance inventories, stock and bond records.

**CSC 092 The Microcomputer: Applications for the Classroom Instructor I /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: None.

Basics of computer operation and simple programming for instructional use. Emphasis on teaching educators techniques of programming the microcomputer to supplement classroom instruction. A survey of commercially prepared teaching packets will be made.

**CSC 094 The Microcomputer: Applications for the Classroom Instructor II /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: None.

Continuation of CSC 092. Microcomputer programming techniques for instructional use. Emphasis on assisting teachers to develop programs for instructional units.

**CSC 096 The Microcomputer as a Tool for Small Business /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: None.

Basics of computer operation and simple programming for use in small businesses. Includes using the computer to control and report inventory, cash flow, personnel records, payroll, capital depreciation and record keeping.

**CSC 098 Supervised Independent Microcomputer Programming /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: None.

Assistance for students in developing programs.

**CSC 100 Introduction to Computers /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: MTH 070.

General introduction to computer hardware and software. Includes computer and data processing terminology and programming concepts (e.g., program design, coding and documentation). Problems are programmed in the BASIC language.

**CSC 105 Survey of Microcomputer Uses /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Not for programming or engineering majors. Overview of microcomputer uses with emphasis on software. Includes use of computers as tools in business, the home, education and the social and natural sciences. Also includes application software evaluation. (Same as ARC 105, AJS 105 and BUS 105.)

**CSC 110 Data Entry and Procedures /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: Some typing ability (speed not essential).

Entering and verifying simulated production data from several types of source documents utilizing magnetic, terminal and card punch devices. Emphasis on low error rate production.



**CSC 110A Introductory Magnetic Entry Operations /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisite: Some typing ability (speed not essential).  
Introduction to the magnetic method of computer input. Emphasis on operational skills and procedures.

**CSC 110B Introductory Card Punch Operations /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisite: Some typing ability (speed not essential).  
Introduction to the card method of computer input. Emphasis on operational skills and procedures.

**CSC 110C Terminal Operations /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisite: Some typing ability (speed not essential).  
Entering simulated production data from several types of source documents utilizing computer terminals. Emphasis on low error rate production.

**CSC 115 Advanced Data Entry /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 110.  
Advanced training at the job entry level in the operation of data entry devices. Includes permanent programs, labeling, error conditions and correction, verification, keying, temporary program correction, program chaining, copying, field totaling, record inserting, production statistics, speed building and multifformatting.

**CSC 115A Advanced Magnetic Entry Operations /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisites: CSC 110A, 110B and 110C.  
Development of skill and efficiency in the operation of magnetic input methods. Includes operational procedures, making a program diskette with permanent programs, and the use of the operator's manual.

**CSC 115B Accuracy and Speed Building in Data Entry /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisites: CSC 110A, 110B and 110C.  
Operational skills and procedures to increase production level of input in computer usable form.

**CSC 115C Advanced Terminal Operations /1 cr. hr./1.4 periods (1 lec., .4 lab)**

□ Prerequisites: CSC 110A, 110B and 110C.  
Operational skills and procedures to increase understanding and efficiency in the operation of terminals. Includes programming, keying, verifying and printing data using utility programs.

**CSC 120 Data Entry Problems /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: CSC 115.  
Procedures for magnetic and terminal type data entry equipment. Includes setup, keying, verifying, record keeping, printing and recycling.

**CSC 130 Computers and Programming /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 100.  
Structured programming principles and techniques. Includes problem analysis, the algorithm, structured program design, the program development cycle, table processing and file handling. Although emphasis is on logic rather than on a language, PASCAL is taught to reinforce basic principles.

**CSC 135 Introduction to Computer Operations /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 100.  
Examination of basic computer hardware and software concepts. Includes operating systems, time sharing, file organization, utilities and multiprogramming. Instruction and lab experience make use of available text editors.

**CSC 140 FORTRAN Programming /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 100, and MTH 070 or satisfactory score on math assessment test.  
Principles and techniques of FORTRAN programming. Includes the writing of programs on-line via a text editor and the designing of logic algorithms and/or flow charts as preparation for writing FORTRAN code. Selection of programs includes engineering or business applications.

**CSC 160 COBOL Programming /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 130 and 135.  
Comprehensive study of and practice in writing programs using COBOL (standard business language). Includes proper documentation, programming standards and programming techniques for utilizing auxiliary storage devices.

**CSC 170 RPG Programming /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 130.  
Introduction to the solutions of business oriented problems through writing and executing Report Program Generator Programs. RPG is the primary language of most small-scale computers.

**CSC 175 Advanced BASIC Programming /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 130 and BASIC programming experience.  
Advanced programming techniques in BASIC on microcomputers. Includes sequential file manipulation, string and array processing, sorting, master vs. transaction files, updates and menus using business examples. Different versions of BASIC are explained.

**CSC 190 Programming in PASCAL /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 130.

Programming techniques using PASCAL, a structured programming language. Includes program writing using hands-on computer instructional techniques, business and scientific applications and comparison with other high-level languages.

**CSC 195 Job Entry Procedures /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles and techniques for successful job hunting. Includes application letter and resume writing, interviewing and related topics.

**CSC 196 Work Standards and Job Attitudes /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Development of proper work standards and job attitudes. Includes ethics, work relationships and human relations using role playing.

**CSC 197 Edit Language for Programmers and Operators /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Use of a text editor to build and alter files for storage and retrieval. Includes learning the keyboard and functions of special keys.

**CSC 197 Edit Language for Programmers and Operators /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Use of a text editor to build and alter files for storage and retrieval. Includes learning the keyboard and functions of special keys.

**CSC 198 Data Processing Projects I /2 cr. hrs./6 periods (6 lab) □ Prerequisite: None.**

Practical work experience on assigned data processing projects in data entry, controls and operations.

**CSC 199 Co-op Related Class in CSC /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in CSC 199 Co-op Work in CSC.

Introduction to Cooperative Education for Computer Science students (instruction which provides for success in securing and retaining a training job related to computer science). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**CSC 199 Co-op Work in CSC /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in CSC 199 Co-op Related Class in CSC.

A supervised cooperative work program for Computer Science students in a computer related occupation. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**CSC 235 Advanced Computer Operations /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 135.

Advanced operating system control commands involving utility control programs with emphasis on job and batch job stream organization. Includes overall system characteristics and detailed coding of selected functions. Operating systems and computers used vary because of diversity of campus facilities, but overall course emphasis remains constant.

**CSC 250 Introduction to Assembly Language /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 130 and one of the following: CSC 140, 160, 175 or 190.

Basic concepts of assembly language. Includes computer architecture, machine language programming, assembly programming, input/output and console operations. Simple microprocessors will be used as a teaching vehicle.

**CSC 255 Microprocessor Applications /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 250.

Comparison of the architecture and features of available microprocessors. Includes application of microprocessors to monitor and control physical processes, displays, lights, switches, instruments, etc.

**CSC 256 Microcomputer Software Applications /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 130 and ACC 102.

Study of microcomputer applications. Includes a word processor, a spread sheet, a micro level data base, a graphics system and a widely based microcomputer operating system. Also includes a short overview of available microcomputer accounting systems.

**CSC 260 Advanced COBOL and File Management /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisites: CSC 135 and 160.

Development of advanced COBOL programming techniques and use of language features. Includes report writer, sorts, multidimensioned array manipulation, subprograms, interactive programming and on-line debugging aids. Students create, retrieve and update files using sequential, index sequential and direct organization methods.

**CSC 265 The C Programming Language /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: Two high level languages and an assembly language.

Principles and techniques of C language syntax, using many standard software tools. In lab, students write C programs in portable code to facilitate systems programming concepts. Standard run time libraries are used.

**CSC 270 IBM/370 Assembly Language (BAL) /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisite: CSC 250.

Assembly level language and its relationship to machine language. Includes debugging techniques, basic input/output control and linkage. Emphasis on standard and decimal instruction sets, subroutine control and linkage.

**CSC 274 DEC Assembly Language (MACRO) /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisite: CSC 250.

Programming in the native instruction set of one of the large Digital Equipment Corporation computers, (either the DEC/10, DEC/20 or VAX/11). Includes bit and character manipulation, program modularity, file handling and linkage between machine language and high level languages.

**CSC 275 Advanced Programming and File Management /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisites: CSC 175 and 280.

Advanced programming techniques with emphasis on Random Access/ISAM file structures, linked records, graphs and documentation. Students design, program, implement and document a small business system. BASIC is the usual language, but occasionally another language may be used.

**CSC 280 Systems Analysis /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 160.

Tools of systems analysis. Includes documentation methods (systems flow chart, decision table, etc.), user communication, record layout, code design, file design (batch and on-line data base concepts) and documentation design (source and printed output). Selected business system applications are used to apply the above tools.

**CSC 281 Systems Design /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 280.

Application of the tools of systems analysis covered in CSC 280 to design a total system. The case study approach is used. The student will prepare a feasibility study to present alternatives or a systems proposal to recommend a course of action.

**CSC 290 Systems Programming Theory /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: CSC 274.

Writing of compilers, operating systems and utility programs. Includes sorting and timing techniques.

**CSC 291 Data Base Concepts /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisites: CSC 260 and 280.

Fundamentals of data structures and generalized data management systems. Includes hierarchical, network and relational systems. System 1032 will be used as the laboratory data base tool.

**CSC 294 Current Topics in Computer Science /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 260, 270 and 274.

Selected topics which reflect the most current technological and systems software concepts in the field of computer science. May include such topics as teleprocessing, data base concepts, structured programming and minicomputers. May be taken four times for a maximum of twelve credit hours.

**CSC 296 Operating Systems /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: CSC 270 and 274.

Design and functions of a computer's operating system. Includes system generation as affected by computer size, configuration, needed-library routines and macros. Students work through the actual generation of an operating system.

**CSC 298 Data Processing Projects II /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: Consent of instructor.

Students are assigned to selected projects at computer installations in the community. Includes instruction and practice in preparing project proposals; project management; interfacing with potential users of a system; and design, programming, implementation and documentation of a project.

**CSC 299 Co-op Related Class in CSC /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in CSC 299 Co-op Work in CSC. Principles of job success. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**CSC 299 Co-op Work in CSC /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: Concurrent enrollment in CSC 299 Co-op Related Class in CSC.

A computer related, supervised cooperative work program for students in an occupation related to computer science. Teacher-coordinators work with students and their supervisors. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

## COOPERATIVE EDUCATION

### **CED 199 Co-op Related Class in Liberal Arts /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in CED 199 Co-op Work in Liberal Arts.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to the student's program of study). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

### **CED 199 Co-op Work in Liberal Arts /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in CED 199 Co-op Related Class in Liberal Arts.

A supervised cooperative work program for first-year students in an occupation related to the student's program of study. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

### **CED 299 Co-op Related Class in Liberal Arts /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: CED 199 and concurrent enrollment in CED 299 Co-op Work in Liberal Arts.

Continuation of CED 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

### **CED 299 Co-op Work in Liberal Arts /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: CED 199 and concurrent enrollment in CED 299 Co-op Related Class in Liberal Arts.

Continuation of CED 199. A supervised cooperative work program for second-year students in an occupation related to the student's program of study. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

## DENTAL ASSISTING

### **DAE 060 Orientation to Dental Care /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Consent of program coordinator.

Introduction to the field of dental care. Includes the dental health team, ethics, jurisprudence and professional organizations.

### **DAE 061 Biomedical Dental Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Consent of program coordinator.

Introduction to the biosciences as they relate to the oral cavity. Includes anatomy, physiology, histology, microbiology and nutrition as it affects total dental health.

### **DAE 062 Dental Assisting I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Consent of program coordinator.

Basic principles and techniques of dental assisting. Includes morphology of human dentition and dental instruments and their use in various operative procedures.

### **DAE 063 Oral Radiography /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Consent of program coordinator.

Use of dental roentgenography as a diagnostic aid. Includes safety factors when exposing radiographs; training in exposing, processing, mounting, labeling and filing radiographs; and training in recognizing radiographs that are acceptable for diagnosis.

### **DAE 064 Dental Materials /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Consent of program coordinator.

Chemical and physical properties of dental materials and their uses in specific operative procedures. Includes units of measure, various measuring devices and maintenance of all related equipment.

### **DAE 065 Pre-Clinical Procedures /2 cr. hrs./5 periods (1 lec., 4 lab)**

□ Prerequisite: Consent of program coordinator.

Basic procedures of chairside assisting in general and specialty dental practices.

### **DAE 066 Dental Assisting II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: DAE 060 through 065.

Principles and techniques of pharmacology, therapeutics and emergency medical-dental care as applied to dental assisting.

### **DAE 067 Dental Assisting III /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: DAE 061 through 065.

Principles and techniques of dental practice management and oral health education as applied to dental assisting.

### **DAE 068 Clinical Procedures /8 cr. hrs./24 periods (24 lab)**

□ Prerequisites: DAE 061 through 065.

Application of acquired skills in clinical environment under direct supervision of the dentist and instructor.



## DENTAL LABORATORY TECHNOLOGY

### **DLT 101 Dental Morphology /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Consent of program director.

Development and structure of teeth and construction of dentures. Includes configuration of hard and soft areas of the jaws, as related to denture construction. Emphasis on principles in tooth design and balanced occlusion with regard to normal and abnormal ridge relationship. Plaster sculpture is used in the production of a full complement of anatomical teeth.

### **DLT 102 Nonmetallic Dental Materials /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Consent of program director.

Principles of chemistry and physics as related to dental materials. Products reviewed include gypsum materials, plastic and elastic duplicating materials, denture base materials, acrylic resin teeth, dental waxes, separating media and dental porcelain.

### **DLT 103 Complete Dentures /4 cr. hrs./10 periods (1 lec., 9 lab)**

□ Prerequisite: Consent of program director.

Complete examination of the relationship between upper and lower dentures as interpreted on a functional articulator. Includes casting of models, trays, bite blocks, setting up dentures in balanced occlusion, investing, packing, curing and finishing of dentures.

### **DLT 104 Dental Laboratory I /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisites: DLT 101, 102 and 103.

Chemistry and metallurgy of dental alloys, the compositions of plating solutions and principles of electroplating. Includes use of cast gold alloys, abnormal castings, base metal casting alloys, metallographic techniques, and wrought metal bars and clasps. A full complement of teeth is sculptured from wax ivory blocks and set up to occlusion. Upper and lower partial frame structures are constructed in cast chromium-cobalt alloy.

### **DLT 105 Partial Denture Construction /4 cr. hrs./10 periods (1 lec., 9 lab)**

□ Prerequisites: DLT 101, 102 and 103.

Construction of partial dentures and appliances. Includes wrought metal lingual bars and clasps; investing and soldering techniques of bilateral appliances; processing partial dentures in acrylic in three techniques; fabrication of dies of inlays and abutments; and repair and relining of dentures.

### **DLT 106 Orthodontics and Maxillofacial Construction /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: DLT 101 through 105.

Construction and theory of simple orthodontic and maxillofacial appliances. Includes construction utilizing wrought wire and/or cast metal frames as retentive devices and the processing of acrylic to form final appliances.

### **DLT 201 Dental Laboratory II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: DLT 101 through 106.

Principles of fixed bridgework, abutments, inlays and crowns. Includes theory of spanning spaces with various types of artificial teeth in complete fixed and cantilever bridgework; importance of stress, function and aesthetics in the design of fixed bridgework; handling of wax patterns, investments, casting techniques and making dies from impressions; and techniques in waxing, investing, casting inlays, three-quarter crown, full crown and veneers. Tooth carving techniques taught in previous semester are used.

### **DLT 202 Dental Metallurgy I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: DLT 101 through 106.

Examination of metals currently used by the dental technician. Includes physical properties of metals, crystal structure, manufacturing processes, theory of alloys, soldering, casting investments and heat treatment of gold alloys.

### **DLT 203 Fixed Bridgework /4 cr. hrs./10 periods (1 lec., 9 lab)**

□ Prerequisite: DLT 101 through 106.

Construction of fixed bridgework. Includes waxing, investing and finishing simple and complex inlays, full crowns, veneers and three-quarter crowns; and construction of bridges of various designs utilizing metal, porcelain and plastic, separately or in conjunction with one another.

### **DLT 204 Dental Laboratory III /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Principles of surveying, design of cast partials, and technical applications of metallurgy and engineering principles. Includes composition and physical properties of gold and chromium-cobalt alloys and their working qualities. All types of known designs and principles of retention are used in the construction of removable bridgework.

### **DLT 206 Dental Ceramics /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Skill development in porcelain and porcelain-on-metal techniques. Includes composition and physical properties, as well as the fundamentals of manipulating porcelain and metal. Emphasis on low- and high-fusing porcelains, their vitrification, control of form, control of color, design of metal structure, and application of stain and glaze.

### **DLT 207 Advanced Dental Laboratory Technology—Complete Dentures /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced denture construction, including balanced occlusion, problem ridges, overdentures and soft denture bases. Students must enroll in three of the six DLT 207 modules.

**DLT 207 Advanced Dental Laboratory Technology—Partial Denture /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced partial denture construction, including RPI clasp design, intra-coronal and extra-coronal attachments and their applied uses. Students must enroll in three of the six DLT 207 modules.

**DLT 207 Advanced Dental Laboratory Technology—Crown and Bridge /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced crown and bridge construction, including use of semi- or fully adjustable articulators and use of all veneering materials. Students must enroll in three of the six DLT 207 modules.

**DLT 207 Advanced Dental Laboratory Technology—Ceramics Work /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced dental ceramics, including the principle of nathology and the incorporation of both precious and nonprecious precision attachments. Students must enroll in three of the six DLT 207 modules.

**DLT 207 Advanced Dental Laboratory Technology—Ortho Appliances /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced orthodontics, including the technology of major tooth movements and split arch appliances. Students must enroll in three of the six DLT 207 modules.

**DLT 207 Advanced Dental Laboratory Technology—Maxillofacial Appliances /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: DLT 201, 202 and 203.

Five-week module on advanced maxillofacial construction. Includes construction of intraoral appliances and artificial eyes, ears, noses and other visible soft tissue prosthetics. Students must enroll in three of the six DLT 207 modules.

## DESIGN

**DES 080 Applied Design /3 cr. hrs./11 periods (1 lec., 10 lab)**

□ Prerequisite: None.

Firsthand experience in interior or functional design. Student must work with a professional a minimum of eight hours per week. May be taken two times for a maximum of six credits.

**DES 111 Industrial Graphics /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Representation of products and equipment, or exteriors and interiors, in perspective through shaded and line drawings in several media.

**DES 150 Functional Design /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Design of objects and systems. The development of design solutions for particular design problems. Students select their own areas of design interest.

**DES 151 Lightweight Structure Design /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Design concepts and application of various types of practical and inexpensive methods of shelter, including domes, pre-stressed membranes, inflatables and other innovative methods.

**DES 155 Home Furnishings /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of various types of home furnishings both in the functional sense and with respect to social, aesthetic, economic and psychological effects on individuals.

**DES 156 Design for Living /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of functional interior design and their application. Intended for career-oriented interior design students and those who wish to decorate their own surroundings. Includes composition, traffic flow, proportion, color usage and different styles.

**DES 211 Commercial Graphics /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Training in principles and techniques of commercial graphics. Includes composition, layout, typography, color selection and design of logos, catalogs and brochures. Emphasis on preparation for the advertising and graphics industries. (Same as ART 211.)

**DES 222 Advanced Commercial Graphics /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: DES 211.

Continuation of DES 211. Advanced graphic design and production skills, including preparation of mechanical art work for printing. Emphasis on portfolio preparation.

**DES 250 Industrial Functional Design /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Principles and techniques of industrial functional design. Emphasis on solutions to problems in fabrication and reproducibility of various products.

**DES 255 Spatial Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Creative and technical use of design principles applied to specific problems in designing living areas. For the serious design student.



**DES 256 Interior Environmental Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Theory and practice of interior design. For the student seeking career preparation in interior design. Includes customer-client relationships, financial problems, custom and built-in furnishings and home entertainment equipment.

**DES 299 Co-op Related Class in DES /1 cr. hr./1 period (1 le.c.)**

□ Prerequisite: Concurrent enrollment in DES 299 Co-op Work in DES.

Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**DES 299 Co-op Work in DES /1-8 cr. hrs./5-40 periods (5-40-lab)**

□ Prerequisite: Concurrent enrollment in DES 299 Co-op Related Class in DES.

A supervised cooperative work program for second-year students in an occupation related to design. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**DRAFTING****DFT 101 Blueprint Reading/Sketching /4 cr. hrs./5 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Reading blueprints and freehand technical sketching in orthographics, lettering, sections and auxiliaries, dimensioning, manufacturing operations and tolerance of position and form.

**DFT 101A Blueprint Reading /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Blueprint reading involving many areas of trade and industry. Includes orthographics, lettering, sections and auxiliaries, dimensioning, manufacturing operations, and tolerance of position and form.

**DFT 101B Sketching /1 cr. hr./2 periods (2 lab)**

□ Prerequisite: None.

Freehand sketching involving many areas of trade and industry. Includes orthographics, lettering, sections and auxiliaries, dimensioning, manufacturing operations, and tolerance of position and form.

**DFT 149 Independent Study in Drafting /1-3 cr. hrs./3-9 periods (3-9 lab)**

□ Prerequisite: DFT 110.

Independent work on a special project not included in regular courses. The student is required to obtain a sponsoring instructor in this area and establish objectives, a method of procedure and a method of evaluation.

**DFT 150 Technical Drafting I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Introduction to technical drafting concepts and techniques. Students proceed through problems they will meet in their association with engineers and designers, becoming familiar with drafting tools, sketching, lettering, geometric construction, orthographic projection, dimensioning, isometrics, sections and auxiliary views.

**DFT 150 Dibujo Técnico I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Requisito: Ninguno.

Introducción a los conceptos y técnicas de dibujo técnico. Los estudiantes resolverán problemas que encontrarán al trabajar para ingenieros y diseñadores, familiarizándose con la herramienta de dibujo, bosquejos, letreros, construcción geométrica, proyección ortográfica, dimensiones, isométrico, secciones y puntos de vista auxiliares.

**DFT 150A Technical Drafting I—Basic Procedures /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□ Prerequisite: None.

Introduction to basic tools and procedures of drafting, including lettering, line work, scales, geometric construction and view visualization.

**DFT 150B Technical Drafting I—Multi-Views and Basic Dimensioning /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□ Prerequisite: DFT 150A.

Introduction to orthographic projection, freehand sketching and size dimensioning.

**DFT 150C Technical Drafting I—Problem Solving /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□ Prerequisite: DFT 150C.

Drawing problems, including machine operations, conventional practices and pictorial representations.

**DFT 150D Technical Drafting I—Sections and Auxiliaries /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□ Prerequisite: DFT 150B.

Further uses of orthographic projection, involving auxiliary views, sectional drawings and location dimensioning.

**DFT 150 Dibujo Técnico I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Requisito: Ninguno.

Introducción a los conceptos y técnicas de dibujo técnico. Los estudiantes resolverán problemas que encontrarán al trabajar para ingenieros y diseñadores, familiarizándose con la herramienta de dibujo, bosquejos, letreros, construcción geométrica, proyección ortográfica, dimensiones, isométrico, secciones y puntos de vista auxiliares.

**DFT 151 Technical Drafting II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: DFT 150.

Continuation of DFT 150, furthering the student's skills. Includes review of basic technical drafting and problems in dimensioning, tolerancing, detail and assembly drawings, and hardware selection.

**DFT 151 Dibujo Técnico II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Requisito: DFT 150.

Una continuación de DFT 150, ampliando las pericias de los estudiantes. Los procedimientos del primer curso se estudian para encontrar soluciones de otros problemas técnicos de esta materia.

**DFT 151A Technical Drafting II—Advanced Problem Solving /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□Prerequisite: DFT 150.

Continuation of DFT 150, furthering the student's skills. Includes threads, developments and tolerances.

**DFT 151B Technical Drafting II—Production Drawings /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□Prerequisite: DFT 151A.

Completion of simple drawings upon vellum to ANSI specifications. Includes introduction to standard checking techniques and drawing changes.

**DFT 151C Technical Drawing II—Advance Production Drawings /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□Prerequisite: DFT 151B.

Completion of complex drawings to ANSI specifications. Includes auxiliary projections, sectional views and introduction to metric drawings in both hard and soft change.

**DFT 151D Technical Drawing II—Assembly Drawings /1 cr. hr./1.5 periods (.8 lec., .7 lab)**

□Prerequisite: DFT 151C.

Completion of assemblies and subassemblies in both plan and pictorial representation. Includes use of the standard parts list and the change block.

**DFT 152 Technical Drafting III /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: DFT 151.

Advanced technical drafting concepts and techniques. Complex problems in mechanical drafting, typical of industry, to develop skill, accuracy and speed.

**DFT 153 Tool Design /4 cr. hrs./6 periods (4 lec., 2 lab)**

□Prerequisite: DFT 152.

Introduction to the problems of tool design. Includes drill jigs, radius dies, fixtures, welding jigs and assembly jigs. Drawings are prepared concurrently with the study of related shop practices, mathematics, geometry, materials and basic tools of jig and fixture fabrications.

**DFT 154 Electronic Drafting /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: ETR 001.

Basic concepts and techniques of drafting for the electronics industry. Primarily for the electronics technical drafting student. Emphasis on schematics, logic diagrams, printed circuits and integrated circuits.

**DFT 155 Electro-Mechanical Design I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisites: DFT 151 and 154.

Practical packaging applications common to the electronics industry. Includes electrical, mechanical, environmental, functional and manufacturing aspects of electromechanical gear design.

**DFT 160 Geometric Dimensioning and Tolerancing /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: DFT 152.

Introduction to geometric dimensioning and tolerancing. Practice in the use of the current system of tolerancing (ANSI Y14.5M) used by the United States government and many commercial firms. Designed to increase the student's awareness of dimensioning and tolerancing techniques.

**DFT 170 Microelectronic Drafting /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: None.

Introduction to the fundamentals of drafting, oriented toward microelectronic design. Includes schematics, logic diagrams and the design and drafting of thin and thick film microcircuits.

**DFT 180 Computer Aided Drafting I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□Prerequisite: DFT 133 or concurrent enrollment in DFT 151.

Principles and techniques of CAD equipment operation. Includes terminology; commands to draw lines, angles, arcs, circles and ellipses; geometric construction; pictorials; multiview projection; sectional views; and dimensioning.

**DFT 199 Co-op Related Class in DFT /1 cr. hr./1 period (1 lec.)**

□Prerequisite: Concurrent enrollment in DFT 199C Co-op Work in DFT. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to drafting). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**DFT 199 Co-op Work in DFT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in DFT 199 Co-op Related Class in DFT.

A supervised cooperative work program for first-year students in an occupation related to drafting. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**DFT 240 Manufacturing Processes I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Background information on various manufacturing materials and fundamental types of manufacturing methods. Includes introduction to automation to acquaint the student with modern practice of numerical control.

**DFT 245 Manufacturing Processes II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Background information on casting and foundry practices. Includes familiarization with the production of simple molds. Their care and casting, and basic heat treatment inspection and testing using both destructive and nondestructive methods.

**DFT 280 Computer Aided Drafting II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: DFT 180.

Continuation of DFT 180. Principles and techniques for operating more advanced CAD equipment. Includes terminology, commands and advanced problems in production drawings.

**DFT 299 Co-op Related Class in DFT /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: DFT 199 and concurrent enrollment in DFT 299C Co-op Work in DFT.

Continuation of DFT 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**DFT 299 Co-op Work in DFT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: DFT 199 and concurrent enrollment in DFT 299 Co-op Related Class in DFT.

Continuation of DFT 199. A supervised cooperative work program for second-year students in an occupation related to drafting. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**DRAFTING, CONSTRUCTION****DFC 110 Construction Drafting I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Introduction to drafting. Includes developing the following working drawings for a small single family detached residence: plot plans, floor plans, sections, details, and structural, mechanical, electrical and plumbing plans. Emphasis on line weights, lettering and composing working drawing sets.

**DFC 115 Construction Determinants I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the construction industry. Includes methods of construction, building equipment systems, codes and standards, contract documents, office procedures, ethics, architectural practice and estimating.

**DFC 160 Construction Drafting II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: DFC 110.

Practical application of construction drafting principles. The student will develop a complete set of working drawings for a wood frame and masonry building.

**DFC 165 Construction Determinants II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of building materials and their appropriate use and specification throughout the construction industry.

**DFC 210 Construction Drafting III /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: DFC 160.

Advanced construction drafting principles and applications. Using various media and specialized techniques, the student will develop drawings based on the following types of drafting problems: civil engineering, landscape architectural, structural, architectural, mechanical, plumbing and electrical.

**DFC 215 Introduction to Microcomputers for the Construction Industry /3 cr. hrs./5 periods (1 lec., 4 lab)**

□ Prerequisites: DFC 115, 160 and 165.

Introduction to microcomputers in structural, mechanical, plumbing and electrical design. Includes solar calculations, specifications writing, cost estimating and an introduction to computer aided graphics.

**DFC 220 Site Development Drafting /3 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: DFC 160.

Introduction to drafting principles involved in the development of construction sites. Topography, grading and drainage, boundary descriptions and site planning.

**DFC 260 Construction Drafting IV /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: DFC 210 and 220.

Further advanced construction drafting principles and applications culminating in a final project. The student will develop drawings for a nonresidential building using a systems-drafting format.

## **DRAMA**

### **DRA 051 Theater Practice for the Serious Amateur /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Techniques of acting and theatrical presentation for beginning actors of all ages. Designed to stimulate participation in various types of community theatrical presentations.

### **DRA 060 Theater Appreciation /3 cr. hrs./3 periods (1.5 lec., 1.5 lab)**

□ Prerequisite: None.

Examination and evaluation of various modes of theatrical presentations and techniques. Includes reading, attending and criticizing ten to twelve theatrical productions of various types, periods and styles as performed by producing groups with varying goals, training and purposes.

### **DRA 103 Voice and Movement for the Actor I /1 cr. hr./2 periods (2 lab)**

□ Prerequisite: None.

Principles and practice of beginning voice and movement skills for the actor. Includes phonetics, physical isolation, and awareness exercises. May be taken two times for a maximum of two credit hours.

### **DRA 104 Voice and Movement for the Actor II /1 cr. hr./2 periods (2 lab)**

□ Prerequisite: DRA 103.

Continuation of DRA 103. Includes development and practice of stage dialects and physicalization of character. May be taken two times for a maximum of two credit hours.

### **DRA 109 Special Topics in Theater /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Experience in and study of selected styles and forms in theater. One topic is covered each time course is offered. Examples: ethnic theater (Chicano-Latino theater or Black theater), children's theater, commedia del arte, mime theater and musical theater.

### **DRA 109 Special Topics in Theater: Chicano-Latino Theater /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Experience in and study of Chicano-Latino style and form in theater.

### **DRA 111 Stagecraft /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Concurrent enrollment in DRA 112 and 113.

Principles of the operation and effects of various types of stages and stage scenery. Includes the construction of stage scenery and the history and construction of costumes and properties.

### **DRA 112 Stagecraft Laboratory /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: DRA 111.

Practical application of techniques for constructing stage scenery and properties. Includes uses of various materials; construction of flats, steps and platforms; and rigging systems. May be taken three times for a maximum of three credit hours.

### **DRA 113 STagecraft Crew /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: DRA 111.

Preparing, organizing, setting up, running and shifting of theatrical sets, properties and costumes for approved theatrical productions. May be taken three times for a maximum of three credit hours.

### **DRA 115 Make-up /1 cr. hr./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Principles and practice of straight and character make-up under various conditions. Includes special effects, masks, clown make-up and fantasy make-up.

### **DRA 118 Basic Theatre Graphics /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Principles and practice of graphic skills necessary in the planning of theatrical productions. Includes drafting and mechanical drawing, perspective drawing and watercolor painting techniques.

### **DRA 140 History of Theater I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of theater, drama and audiences from ancient Greece to the late 18th century. Includes changes in theaters, stages and theatrical conventions; and representative plays from each period.

### **DRA 141 History of Theater II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of theater, drama and audiences from the 18th century to the present. Includes changes in theaters, stages and theatrical conventions; and representative plays from each period.

### **DRA 149 Introduction to Acting I /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Introduction to performance techniques and the development of physical skills for effective performance. Includes techniques of acting and characterization.

### **DRA 151 Introduction to Acting II /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: DRA 103 or concurrent enrollment, and DRA 149.

Further skill development in performance techniques. Includes methods of developing and projecting a character's physical scope, emotional inner life and the employment of sub-text (unspoken thoughts) in performances. Also includes techniques for character and script analysis.



**DRA 201 Independent Studies in Drama /1-4 cr. hrs./3-12 periods (3-12 lab)**

□ Prerequisite: None.

Students work at various assigned tasks in theatrical productions under the guidance of an instructor. Alternatively, students may design their own projects with the instructor's approval.

**DRA 220 Stage Lighting /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisites: DRA 118 or concurrent enrollment, and concurrent enrollment in DRA 121 and 122.

Principles of stage lighting design and practice. Includes study of stage lighting, instruments and their capabilities, construction, and uses in various theatrical applications.

**DRA 221 Stage Lighting Laboratory /1 cr. hr./3 periods (3 lab)**

**Prerequisite: DRA 220.**

Practical application of stage-lighting techniques. Includes mounting, hanging, and focusing from design; adjustments and repair of instruments; organizing and operation of control systems; and safety practices. May be taken three times for a maximum of three credit hours.

**DRA 222 Stage Lighting Crew /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: DRA 220.

Organizing, setting up and operating of stage lighting for approved theatrical productions. May be taken three times for a maximum of three credit hours.

**DRA 223 Scene Design /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisites: DRA 118 or concurrent enrollment, and concurrent enrollment in DRA 224 and 225.

Principles of scene design for various types of stage and models of productions. Includes ground plans, color design, painting techniques, and uses of plastic materials and fabric design.

**DRA 224 Scene Design Laboratory /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: DRA 223.

Practical application of scene design techniques. Includes base and paint application in various styles, mixing and blending of painting materials, and forming and mounting set decorations. May be taken three times for a maximum of three credit hours.

**DRA 225 Scene Design Crew /1 cr. hr./3 periods (3 lab)**

□ Prerequisite: DRA 223.

Planning, painting and decorating stage settings for approved theatrical productions. May be taken three times for a maximum of three credit hours.

**DRA 245 Principles of Dramatic Structure /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of the structural elements of major dramatic forms and styles. Includes reading and viewing of representative plays and analysis of their structures in relationship to modes of presentation and the resulting effects.

**DRA 250 Intermediate Acting I /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: DRA 103 and 112 or concurrent enrollment in either of both, and DRA 149.

Theory and practice of creating sustained and logical character portrayals using all types of dramatic literature from various cultures. Includes rehearsal and performances of scenes in representational and presentational styles and practice in auditioning techniques.

**DRA 251 Intermediate Acting II /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: DRA 104 and 112 and either DRA 151 or 250 (DRA 140 and 112 may be taken concurrently with DRA 251).

Continuation of DRA 250. Includes scene and monologue development and focusing on conventions of non-realistic styles.

**EARLY CHILDHOOD EDUCATION**

**ECE 106 The Growing Years /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of forces which shape the growing child. Includes the interplay of biological factors, human interaction and social structure from earliest womb environment into adolescence.

**ECE 107 Human Development and Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Interdisciplinary and intercultural approach to human development and interpersonal relationships from birth to death.

**ECE 108 Literature/Social Studies for Children /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of materials, principles and techniques for the selection and presentation of children's literature and social studies concepts.

**ECE 108 Literatura ciencias sociales para niños /3 cr. hrs./3 periods (3 lec.)**

□ Requisito: Ninguno.

La historia y el desarrollo de la literatura infantil; estudios de materiales, principios, metodología y técnicas en la selección y presentación de distintas clases de materiales.

**ECE 110 Communication Skills for Children /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Language and communication in early childhood education. Includes developing materials using existing programs and using computers in language development.

**ECE 111 Techniques for the Special Child /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Techniques, procedures and trends in special education as they relate to the following areas of exceptionality: visually impaired, auditorially impaired, mentally impaired, physically impaired, emotionally disturbed, speech impaired and learning disabled.

**ECE 112 Music/Art for Children /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Materials, activities and procedures for developing children's musical and artistic skills.

**ECE 112 Música/arte para el niño /3 cr. hrs./3 periods (3 lec.)**

□ Requisito: Ninguno.

El papel de la música para el niño; presentación de materiales, actividades y procedimientos para enseñar música a los niños.

**ECE 114 Effective Parenthood /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of parental factors contributing to optimal physical, intellectual, affective and moral development of children. Includes a variety of specific problem-solving techniques.

**ECE 116 Understanding Children /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Direct study of children from infancy through early adolescence accomplished primarily through structured observations and student-child interactions.

**ECE 117 Child Growth and Development /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Growth, development and acculturation of the child from conception to adolescence.

**ECE 118 Introduction to Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Educational theories and philosophies. Includes supervised fieldwork to provide exposure to varied educational settings.

**ECE 120 Supervision and Administration /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of all administrative responsibilities within all areas of early childhood education.

**ECE 124 Math/Science for Children /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Concepts, methods and materials used in teaching mathematics and science to children. Includes developing materials and using existing programs and computers.

**ECE 126 Teaching Techniques /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and techniques of classroom management. Includes supervised field experience.

**ECE 128 Child Care Programs /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Acquisition and development of competencies required by child care personnel.

**ECE 130 Day Care Programs /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Acquisition and development of required competencies in day care programs. Includes classroom instruction and supervised experience in care of infants, toddlers and school-age children.

**ECE 199 Co-op Related Class in ECE /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in ECE 199 Co-op Work in ECE. Instructor Approval.

Introduction to Cooperative Education designed for first-year students (instruction which provides for success in securing and retaining a training job in early childhood education). Includes methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience.

**ECE 199 Co-op Work in ECE /2 cr. hrs./10 periods (10 lab)**

□ Prerequisite: Concurrent enrollment in ECE 199 Co-op Related Class in ECE. Instructor Approval.

A supervised cooperative work program for first-year students in early childhood education. Teacher-coordinators work directly with students and their supervisors.

**ECE 296 Independent Studies in Early Childhood Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Departmental approval.

Students independently continue their development in Early Childhood Education under the guidance of a faculty member. May be taken two times for a maximum of six credit hours.

**ECE 299 Co-op Related Class in ECE /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: ECE 199 and concurrent enrollment in ECE 299 Co-op Work in ECE. Instructor Approval.

Continuation of ECE 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience.

**ECE 299 Co-op Work in ECE /2 cr. hrs./10 periods (10 lab)**

□ Prerequisites: ECE 199 and concurrent enrollment in ECE 299 Co-op Related Class in ECE. Continuation of ECE 199. Instructor Approval.

A supervised cooperative work program for second-year students in early childhood education. Teacher-coordinators work directly with students and their supervisors.



## **EARTH SCIENCES**

### **ESC 070 Earth, Sea, Sky /3 cr. hrs./3 periods/ (3 lec.)**

□ Prerequisite: None.

Overview of earth sciences, including segments taken from astronomy, meteorology, climatology, oceanography and geology. Does not include a lab.

### **ESC 101 Physical Geography: Weather and Climate /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

The physical elements—weather, climate, vegetation and soils—and their importance to man. Includes their interrelationships, resulting patterns and effects. A physical laboratory science.

### **ESC 102 Physical Geography: Land Forms and Oceans /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Introduction to the surface of the earth and the forces of nature that shape it. Includes the study of volcanoes, earthquakes, glaciers, rivers and oceans, and the interrelation of these forces with man. A physical laboratory science.

### **ESC 103 Cultural Geography /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Examination of the human world from a geographic perspective. Includes an exploration of global issues such as population, food supply, geopolitics and urbanization. Also includes industrialization as seen in the special combination of cultural, physical, historical, economic and organizational qualities imprinted on the landscapes of the world. A social science.

### **ESC 110 Geology of the Western United States /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

This course provides an introduction to physical and historical geology using samples from the western United States including national parks and monuments.

### **ESC 115 Introduction to Environmental Science /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Exploration of factors involved in the survival of mankind and other life-forms. Includes an introduction to the basic principles of ecology and ecosystems as they relate to problems of air and water pollution and energy use.

### **ESC 120 Introductory Geology I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

An introduction to the physical aspects of the earth's crust; rocks and minerals, their relationship to one another; and the surface and subsurface processes that operate on and in the earth.

### **ESC 121 Introductory Geology II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

This course traces the history of the earth and life on earth as indicated by the sequence of rock layers, the distribution of surface sediments, former geographic relationships, the fossil record and the nature of ancient environments. (ESC 120 is strongly recommended.)

### **ESC 209 Mineralogy and Introduction to Petrology /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: ESC 120.

This course deals with the relationships between crystal chemistry, atomic structure and the properties of minerals, and teaches students how to use these relationships to make identifications. The students will also learn fundamental principles for the more detailed study of igneous, sedimentary and metamorphic rocks.

### **ESC 221 Structural Geology /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisites: Trigonometry and ESC 120 or equivalent required; ESC 121 recommended.

Study of structures resulting from formation and deformation of rocks, of the forces which cause such deformations, and the geographic features which result. Field mapping techniques will be introduced in the lab portion of the course.

## **ECONOMICS**

### **ECO 100 Introduction to Microeconomics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070.

Basic principles of economic theory. Includes analysis of consumer and producer choices; how prices and incomes are determined in the U.S. economy; and applications of economic principles to such issues as monopoly, pollution and different economic systems.

### **ECO 101 Introduction to Macroeconomics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070.

Basic economic principles as they apply to the economy as a whole. Includes determinants of gross national product, level of employment and prices; the role of money and banking institutions; and applications of economic principles to such issues as inflation, recession, federal government tax and expenditure policies.

### **ECO 160 Personal and Family Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles to assist individuals and families in making decisions regarding earning, spending and investing money. Includes choosing a career, making major purchases, sources of consumer information and putting one's dollars to work. Same as HEC 160).

**ECO 210 Survey of Economic Theory /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 175.

Introduction to current economic theory. Designed for engineering majors. The microeconomics of consumer and producer choice and the macroeconomics of gross national product, employment and price level determination. Not open to students who have taken or are taking ECO 100 and/or ECO 101.

**ECO 230 Money and Banking /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ECO 101.

Basic principles of the U.S. financial system. Nature of money and credit, how money and credit influence the economy, the role of commercial banks and the Federal Reserve Bank, interest rate determination, and international monetary policies.

**ECO 298 Topics in Contemporary Economics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ECO 100 or 101.

Supervised independent study of economic topics determined by student interest.

**EDUCATION****EDU 100 Principles of Bilingual Education /3 cr. hr./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of basic principles of bilingual education. Includes philosophy, history, rationale, legislation and models.

**EDU 100 Principios de la educación bilingüe /3 cr. hr./3 periods (3 lec.)**

□ Requisito: Ninguno.

Estudio de los principios básicos de la educación bilingüe. Este curso abarca: filosofía, historia, razonamiento, leyes y modelos.

**EDU 107 Art for the Child /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Techniques of teaching arts and crafts projects to children, using materials commonly found in the home. Includes Mexican cultural arts within the capabilities of primary school children.

**EDU 107 Arte para el niño /3 cr. hr./3 periods (3 lec.)**

□ Requisito: Ninguno.

Este curso imparte técnicas de como enseñar a los niños proyectos de artes y artesanía usando materias que se encuentran comunmente en casa. Se incluyen artes culturales mexicanas que están dentro de las capacidades de niños de escuela primaria.

**EDU 110 Social Sciences Through Literature /3 cr. hr./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of social studies in various subject areas (e.g., politics and history) through literary genres. Emphasis on utilizing this approach in the elementary school as part of the curriculum.

**EDU 110 Ciencias sociales por medio de la literatura /3 cr. hr./3 periods (3 lec.)**

□ Requisito: Ninguno.

El estudio de los géneros literarios y en particular las ciencias sociales a través de distintas materias tal como, ciencias políticas, historia, filosofía, etc. Estas materias se estudian por medio de la literatura. Énfasis en como utilizar este método en las escuelas primarias como parte del currículum.

**EDU 115 Actividades creativas /3 cr. hr./3 periods (3 lec.)**

□ Requisito: Ninguno.

Materias selectas y técnicas para la enseñanza de actividades para niños. Música, juegos, rimas, poemas, y drama para desarrollar y aumentar la creatividad de los niños se emplearan de las culturas anglo y mexicana.

**EDU 115 Creative Activities /3 cr. hr./3 periods (3 lec.)**

□ Prerequisite: None.

Selected materials and techniques for teaching activities to children designed to develop their creativity. Includes music, poems and drama from both the Anglo and Mexican cultures.

**EDU 115 Actividades creativas /3 cr. hr./3 periods (3 lec.)**

□ Requisito: Ninguno.

Materias selectas y técnicas para la enseñanza de actividades para niños. Música, juegos, rimas, poemas, y drama para desarrollar y aumentar la creatividad de los niños. Se emplearan de las culturas anglo y mexicana.

**ELECTRONICS****ETR 001 Introduction to Electronics /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: MTH 070 or concurrent enrollment.

Introduction to the field of electronics through the use of basic electronic test equipment and the construction of a transistor radio. A pre-program course for students who have not had previous training in electronics or who require some knowledge of electronic principles to support their major program.

**ETR 050 FCC Amateur License Preparation /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Preparation for the FCC Amateur Radio Examination at the Novice or General Class level. Includes history of amateur radio and its use as a public service, fundamentals of electronics, sending and receiving Morse code, equipment installation and maintenance, and operation of receivers and transmitters. Does not satisfy major requirements in the electronics program.

**ETR 100 Fundamentals of Electronics /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 001, and MTH 115 or concurrent enrollment. Basic principles of electronics. Includes direct and alternating current as they apply to resistive, capacitive and inductive passive circuits.

**ETR 101 Basic DC Electronic Circuit Analysis /2 cr. hrs./3 periods (1.5 lec., 1.5 lab)**

□ Prerequisites: ETR 001, and MTH 115 or concurrent enrollment. Fundamentals of direct current electronic circuit theory. Includes practice in using applicable test equipment.

**ETR 102 Basic AC Electronic Circuit Analysis /2 cr. hrs./3 periods (1.5 lec., 1.5 lab)**

□ Prerequisites: ETR 101, and MTH 115 or concurrent enrollment. Fundamentals of alternating current electronic circuit theory. Includes practice in using applicable test equipment.

**ETR 103 Active Devices /2 cr. hrs./3 periods (1.5 lec., 1.5 lab)**

□ Prerequisites: ETR 100 or 102, and MTH 115 or concurrent enrollment. Basic concepts of active devices. Includes characteristics, parameters, circuit applications and limitations of the devices. Also includes diodes, bipolar transistors, linear amplifiers, coupling and biasing.

**ETR 105 Electronic Circuits /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 100, and MTH 125 or concurrent enrollment. Introduction to the electronic behavior of active devices. Includes transistor circuit analysis, power supplies, regulators, amplifiers (A, B, AB, and C), and introduction to feedback amplifiers. May be taken concurrently with ETR 110.

**ETR 110 Digital Electronics /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisites: ETR 100 and MTH 125. (May be taken concurrently with ETR 105 and MTH 125). Fundamentals of digital electronics. Includes binary, octal and hexadecimal arithmetic; digital logic; Boolean algebra; and discrete and integrated digital circuits.

**ETR 112 Electronics for Technical Careers /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MTH 070.

Concepts of solid-state electronics as they apply to technical careers.

**ETR 121 Electronic Solder Assembly /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Basic skills required to perform hand soldering on electronic equipment. Includes component preparation and insertion, terminal installation and soldering, wire interconnections and construction of a printed circuit board assembly. Also includes inspection methods and techniques.

**ETR 121A Basic Electronic Solder Assembly /1 cr. hr./1.5 periods (.5 lec., 1 lab)**

□ Prerequisite: None.

Principles and techniques of basic electronic solder assembly. Includes soldering theory, wire preparation, wiring and soldering on terminals and connector and connector pins plus an introduction to printed circuit boards.

**ETR 122 Electronic Construction Assembly /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: ETR 100 and MTH 115.

Basic skills required to work on electronic equipment. Includes assembly techniques, soldering and desoldering, printed circuit board fabrication and wire stripping. Also includes discussion of machine shop and power tools.

**ETR 123 Electronic Fabrication and Processing /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Basic skills required for manufacturing printed circuit boards and related electronic hardware. Includes printed circuit board artwork, patterning, lay-up, etching, plating, drilling, routing, and inspection methods and techniques.

**ETR 124 Electronic Measurements /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: ETR 105.

Basic measuring techniques. Includes techniques for making accurate DC-AC, power, time, period, and frequency measurements using a variety of instruments. Also includes measurements on recorders, transistor curve-tracers, generators, counters, spectrum analyzers, distortion analyzers and microwave devices.

**ETR 143 Television Theory and Servicing /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 105 and 110 and MTH 125.

Principles and techniques of television servicing. For students who wish to become trouble-shooting television electronic technicians or those with other majors who wish to learn or sharpen trouble-shooting skills on analog and linear circuitry. Includes tools of the trade, television standards, circuit analysis, alignment techniques, trouble-shooting, signal tracing and signal substitution.

**ETR 150 Home Entertainment Equipment Repair /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 105, 110 and 143 and MTH 125.

Repair of home entertainment equipment other than television receivers. Includes theory and repair of audio amplifiers, AM-FM-MPX receivers, tape decks, cassette decks, turntables, and Dolby and other noise reduction devices.

**ETR 190 Electronic Theory Review /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: Previous electronics training and experience.

Review of electronic theory for students who have previously completed some training but need to review before continuing their training in other electronic courses.

**ETR 199 Co-op Related Class in ETR /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in ETR 199 Co-op Work in ETR. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to electronics). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**ETR 199 Co-op Work in ETR /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in ETR 199 Co-op Related Class in ETR.

A supervised cooperative work program for first-year students in an occupation related to electronics. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**ETR 230 Advanced Circuits /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 105 and 110 and MTH 125.

Advanced circuit analysis and applications. Includes operational amplifiers and other linear integrated circuits: AF and RF amplifiers, active filters and modulation circuits.

**ETR 235 Communications /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: ETR 230 or equivalent experience.

Communications systems from low frequencies through microwave frequencies. Includes FM, AM and PM modulation techniques (single-sideband and multiplexing); antenna systems; and systems measurements.

**ETR 250 Digital Devices I /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: ETR 105 and 110, or equivalent experience.

Digital integrated circuit applications, construction, trouble-shooting and maintenance. Includes specific applications of TTL logic family in a simple computer project.

**ETR 251 Digital Devices II /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: ETR 230 and 250.

Operational amplifiers, A/D-D/A converters, modems, digital transmission lines, interface to AC circuits, and control loops of process control applications.

**ETR 253 Electronic Analysis /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: MTH 125 or 150, and MTH 155.

Electronic analysis by means of advanced mathematical concepts and techniques. Includes aspects of linear algebra, trigonometry and calculus.

**ETR 255 Digital Systems /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: CSC 180, and ETR 250 or concurrent enrollment.

Principles of digital systems. Includes minicomputer operation, assembly and machine languages, methods of addressing, and I/O operation on single-user and multi-user operating systems. Also includes a variety of bus concepts and their associated timing considerations.

**ETR 256 Microprocessors /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: ETR 250 and 255.

Microprocessor software and hardware. Includes assembly language programming, assemblers, introduction to operating systems, bus architecture, memory, I/O, timing and waveforms, and trouble-shooting methods.

**ETR 257 Computer Peripherals /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: ETR 255, and ETR 256 or concurrent enrollment.

Various types of computer peripheral equipment and their interfaces with the computer.

**ETR 274 Industrial Instrumentation (Hydraulics and Pneumatics) Systems /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: MTH 125.

Principles of industrial instrumentation. Includes fluid control systems (hydraulic and pneumatic), instrumentation systems, pressure transducers, pressure control devices and pressure loop systems.

**ETR 276 Industrial Electronic Systems /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: ETR 274.

Elementary principles of industrial electronic control and instrumentation systems. Includes electronic transducers, electronic control devices and electronic loop systems.

**ETR 290 General Radiotelephone FCC License /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: ETR 230 or equivalent experience.

Preparation for FCC general radiotelephone certificate examination. Includes review of electronic circuit analysis, basic radio theory, laws and regulations.

**ETR 299 Co-op Related Class in ETR /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: ETR 199 and concurrent enrollment in ETR 299 Co-op Work in ETR.

Continuation of ETR 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**ETR 299 Co-op Work in ETR /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: ETR 199 and concurrent enrollment in ETR 299 Co-op Related Class in ETR.

Continuation of ETR 199. A supervised cooperative work program for second-year students in an occupation related to electronics. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**EMERGENCY MEDICAL TECHNOLOGY****EMT 051 Basic Emergency Medical Technology /5 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisite: Consent of instructor.

Introduction to all techniques of pre-hospital emergency medical care currently considered as responsibilities of the emergency medical technician. Practice in recognizing symptoms of illness and injuries and proper procedures of emergency care.

**EMT 057 Review Topics in Basic EMT /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: EMT certificate.

Refresher course for the basic emergency medical technologist pursuing recertification. Includes practice in the manipulative skills, mechanical aids to BLS, MAST, splinting and intravenous monitoring.

**EMT 058 Refresher Training for EMT /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisites: EMT 051 and graduation from the basic program at least one year prior to enrollment.

For students in the Emergency Medical Services field who must meet refresher training requirements for recertification.

**EMT 059 Emergency Cardiac Care /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: EMT 051.

Introduction to more advanced techniques for pre-hospital care of the cardiac patient. Includes anatomy and physiology of the heart, the conductive system, EKG recording and basic interpretation, physical assessment of the cardiovascular and respiratory systems, and mechanisms of cardiovascular disease processes.

**EMT 100 Basic Cardiac Life Support /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles and techniques of basic cardiac life support. Includes techniques of airway care and cardiopulmonary resuscitation, introduction to the common types of equipment used in basic cardiac life support, introduction to the pathogenesis of coronary artery disease, electric shock, drowning and sudden death. Designed to train and certify allied health personnel and other interested individuals. Upon course completion, the student may be eligible for basic life support certification by the American Red Cross.

**EMT 101 Intermediate Emergency Medical Technology I /6 cr. hrs./7 periods (6 lec., 1 lab)**

□ Prerequisite: EMT 051.

Continuation of training in techniques of pre-hospital emergency medical care and examination of aspects of human anatomy and physiology surveyed in EMT 051. Includes pharmacology; the respiratory, cardiovascular, and central nervous systems; soft tissue and musculoskeletal injuries; obstetrics/gynecological emergencies; rescue techniques; and communications.

**EMT 102 Intermediate Emergency Medical Technology II /4 cr. hrs./5 periods (4 lec., 1 lab)**

□ Prerequisite: EMT 101.

Continuation of training in techniques of pre-hospital emergency medical care. The recognition, management and pathophysiology involved with the respiratory, nervous and cardiovascular systems. Expands on disorders of hydration, including progression of shock. Also includes a study of blood and its components and techniques of management. Emphasis on patient assessment and the importance of report writing.

**EMT 103 Intermediate Emergency Medical Technology III /4 cr. hrs./5 periods (4 lec., 1 lab)**

□ Prerequisite: EMT 102.

Continuation of training in techniques of pre-hospital emergency medical care. Includes methods used by the I-EMT for interviewing in a medical emergency; a survey of the eight clusters of a medical situation associated with medical emergencies with exposure to environmental extremes.

**EMT 104 Intermediate Emergency Medical Technology IV /4 cr. hrs./5 periods (4 lec., 1 lab)**

□ Prerequisite: EMT 103.

Continuation of training in techniques of pre-hospital emergency medical care. Includes techniques involved in rescue, communications, and the systems approach to medical emergencies with emphasis on oral evaluation and skills evaluation. Also provides rotations through clinical settings, which allows for further exposure to I-EMT skills.



**EMT 201 Introduction to Paramedicine /4 cr. hrs./6 periods (3 lec., 3 lab)**

**Prerequisite: Acceptance into Advanced Paramedic Program.**

□ Introduction to the paramedic career field. Includes medico-legal implications, psycho-social aspects and interpersonal communication skills for prehospital emergency medicine. Also includes shock and fluid therapy,, anatomy and physiology, and medical terminology. Lab portion provides basic EMT skills application at the paramedic level.

**EMT 202 Paramedicine: Pharmacology /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Drug information and administration. Includes action of drugs, weights and measures, and principles and techniques of drug administration for effective paramedical prehospital care.

**EMT 203 Pathophysiology and Management of Respiratory Emergencies /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced techniques for life support in the prehospital setting. Includes airway management, oxygen therapy, respiratory system, pathophysiology and assessment.

**EMT 204 Advanced Life Support: Cardiology**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Principles of cardiology and advanced cardiac life support skills for the paramedic. Includes cardiac disease states, electrocardiography, and identification and field management of cardiac arrhythmias.

**EMT 205 Pathophysiology and Management of Neurological Problem /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
**Advanced life support approaches to neurological injuries, including head trauma, spinal injury and other medical problems.**

**EMT 206 Pathophysiology and Management of Soft Tissue Injuries /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support approaches to soft-tissue injuries, including patient assessment and techniques and management of soft tissue injuries.

**EMT 207 Pathophysiology and Management of Musculoskeletal Injuries /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support approaches to traumatic injuries, including fractures, dislocations, sprains, strains and various splinting devices.

**EMT 208 Pathophysiology and Management of Medical Problems /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support approaches to emergency medical problems. Includes diabetic, anaphylactic reaction, environmental, alcoholism and drug abuse, poisoning, abdomen genitourinary aquatic, and management of these problems.

**EMT 209 Pathophysiology and Management of Gynecologic Emergencies /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support approaches to gynecologic emergencies. Includes complications and abnormal delivery, breech birth, multi-birth, post-partum hemorrhage and ruptured uterus.

**EMT 210 Pathophysiology and Management of Pediatric and Neonatal Patient /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program  
Advanced life support approaches to the pediatric and neonatal patient under emergency situations, including SIDS, croup, epiglottitis and battered child.

**EMT 211 Emotional Aspects of Illness and Injury /1 cr. hr./2 periods (1 lec., 1 lab)FL**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support skills approaches to emergency care of the emotionally disturbed, including psychiatric disorders, high anxiety and stress in emergencies.

**EMT 212 Extrication/Rescue Techniques /1 cr. hr./2 periods (12 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Advanced life support approaches to extrication and rescue. Includes devices used for extrication and aspects of rescue that directly relate to patient care.

**EMT 213 Telemetry and EMS Communications /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
Introduction to the capabilities of telemetry and communication systems used by paramedic.

**EMT 214 Paramedic Procedures: Hospital /3 cr. hrs./15 periods (15 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program.  
In-hospital clinical procedures for the paramedic.

**EMT 215 Paramedic Procedures: Ambulance /5 cr. hrs. (26 lab)**

□ Prerequisite: Acceptance into Advanced Paramedic Program  
Clinical procedures, on ambulance, for the paramedic.



## ENGINEERING

### **ENG 110 Construction Surveying /3 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: MTH 110.

Principles and techniques of construction surveying. Includes use of surveying instruments, measurement of horizontal distances, leveling, angle measurements, traversing, locating details, stadia surveys, topographic mapping and grade staking.

### **ENG 120 Engineering Graphics /3 cr. hrs./7 periods (1 lec., 6 lab)**

□ Prerequisite: DFT 150.

Principles and techniques of engineering graphics. Includes freehand technical sketching, instrument working drawings, projection, descriptive geometry and applications to engineering space problems.

### **ENG 130 Elementary Surveying /3 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: MTH 150 and 155, or 160.

Basic principles and techniques of surveying. Includes measurement of horizontal distances, use of surveying instruments, angle measurements, traverse surveys and computations, topographics, government land surveys and solar observations.

### **ENG 140 Introduction to Electrical Engineering /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: MTH 150 and 155 (or 160), and high school physics.

Introduction to the professional fields of electrical, electronic and computer engineering. Includes selected fundamental concepts and techniques encountered in the practice of these fields.

### **ENG 210 Engineering Mechanics: Statics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: PHY 131 or 210, and concurrent enrollment in MTH 215.

Engineering analysis of static mechanical systems. Includes vector algebra, equilibrium, momentum, couples, centroids, trusses, machines, friction and equivalent force systems.

### **ENG 220 Engineering Mechanics: Dynamics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ENG 210.

Engineering analysis of dynamic mechanical systems. Includes rectilinear motion, curvilinear motion, kinetics of rigid bodies, plane motion of rigid bodies and mechanical vibrations.

### **ENG 230 Mechanics of Materials /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ENG 210.

Analysis of mechanical properties of materials and their engineering applications. Includes material behavior, external forces on rigid and elastic bodies, stress, strain, load analysis and design factors.

### **ENG 240 Introduction to Digital Systems /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ENG 140 and CSC 140.

Basic principles of digital systems. Includes digital coding of information, basic logic design, number systems, sequential circuit design and computer organization.

### **ENG 245 Elementary Circuit Theory /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: PHY 216 or 132, and concurrent enrollment in MTH 220.

Analysis of elementary linear and nonlinear circuits. Basic principles of common electronic devices and circuit applications.

### **ENG 250 Numerical Analysis for Engineers /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: CSC 140 and MTH 185.

Applications of numerical methods and computer programming techniques for the creation of mathematical models of engineering systems.

### **ENG 260 Elements of Electrical Engineering /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: PHY 132 and MTH 185.

Introductory survey of the electrical engineering discipline with emphasis on electrical power applications.

### **ENG 261 Elements of Electronics /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ENG 260.

Introductory survey of the principles of electronics and instrumentation. Includes semiconductor devices, operational amplifiers, digital logic, microprocessors, transducers, and analog, digital and hybrid applications.

## ENGINEERING CONSTRUCTION TECHNOLOGY

### **ECT 100 Principles of Construction /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Methods used to determine types of materials, equipment and labor required for construction projects to meet building codes. Includes blueprint reading, building codes, electrical and mechanical systems, inspection, testing and properties of cement, timber, steel and soil.

### **ECT 110 Construction: Civil Blueprint Reading I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Fundamentals of civil engineering blueprint reading. Includes road construction layout, grade staking, excavation and embankment layout, site development layout and construction, and utility construction layout.

**ECT 111 Construction: Commercial Blueprint Reading I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Residential and light commercial blueprint reading. Includes blueprint symbols and terminology; construction materials; applications and specifications for commercial buildings; light frame and brick veneer construction; and appropriate mathematics.

**ECT 120 Building Materials /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ECT 100 and MTH 110.

Construction standards and specific types of building materials used in commercial, industrial and private construction projects. Includes industrial and local area standards and properties of materials (wood, concrete, masonry and other standard construction materials).

**ECT 130 Construction: Piping Systems /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Principles and techniques of piping system construction. Includes project planning, piping design, installation, safety parameters, inspection criteria and maintenance.

**ECT 140 Construction: Electricity /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: MTH 110.

Principles of electrical system construction. Includes basic theory of electricity, circuit components, distribution systems, electrical equipment, power consumption, costs and the National Electric Code.

**ECT 150 Construction: Masonry /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ECT 120.

Principles and techniques of masonry construction. Includes preparation, composition, protection, placement and curing of concrete, mortar and plaster. Also includes construction using brick, concrete block and stone.

**ECT 160 Construction: Carpentry I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Residential and commercial carpentry. Includes safety, construction materials, blueprint reading, site layout and preparation, excavation, forming, framing and use of commercial concrete.

**ECT 170 Construction: Carpentry II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ECT 160.

Continuation of ECT 160. Exterior and interior finishing for wood and concrete construction. Includes installation of outside wall coverings, cornices, door installations, and concrete forms for architectural and structural concrete.

**ECT 200 Soil Mechanics /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ECT 120 and MTH 120.

Techniques of soil mechanics. Emphasis on sound solutions to construction problems in the area of foundation work and earth structures. Includes basic soil relationships, permeability, consolidation, shear strength, cuts and slopes, lateral pressures, soil exploration and sampling, compaction and stabilization. **ECT 205 Construction: Civil Blueprint Reading II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ECT 110.

Continuation of ECT 110. Includes advanced road construction and utility plans, advanced site development layout, box culvert construction, drainageway installation, bridges, aquaduct structures and appropriate mathematics to handle these topics.

**ECT 206 Construction: Commercial Blueprint Reading II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ECT 111.

Continuation of ECT 111. Blueprint reading and specifications for general and heavy commercial construction. Includes heavy timber, structural steel and reinforced concrete construction for townhouses and large commercial buildings.

**ECT 210 Building and Material Cost Estimating /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: ECT 120.

Principles of building and material cost estimating. Includes specifications; site work; concrete, steel, masonry, electrical, piping, carpentry and alteration take-offs; job overhead; subcontractor's bids; and pricing.

**ECT 220 Construction: Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ECT 210.

Construction management procedures, including analysis of the general provisions of contracts and review of material submittals.

## ENGLISH AS A SECOND LANGUAGE

The ESL program is designed for bilingual and foreign students to help them develop proficiency in oral and written English by practicing basic skills in listening, speaking, reading and writing American English. Students will be placed in the program according to assessment test results and teacher evaluation.

### **ESL 050A Elementary Grammatical Patterns I /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Development of elementary listening, speaking, reading and writing skills in frequently used patterns of basic American English. Reading, writing and laboratory exercises are used to reinforce these patterns.

### **ESL 050B Elementary Grammatical Patterns II /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: ESL 050A.  
Continuation of ESL 050A.

### **ESL 051 Intermediate Grammatical Patterns /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ESL 050B or satisfactory score on ESL assessment test.  
Development of intermediate listening and speaking skills in the frequently used patterns of American English. Reading and writing are introduced to reinforce these patterns.

### **ESL 052 Intermediate ESL Reading and Writing—Levels I and II /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: ESL 051 or satisfactory score on ESL assessment test.  
Level I—The reading component stresses vocabulary development and the development of cultural awareness gained from reading various types of American literature written on a low intermediate level. Basic word recognition, comprehension and study skills are introduced. The writing component stresses skills in basic word order, certain tenses and parts of speech, and mechanics in various types of writing. Level II—Reading and writing components are on a more advanced intermediate level.

### **ESL 053 Advanced Grammatical Patterns /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: ESL 052 or satisfactory placement on ESL assessment test.  
Development of advanced listening and speaking skills in the frequently used patterns of American English. Reading and writing are introduced to reinforce these patterns.

### **ESL 054 Advanced Writing /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: ESL 053 or satisfactory score on ESL assessment test.  
Skill development in grammar, sentence patterns, paragraph development and organization at an advanced level.

### **ESL 055 Gaining Independence in Reading /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: ESL 054 or satisfactory score on the ESL assessment test.  
Improvement of speed and comprehension in reading through conscious analysis of paragraph structure and recognizing the progressive development of ideas.

### **ESL 057 Composition I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

This is a first semester English composition course at the freshman level designed to help the foreign and bilingual student with special needs.

### **ESL 058 Composition II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

This is a second semester freshman composition course designed to help foreign and bilingual students with special needs.

### **ESL 060 American English Pronunciation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ESL 051.

An intermediate-advanced level course designed to develop fluency in American English pronunciation through the use of oral reading, conversational practice and exercises.

## EXPLORATORY

### **EXP 020 Techniques of Microwave Cooking /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Fundamental principles and proper operation of microwave ovens. Includes safety, special techniques in microwave cooking and the advantages and disadvantages of microwave cooking.

### **EXP 051 Social Science Survey /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Units from the social or behavioral sciences selected by the student.

### **EXP 055 Humane Treatment of Animals /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Critical examination of the moral, religious and social issues raised by mankind's treatment of animals. Includes the history and philosophy of the humane movement.

### **EXP 060 People /1 cr. hrs./1 period (1 lec.)**

□ Prerequisite: None.

Exploration of ideas and experiences in many different areas of study, work, cultural awareness and community development. The class will be divided into learning teams.

**EXP 060 La gente /1 cr. hr./1 period (1 lec.)**

□ Requisito: Ninguno.

Grupos de aprendizaje ofrecen a los participantes la oportunidad de explorar nuevas ideas y experiencias en las áreas del estudio, trabajo, conocimiento cultural y participación en la comunidad.

**EXP 070 The World Energy Crisis /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Exploration of the different facets of the energy "crisis," domestic and international. Includes the idea of energy as a foundation of United States and world economics.

**EXP 087 Music Appreciation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the formal development of musical ideas and their relationship to culture. For non-music majors.

**EXP 088 Political Involvement /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of local, state and national government campaigns. Includes the process of running for political office and the principles of effective campaign management. Designed to aid persons who wish to become involved in the political process.

**EXP 089 Funding Projects /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of federal funding and preparation of grant proposals. A practical course designed to assist agency and business employees in the preparation of proposals for federal funds. Includes an analysis of the United States government funding policies and the operation of federal agencies as related to funding. The student will write an elementary proposal for a federal grant.

**EXP 090 Picture Framing /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Basic principles of constructing picture frames. Intended for students who are employed or seek employment in galleries or framing shops. Includes selecting molding and mat materials and safe operation of power and hand tools.

**FASHION DESIGN AND CLOTHING****FDC 111 Clothing Construction (Beginning)/1 3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None

Fundamental principles of clothing construction. Includes selection of fabric and style, and all techniques required for construction of clothing for men, women and/or children, using commercial patterns. Proficiency test may be taken for level placement.

**FDC 111 Costura/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Requisito: Ninguno.

Este curso trata de las bases fundamentales para la construcción de ropa, la selección de telas y estilos, y el uso de patrones.

**FDC 112 Alteration and Designing/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None

Methods of altering commercial patterns and principles of fitting garments. Includes production of personal patterns for basic dress, shirt and pants.

**FDC 121 Applied Dress Design/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None

Flat pattern method of pattern making with emphasis on engineering.

**FDC 122 History of Fashion/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None

History of clothing and personal decoration as a reflection of society and culture. Includes social, aesthetic, economic and philosophical expressions from 3000 B.C. to the 20th century. Also includes individual and group expression through the following as related to historical events and trends: fabric and decoration, silhouettes, garments, accessories, hairstyles and cosmetics.

**FDC 126 Textiles/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None

Technology of textile fibers, yarns, fabric construction and special finishes. Includes design projects applicable to interior design, fashion design and merchandising. Also includes selection, economics and care of fabrics.

**FDC 131 Clothing Selection/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None

Consumer analysis of clothing design, construction and cost based on social, aesthetic and individual needs. Includes selection of color and line. Designed for personal use or for those in the fields of fashion design, clothing consultation or merchandising.

**FDC 132 Psychology of Dress/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None

Human behavior in relationship to clothing and body image. Includes satisfaction of basic human needs, effect on individuals and groups, reflection of self-perception, evaluation of clothing in trends and changing society and culture. Students pursue a research project.

**FDC 141 Fashion Design I/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None

Theory and practice of fashion design. Includes profile of the designer at work, basic fashion design sketching and the application of fine art principles to fashion design.

**FDC 142 Alteration and Repair/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None

Techniques for lengthening the life and increasing the usefulness of garments. Includes methods of altering, fitting, repairing, restyling, reconditioning and restoring clothes.

**FDC 199 Co-op Related Class in FDC/1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in FDC 199 Co-op Work in FDC. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to fashion design and clothing). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**FDC 199 Co-op Work in FDC/1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisite: Concurrent enrollment in FDC 199 Co-op Related Class in FDC.

A supervised cooperative work program for first-year students in an occupation related to fashion design and clothing. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**FDC 211 Clothing Construction (Advanced) II/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: FDC 111 or satisfactory score on proficiency test. Advanced clothing construction techniques. Includes selection of fabrics and patterns. Commercial patterns are used.

**FDC 212 Clothing Construction (Tailoring) III/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: FDC 211 or consent of instructor. Custom and semicommercial tailoring techniques. Includes experiments with recent developments in construction methods. Emphasis on use of natural fibers.

**FDC 241 Fashion Design II/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: FDC 111 and 141 or consent of instructor. Application of fashion design principles. Students design and construct original garments by draping fabric on the dress form.

**FDC 299 Co-op Related Class in FDC/1 cr. hr./1 period (1 lec.)**

□ Prerequisites: FDC 199 and concurrent enrollment in FDC 299 Co-op Work in FDC.

Continuation of FDC 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**FDC 299 Co-op Work in FDC/1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisites: FDC 199 and concurrent enrollment in FDC 299 Co-op Related Class in FDC.

Continuation of FDC 199. A supervised cooperative work program for second-year students in an occupation related to fashion design and clothing. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**FAST FOOD INDUSTRY****FFI 101 Restaurant Operations and Sanitation/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of techniques for controlling sanitation in the foodservice industry. Includes quality, time and cost management and developing positive attitudes toward the product by employees and customers. Emphasis on the contribution to profitability by the individual employee. Food Sanitation Certificate test at midterm.

**FFI 102 Restaurant Cash Register Operations and Inventory Control/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 060 or concurrent enrollment.

Examination of techniques, control transactions and inventory management in the foodservice industry. Includes records, materials and profit margins. Emphasis on the contribution by the employee to profitability.

**FFI 199 Co-op Related Class in FFI/1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in FFI 199 Co-op Work in FFI. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a job related to the fast-food industry). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**FFI 199 Co-op Work in FFI/1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in FFI 199 Co-op Related Class in FFI. A supervised cooperative work program for first-year students in an occupation related to the fast-food industry. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.



**FFI 299 Co-op Related Class in FFI/1 cr. hr./1 period (1 lec.)**

□ Prerequisites: FFI 199 and concurrent enrollment in FFI 299 Co-op Work in FFI.

Continuation of FFI 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**FFI 299 Co-op Work in FFI/1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: FFI 199 and concurrent enrollment in FFI 299 Co-op Related Class in FFI.

Continuation of FFI 199. A supervised cooperative work program for second-year students in an occupation related to the fast-food industry. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**FINANCE****FIN 101 Savings and Loan Business Operations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The role and functioning of savings associations in the country's economy. Includes a detailed exposure of the asset-liability structure as well as the needs and uses of accounting and other statistical reports. Also includes association tax regulations, use of reports to analyze savings flows, lending processes, savings associations and the social environment.

**FIN 102 Principles of Bank Operations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Fundamentals of bank functions providing a comprehensive introduction to the diversified services offered by the banking industry. Includes bank accounting, pricing and profitability, and personnel and security functions. Designed to help the beginning banker view his profession in a broad perspective.

**FIN 104 Insurance of Savings Accounts /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of savings account insurance. Includes proxies, loans secured by savings accounts, decedent accounts, liquidity, terminology, policy regarding legal advice, classification of ownership and basic theory of savings.

**FIN 106 Teller Operations—Public Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Development of skills needed by tellers to provide accurate, efficient and effective service. Includes fundamental principles of public relations, handling of cash and checks, savings accounts, attitudes, customer relations and creating a positive image.

**FIN 107 Financial Services /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the environment in which financial services professionals assist clients in meeting their financial counseling and planning needs. Includes the comprehensive financial planning process, effective communications, introduction to financial markets, perspectives on professions, regulatory trends and the changing financial services environment.

**FIN 131 Principles of Credit Unions /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Information and training to prepare persons as credit union executives. Includes credit union operations, preparing and conducting annual meetings, and presenting the credit union concept at a public meeting.

**FIN 134 Life Insurance Law and Company Operations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of life insurance law and company operations. Includes legal aspects of contract formation, policy provisions, assignments, ownership rights, creditor rights, beneficiary designations, disposition of life insurance proceeds, settlement options, types of insurers, risk selection, temporary investments, financial statements, and regulations and taxation of companies.

**FIN 135 Business Insurance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: An insurance agent's license or a general insurance course. Business uses of health and life insurance. Includes proprietorship, partnership and corporation continuation problems and their solutions. Also includes key man insurance, non-qualified deferred compensation plans, split-dollar plans and business ethics. Part of a series of courses preparing the licensed agent for a Chartered Life Underwriters' qualification examination.

**FIN 136 Investments and Family Financial Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of investment and family financial management concepts and practices. Includes yields, limited income securities, growth factors analysis of financial statements, family budgeting, property insurance, mutual funds, variable annuities and aspects of other investment media.



**FIN 137 Group Insurance and Social Insurance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Basic background in life insurance, such as an agent's license or a general insurance course.  
Analysis of group life and health insurance. Includes marketing, underwriting, re-insurance, premiums and reserves. Also includes an introduction to socioeconomic problems related to old age, unemployment and disability. Part of a series of courses preparing the licensed agent for a Chartered Life Underwriter's qualification examination.

**FIN 138 Pension Planning /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Basic background in life insurance, such as an agent's license or a general insurance course.  
In-depth examination of pension planning. Includes tax considerations, cost factors and funding instruments involved in private pensions, profit sharing plans and tax-deferred annuities. Part of a series of courses preparing the licensed agent for a Chartered Life Underwriter's qualification examination.

**FIN 139 Credit Union Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Accounting systems used by credit unions for internal control, record keeping and report generation. Includes terms and procedures unique to credit unions.

**FIN 202 Trust Functions and Services /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Thorough examination of services offered by institutions engaged in the trust business. Includes the role of the trust department, assets and ownership, services, operational activities and the changing role of trust departments. Designed for personnel of trust departments in commercial banks and trust companies.

**FIN 203 Bank Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Overview of bank management. Includes new trends which have emerged in the philosophy and practice of management. Also includes introduction to case study.

**FIN 204 Credit Administration /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Review of factors influencing and determining loan policy. Designed for persons on the executive level. Includes credit investigation and analysis, credit techniques, specific credit problems, and regular and unusual types of loans.

**FIN 205 Real Estate Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Overview of real estate finance from the viewpoint of the home mortgage loan officer. Includes the mortgage market, acquisition of a mortgage portfolio, mortgage plans and procedures, mortgage loan processing and servicing, and duties of the mortgage loan officer. (Same as RLS 205.)

**FIN 206 Bank Public Relations and Marketing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Basic principles of public relations, both internal and external. Includes people-awareness skills, customer service skills and improved communication techniques.

**FIN 207 Bank Letters and Reports /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Principles and techniques of effective bank writing. For bank officers, supervisors and employees who write, dictate or review letters or reports. Includes letter forms, types of bank letters, psychological factors and principles underlying modern correspondence.

**FIN 208 Installment Credit /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Techniques of installment lending. Includes credit, obtaining and checking information, servicing the loan, collecting amounts due, inventory financing, special loan programs, business development, advertising and the public relations aspect of installment lending.

**FIN 211 International Banking /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Overview of international banking. Includes international money transfer, trade financing, international agencies and their relation to commercial banks, and international currency exchange.

**FIN 212 Financial Institution /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Overview of financial institutions. Includes purposes of finance, the nature of money, the money supply, banking, monetary roles of the Federal Reserve and Treasury, financial objectives of corporate organization, financing of business, securities, markets, small business finance, farm credit institutions and capital markets.

**FIN 213 Business Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 102.  
Basic methods of securing and managing fixed and working capital funds for individual business units. Emphasis on special problems encountered by minority enterprises in obtaining funds.

**FIN 216 Insurance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 200.

Exploration of the theory of risk and insurable risks faced by business and individuals. Includes contracts, property and liability insurance, homeowner's programs, general liability insurance programs, excess and umbrella liability contracts, special multi-peril contracts, and planning and buying insurance.

**FIN 217 Analyzing Financial Statements /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Characteristics of financial statements and their analysis. Includes review of basic accounting principles for those who have studied accounting. For those who have not, minimum accounting background needed for financial statement analysis is provided.

**FIN 218 Formulation of a Commercial Loan Decision /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of critically analyzing commercial loan applications. For the professional lending officer who wishes to improve such skills. The student will prepare the analysis and narrative recommendation for a formal commercial loan application package.

**FIN 219 Management of Commercial Bank Funds /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 101 or a working knowledge of bank asset and equity accounts.

Principles of managing commercial bank funds. For those who have had previous study and/or work experience in banking and wish to further professionalize their banking knowledge and skills. Includes a detailed analysis of a commercial bank's asset accounts and, to some extent, the supporting equity accounts. Emphasis on optimizing bank profit while maintaining adequate liquidity and safety within the constraints imposed by law, regulation and the interests of the community.

**FIN 221 Mortgage Loan Servicing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 101.

Principles of mortgage loan servicing. For those whose responsibilities involve mortgage loan servicing. Includes payments, escrow accounts, real estate taxes, insurance, contract changes, delinquent loans, foreclosure, FHA and VA mortgages, and the secondary mortgage market.

**FIN 223 Federal Reserve System /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of the operations and policies of the Federal Reserve System during critical periods over the past 60 years. Takes a topical rather than chronological approach, enabling students to compare and contrast Federal Reserve policies dealing with similar problems at different periods in time. Includes international monetary affairs and economic developments affecting the American fiscal system. The subject is fundamental to American banking and highly desirable for current and potential career bankers.

**FIN 224 Advanced Installment Credit /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: FIN 208.

Advanced principles of installment credit. Designed for lending officers and other supervisory personnel involved with installment loan departments and activities. Includes organizing and managing an installment credit department, federal and state credit legislation, rate structuring and yield determination, indirect lending, financial statement analysis and interpretation, leasing of consumer goods, and marketing credit services. Complex case studies emphasize the more difficult aspects of installment credit.

**FIN 225 Bank Credit Cards /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the bank card industry. Designed for those currently employed or anticipating employment in commercial banks or related financial institutions. Includes the economic role of the bank card as well as the basic operational problems involved in the successful management of a bank card plan.

**FIN 233 Advanced Banking Operations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Two years' banking experience.

Advanced principles of banking operations. For students who possess an overview knowledge of this subject. Includes in-depth study of the creation of credit and the need for external controls. Relationships among departments and their functions are stressed.

**FIN 234 Loan Officer Development /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Training in the critical functions of a commercial loan officer. Includes the initial interview, loan development decisions and techniques, documentation for the credit file, problem loans, conveying unpleasant information, and in-basket and loan portfolio games.

**FIN 238 Estate Planning and Taxation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: ACC 204.

Examination of the nature, valuation, disposition, administration, and taxation of property. Includes the use of revocable and irrevocable trusts, testamentary trusts, life insurance, powers of appointment, wills, lifetime gifts and marital deductions. Prepares candidates for the American College National examination for estate planning and taxation.

**FIN 239 Credit Union Financial Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: FIN 139 or ACC 101.

Principles of credit union financial management. Includes financial statement analysis, budgeting, liquidity management, financial planning, risk management, insurance, and investment procedures.

**FIN 240 Wealth Accumulation Planning /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Fundamentals of tax sheltered and tax incentive investments. Includes limited partnerships in real estate, oil and gas, agriculture and equipment leasing.

**FIN 241 Financial and Estate Planning Applications /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: FIN 136 and 240.

Case studies in financial and estate planning. Includes simple fact patterns, basic documents, complex personal financial problems, and financial problems associated with business ownership.

**FIRE SCIENCE**

**FSC 049 Fire Operations I /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

□ Specialized classroom and practical experience in the techniques of firefighting. Includes the chemistry of fire, use of water and other agents, firefighting equipment and its uses, firefighting practices and safety.

**FSC 050 Fire Operations II /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: FSC 049.

Specialized classroom and practical experience in the practices and techniques of firefighting. Includes principles of community fire defense, methods of entry, rescue, tools, apparatus, equipment, salvage, hydraulics, and fire extinguishment.

**FSC 051 Introduction to Fire Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Historical and scientific background on the fire protection field. Includes the development and future of the field in America; governmental, industrial and private fire protection organizations and agencies; and employment and promotional opportunities.

**FSC 052 Fundamentals of Fire Prevention /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the principles of fire prevention. Includes fire prevention surveys, "selling" the service to businessmen, helping the businessman to stay in business, public relations and the application of fire prevention codes.

**FSC 053 Hazardous Materials I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: FSC 052 and MTH 070 or consent of instructor.

Basic chemical concepts and their applications to the field of fire science.

**FSC 054 Advanced Fire Prevention /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Fire prevention in high risk and industrial occupancies. Includes application of codes in the installation, operation, storage and transportation of dangerous materials; investigation and determination of fire causes; legal aspects of fire prevention; and prosecution of violators.

**FSC 055 Fire Investigation: Origin and Recognition of Arson /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of arson investigation.

**FSC 056 Advanced Fire Investigation: Arson /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

An advanced course designed for training in fire investigation for those private sector agencies, fire science and governmental agencies at state and local level, with or without police powers, who have direct responsibility for fire investigations.

**FSC 057 Comprehensive Fire Investigation /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Advanced methods of fire investigation in such applications as aircraft fires, fires set by juveniles, fire deaths, bomb investigation and organized crime. Includes a review of established procedures and techniques of fire investigation.

**FSC 061 Hazardous Materials II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: FSC 053.

Principles and techniques of dealing with flammable, explosive, reactive and toxic materials. Includes identification, classification, researching of such materials and handling them under both hazardous and safe conditions. Also includes information on the special problems they cause and where they are likely to be found, shipped and used.

**FSC 062 Hydraulics and Fire Suppression /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070. (PHY 101 recommended.)

Principles of hydraulics as applied to fire suppression. Includes physical laws affecting the movement of water through pipes, hydrants, pumps, hoses, etc.; functions and limitations of mechanical equipment to overcome these restrictions; effect of friction loss; head and pressure; water system; fire flow requirements; and organization for fire suppression.

**FSC 063 Fire Apparatus and Equipment /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None. (PHY 101 recommended.)

Automotive apparatus (pumpers, aerial ladders, lift platforms, hose wagons, transports and utility vehicles), water towers, heavy auxiliary mechanical equipment and appliances, generators, compressors, rescue and forcible entry tools, and cutting torches.

**FSC 064 Fire Protection Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of fire protection systems. Includes portable and fixed fire extinguishing equipment, automatic sprinkler and deluge systems, rate of temperature rise and smoke detecting devices, and alarm systems.

**FSC 065 Building Construction for Fire Protection /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of building design as related to fire protection. Includes fire travel, relation of fire load to propagation of flame, non-conforming structures and application of building codes.

**FSC 066 Fire Suppression, Strategy and Tactics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of planning fire suppression attacks. Includes planning an attack to fit the problem and revising the plan of attack to meet changing situations.

**FSC 067 Rescue Practices and First Aid /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Application of rescue practices and first aid techniques to emergency situations.

**FSC 068 Special Hazard Tactical Problems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Tactical problems and specific hazards not normally encountered. Designed for experienced fire fighters. Includes hazard characteristics and hazardous materials under fire conditions.

**FSC 071 Public Safety Laws /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Laws relating to the public safety profession. Includes legal duties and responsibilities of public safety employees.

**FSC 155 Fire Investigation: Arson III/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Advanced principles and techniques of fire investigation. Includes forensic lab services, incendiary devices and fuses, laws of arrest, search and seizure, scene photography and insurance fraud.

**FSC 156 Fire Investigation: Arson IV/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Advanced techniques of arson investigation. Includes special topics on state of the art investigative techniques, including those involved in research, legal cases and arson scenes.

**FOOD SCIENCE AND NUTRITION****FSN 055 International Cuisine/2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Study of international foods with lectures and food preparation by students. Includes history of foods studied. May be taken three times for a maximum of six credit hours.

**FSN 056 Authentic Mexican Cookery/3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Methods of utilizing home and commercial cooking facilities and resources to prepare authentic Mexican dishes. Includes selection and substitution of ingredients, cooking procedures and eye appeal. Also includes an appreciation of cultural aspects of Mexican people through the art of cooking.

**FSN 057 Vegetarian Dietary Cookery/2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Planning and preparing foods from vegetable sources that are nutritionally adequate.

**FSN 113 Food Study/2 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

The composition of various types of food. Includes methods of preparing foods to be flavorful, attractive and nutritious. Emphasis on selection and utilization of proper nutrients for maintenance of health in personal of all ages.

**FSN 114 Nutrition/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of nutrients and their use by the body for growth and development. Includes maintenance of health through proper diet.

**FSN 124 Nutrition for the Young Child/2 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

In-depth study of the nutritional needs of children. Emphasis on the total basic nutrient requirements for optimal health and development.

**FSN 213 Meal Management/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: FSN 113.

Planning, preparing and serving meals. Includes food economics, nutritional needs and management of resources.

## FRENCH

### **FRE 050 Conversational French I /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

Designed for persons with no previous knowledge of French. Primary focus on listening to and speaking elementary French. A non-transfer credit course.

### **FRE 051 Conversational French II /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: FRE 050.

Designed for persons able to ask and respond to simple questions relevant to self and to the environment. A non-transfer credit course.

### **FRE 110 Elementary French I /4 cr. hrs./4 periods (4 lec.)**

☐ Prerequisite: None.

Designed to provide proficiency in basic communication (listening, speaking, reading and writing), emphasizing an examination of French cultural traditions.

### **FRE 111 Elementary French II /4 cr. hrs./4 periods (4 lec.)**

☐ Prerequisite: FRE 110.

Designed to provide increased proficiency in listening, speaking, reading and writing. Continued study of French cultural traditions.

### **FRE 210 Intermediate French I /4 cr. hrs./4 periods (4 lec.)**

☐ Prerequisite: FRE 111 or two years of high school French.

Intensive review of grammar in addition to reading selected authors and writing short compositions. Continued practice in speaking French. A transfer credit course.

### **FRE 211 Intermediate French II /4 cr. hrs./4 periods (4 lec.)**

☐ Prerequisite: FRE 210.

Continuation of FRE 210. Emphasis on efficient and contemporary language usage. A transfer credit course.

## GENERAL BUSINESS

### **GEB 040 Supervisory Techniques I /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Managerial functions, the supervisory role and leadership styles as they relate to Civil Service regulations.

### **GEB 041 Supervisory Techniques II /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Self perceptions, career goals, interpersonal relationships, problem solving and time management as they relate to civil servants.

### **GEB 042 Supervisory Techniques III /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Verbal and nonverbal communication, attitudes, motivation, group dynamics and human relationships as they relate to civil servants. Designed for in-service training program.

### **GEB 043 Supervisory Techniques IV /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Employee behavior, causes of misbehavior, grievances, ARS Right to Work Code and unionism as they relate to civil servants. Designed for in-service training program.

### **GEB 055 Hospitality Information Processing /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

Principles of oral and written communication as applied to hotel-motel management.

### **GEB 060 Planning Your Retirement /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

Survey of retirement planning. Includes psychological aspects, health care, legal affairs, money management, benefits for the retired, community services, leisure-time planning and continuing education for senior citizens.

### **GEB 065 Practical Law /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

Overview of basic legal concepts and laws. Includes rights, responsibilities and liabilities of every citizen.

### **GEB 080 Supervision for Air Force Personnel I /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Basic techniques for Air Force supervision. Includes supervisor as a listener, nonverbal communication, understanding behavior of supervisors, value systems, interpersonal relationships and group behavior. Designed for in-service training of Air Force personnel.

### **GEB 081 Supervision for Air Force Personnel II /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

Basic techniques for Air Force supervision. Includes intercultural relationships, advising and counseling, leadership, verbal communication, creative problem solving and organizational development. Designed for in-service training of Air Force personnel.



**GEB 082 Supervision for Air Force Personnel III /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Basic techniques of Air Force supervision. Includes the management process, supervisor's duties, funding to meet training needs, job enrichment, labor relations, the supervisor's rights and obligations, discipline, performance standards and career development.

**GEB 084 Public Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

All categories of public relations problems and practices. Includes corporate, business, association, government, education and other agencies; good media relations; writing news releases, news letters, speeches and memos; step-by-step operation of a public relations campaign; and the place of public relations in an efficient organization.

**GEB 086 Tax Problems of the Independent Businessman /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Tax problems common to small businesses and industries. Includes retail, service and manufacturing businesses and accounting systems beneficial to the small businessman.

**GEB 096 Applied Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles for setting up and operating an accounting system. Includes accounts receivable and payable, operating statements, balance sheets and tax forms. Prepares students for entry level jobs requiring some bookkeeping knowledge.

**GEB 097 Television Advertising /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the principles of television advertising. Includes visual and oral techniques for preparing advertisements. Prepares students for entry level jobs in the television advertising field.

**GEB 099 The Stock Market /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of investing in the stock market. Includes stocks, bonds, speculative investments, mutual funds and commodities.

**GEB 120 Elements of Agency Management I /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Skill development in the problem-solving process to assist trainees in organizing their casework. For beginning social workers with limited casework experience.

**GEB 121 Elements of Agency Management II /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Training in the basic skills needed in social work. Primarily for persons already employed as social workers. Includes helping, empathy, concreteness, respect, warmth, genuineness, self disclosure, confrontation and immediacy.

**GEB 122 Elements of Agency Management III /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Written, oral and nonverbal communication skills needed by social workers to assist them in their work with individuals, groups and committees. Primarily for persons already employed in social work.

**GEB 133 Elements of Agency Management IV /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Examination of selected values, attitudes and beliefs to assist social workers in helping clients of differing cultures. Primarily for persons already employed as social workers.

**GEB 135 Consumer Experience /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of being an effective consumer. Includes consumer behavior, wise consumer strategies, financial responsibilities, consumer protection, fraudulent schemes, budgeting framework and contemporary personal finance problems.

**GEB 140 Elements of Agency Management V /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles of recognizing and dealing with stress and its causes. For office workers. Includes methods for solving problems, managing time and tasks and relaxing in stressful situations.

**GEB 142 Improving Human Relations /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques for improving interpersonal relationships in the work environment. Includes enhancing one's self-image and the self-image of co-workers, communications, Maslow's hierarchy of human needs, appreciation of others' differences, cultural and religious awareness and appreciation for individual differences.

**GEB 144 Improving Written Communications /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques for improving written communication on the job. Includes inter office memoranda, technical reports, case summaries and descriptive writing. Emphasis on grammar, punctuation and sentence structure.



**GEB 150 Management Update Techniques I /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques of reviewing and improving management and supervisory skills. For first line managers. Includes management coordination, effective decision making, the planning process, organization control, staffing, terminations and sources of authority.

**GEB 151 Management Update Techniques II /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques of reviewing and improving management and supervisory skills. For first line managers. Includes interviewing, communication, effective presentations, time management and career advancement.

**GEB 152 Management Update Techniques III /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques of reviewing and improving management and supervisory skills. For first line managers. Includes self-image, working with others, group processes, motivation, personality and leadership.

**GEB 153 Management Update Techniques IV /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques of reviewing and improving management and supervisory skills. For first line managers. Includes leadership techniques, management training, coping with change, executive ethics, dealing with complaints and criticism, motivation, selling yourself, the habit of success and the laws of success.

**GEB 154 Management Update Techniques V /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques of revising and improving management and supervisory skills. For first line managers. Includes brownout, burnout, mental habits, body language, life choices, executive mid-life crisis, love and work and maintaining balance.

**GENERAL MACHINE SHOP**

**GMC 050 General Machine Shop /3 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Basic principles of machine tooling. Includes the safe use of the engine lathe, horizontal and vertical mill, horizontal grinder, drill press and power saw.

**GENERAL TECHNOLOGY**

**GTC 005 First Aid and Safety Practices /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Emergency first aid procedures. Includes the care and transportation of those with accident injuries.

**GTC 010 Basic Electricity /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Introduction to electrical principles. Includes electrical safety, DC currents, AC wiring systems and electrical trouble-shooting.

**GTC 020 Small Engine Repair /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Classroom instruction and shop experience in maintaining and repairing a variety of small engines used on portable power equipment, e.g., lawn mowers, outboard motors, chain saws and rotary tillers. Includes principles of internal combustion engine operations, reading technical manuals and customer relations.

**GTC 051 Business Machine Repair I /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Fundamentals of office machine repairs. Emphasis on the repair and routine maintenance of manual and electric typewriters.

**GTC 052 Business Machine Repair II /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: GTC 051.

Advanced techniques of office machine repairs. Emphasis on the care and routine maintenance of the electric typewriter.

**GTC 058 Solar Energy and Retrofit /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of solar energy and alternative heating, cooling, insulating, power, and lighting systems for use in single family residences. Students will study an existing structure, analyze its energy usage, suggest and price potential alternative sources, and determine economic impact of those systems.

**GTC 060 Building Materials /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the materials commonly used in the construction of commercial and residential structures. Includes properties, grading and cost of materials, hardware and supplies.

**GTC 061 Building and Materials Cost Estimating /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: GTC 060.

Fundamentals of construction blueprint reading and methods of estimating cost of materials, labor and equipment.

**GTC 062 Occupational Safety and Health Act (OSHA) /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination and practical application of the requirements of OSHA in the work place. Includes safety and health programs essential for compliance with the act and their impact upon the employee and employer.

**GTC 063 Principles of the Construction Industry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the construction industry. Includes financing, real estate, zoning, subdividing, ordinances, deed restrictions, rezoning, estimating, scheduling, plan checking and building inspection. Also includes the roles of architects, engineers, contractors, subcontractors and owners.

**GTC 065 Basic Construction Principles /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

General principles of construction. Includes choice of materials and their application to select structural systems, and components in concrete and wood.

**GTC 066 Introduction to Water Treatment /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of water treatment and distribution. Includes basic math, chemistry, micro-aeration, sedimentation, chlorination, pumps, valves, regulations and standards. Prepares operators for Grade II water certification.

**GTC 068 General Welding /2 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Techniques and practices of joining metals by electric arc welding as applied in the iron working trade.

**GTC 070 Heavy Equipment Operation /5 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: None.

Principles of and practice in operating heavy equipment. Includes safety, preventive maintenance, interpretation of grade stakes, and fundamentals of operating front end loaders, backhoes, motor graders and bulldozers.

**GTC 071 Heavy Equipment Maintenance /5 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: None.

Heavy equipment maintenance procedures. Includes hydraulic, electric and fuel systems for front end loaders, backhoes, motor graders and bulldozers. Emphasis on hands-on practice.

**GTC 083 Equine Animal Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the health, breeding and care of horses. Includes anatomy, physiology, reproduction, health maintenance, disease prevention and general care. Prepares students for entry level jobs with large animal veterinarians.

**GTC 084 Advanced Equine Animal Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: GTC 083.

Continuation of GTC 083. Management theories and practices as they relate to both small equine businesses and the equine industry as a whole. Includes breeding, nutrition, preventive medicine, management and marketing of horses.

**GTC 085 Aviation Ground School—Private /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to theory and procedures associated with flight, weather and navigation. Provides general background required to become a private pilot.

**GTC 087 Aviation Ground School—Instruments /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Familiarization with various aircraft instruments. Emphasis on instrument flight rules.

**GTC 088 Aviation Ground School—Commercial /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to theory and procedures associated with flight, weather and navigation. Provides general background required to become a commercial pilot.

**GTC 090 Home Gardening /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and practices of home gardening. Includes design, elementary botany, environmental considerations and commonly used materials. Emphasis on landscaping in the Southwest.

**GTC 092 Woodshop I /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Techniques of wood preparation and finishing. Includes safety practices and use of shop equipment. Emphasis on functional design, drawing and reading project plans. Includes safety practices and use of shop equipment. Prepares students for custom wood working.

**GTC 093 Elementary Television Repair /3 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Basic television repair. Includes simple tests to locate common receiver malfunctions, fundamentals of reading electronic circuit blueprints, and safety practices in routine repair. Designed to assist students in diagnosing common television receiver difficulties. Can be used for exploring the electronics field. More serious electronics students should select other courses.

**GTC 094 Introduction to Motorcycle Safety and Maintenance /3 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Introduction to motorcycle safety and maintenance. Includes safe operating procedures, evasive and defensive techniques, routine maintenance and emergency repairs. Emphasis on diagnosing two- and four-cycle engine malfunctions.

**GTC 095 Furniture Upholstery Techniques /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Techniques and procedures for upholstering furniture. Includes methods of constructing frames, the use of power sewing machines, pattern marking and selecting fabrics.

**GTC 096 Advanced Upholstery /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: GTC 095.

Continuation of GTC 095. Advanced techniques of frame rebuilding, pattern design, fabric selection and upholstery fabrication.

**GTC 097 Woodshop II /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Fundamentals of cabinet making and furniture construction. Includes wood preparation, finishing, cabinet and furniture design, and cost estimating.

**GTC 098 Animal Genetics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A general interest course which examines the basic principles and applications of animal genetics. Primarily for persons interested in breeding small animals.

**GTC 099 Blueprint Reading /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Interpretation of construction and engineering drawings through a familiarization with the symbols and language of blueprints.

**GTC 111 Fundamentals of Oxyacetylene Welding/3 cr. hrs./4 periods (1 lec., 3 lab.)**

□ Prerequisite: None.

Basic techniques of oxyacetylene welding, including safety, flame cutting, horizontal and vertical steel welding and braze welding. Does not satisfy requirements for a welding degree or certificate.

**GTC 112 Fundamentals of Arc Welding/3 cr. hrs./4 periods (1 lec., 3 lab.)**

□ Prerequisite: None.

Basic techniques of arc welding, including safety procedures and vertical and overhead welding. Does not satisfy requirements for a welding degree or certificate.

**GTC 219 Industrial Data Acquisition and Control Systems /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisites: ETR 105, ETR 110 and concurrent enrollment in ETR 276. Familiarization with modern, computer-based data acquisition and industrial control systems. Includes integration into systems of various electronic components (i.e., analog to digital convertors, signal conditioning circuits and microcomputers). Integration of these components, discussed in lectures, will be explored in laboratory exercises.

**GTC 220 Applications of Industrial Data Acquisition and Control Systems /6 cr. hrs./8 periods (4 lec., 4 lab)**

□ Prerequisite: GTC 219

Continuation of GTC 219. Includes data communication techniques, transducer interfacing and intrinsic safety. Problems of systems application, discussed in lectures, will be explored in laboratory exercises.

**GERMAN**

**GER 110 Elementary German I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Introduction to the German language. Designed to provide proficiency in basic communication (listening, speaking, reading and writing). Emphasis on German cultural traditions. A transfer credit course.

**GER 111 Elementary German II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: GER 110 or one year of high school German.

Continuation of GER 110. Designed to provide increased proficiency in listening, speaking, reading and writing. Continued emphasis on German cultural traditions. A transfer credit course.

**GER 210 Intermediate German I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: Ger 111 or two years of high school German.

Intensive review of grammar, in addition to reading selected authors and writing short compositions. Emphasis on practice in speaking German. A transfer credit course.

**GER 211 Intermediate German II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: GER 210.

Continuation of GER 210. Emphasis on efficient and contemporary language usage. A transfer credit course.

**GER 240 Independent Study in German /1-4 cr. hrs./1-4 periods (1-4 lab)**

□ Prerequisite: Consent of instructor.

Independent study in German literature, grammar or special projects under the supervision of an instructor. A transfer credit course.

## GRAPHIC TECHNOLOGY

### **GRA 101 Graphic Technology I/3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: None.

Overview of the graphics communication industry and basic principles of graphic reproduction and their application. Includes setting type, paste-up, process camera work, stripping negatives, platemaking and offset press operations.

### **GRA 102 Graphic Technology II/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 101.

Continuation of GRA 101. Survey of technology in the graphic arts industry. Includes fundamentals of offset lithography, copy preparation, bindery operations, phototypographic techniques and composite paste-up for camera-ready copy.

### **GRA 103 Binding and Finishing Process/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Training in the use of modern binding and related equipment. Includes organization, administration and operation of plant finishing processes and hands-on experience with a power paper cutter, folder, paper drill, stitcher, perforator, collators and binding techniques.

### **GRA 104 Offset Photography—Stripping and Platemaking/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Use of the process camera for offset photography and theory and practice of producing quality line negatives. Includes the use of various light sensitive materials, darkroom chemistry, use of filters, stripping and platemaking techniques for offset duplicators.

### **GRA 105 Photo Typesetting/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: GRA 101 and some typing ability (speed not essential.)

Application of photo typesetting in the graphic arts industry. Includes phototypographic techniques, paste-up, copy preparation, file management, typesetting functions, editing and tabular composition.

### **GRA 199 Co-op Related Class in GRA/1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in GRA 199 Co-op Work in GRA.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to graphic technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

### **GRA 199 Co-op Work in GRA/1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in GRA 199 Co-op Related Class in GRA.

A supervised cooperative work program for first-year students in an occupation related to graphic technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

### **GRA 201 Color Theory and Practice /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 104.

Theory and practice of color process photography. Includes matching and mixing ink, selection of photographic filters and their darkroom application, working with difficult camera copy and production of uncorrected copy.

### **GRA 202 Offset Presswork/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 102.

Theory, operation and minor maintenance of small offset duplicators. Includes printing of line and halftone copy.

### **GRA 203 Estimating of Printing and Materials/3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: GRA 101.

Estimating costs involved in graphics reproduction. Includes techniques for using and properly storing paper and ink and solving related problems.

### **GRA 221 Advanced Stripping and Platemaking for Color/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 104 and 201.

Techniques used in stripping and platemaking for color production. Includes the use of various types of impositions.

### **GRA 222 Advanced Offset Presswork/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 202.

Continuation of GRA 202. Operation of large offset presses.

### **GRA 225 Offset Production/3 cr. hrs./9 periods (9 lab)**

□ Prerequisites: GRA 103, 221 and 222.

Offset printing production as related to the needs of job shops. Includes copy fitting, camera operation, stripping, platemaking, offset press operation, cutting and finishing.

### **GRA 232 Offset Operations and Maintenance/3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: GRA 202 or concurrent enrollment.

Principles and techniques of operating and maintaining large offset presses. Includes printing of close register work, halftones, multicolor work, color ink mixing and solving minor technical problems.

**GRA 299 Co-op Related Class in GRA/1 cr. hr./1 period (1 lec.)**

□Prerequisites: GRA 199 and concurrent enrollment in GRA 299 Co-op Work in GRA.

Continuation of GRA 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**GRA 299 Co-op Work in GRA/1-8 cr. hrs./5-40 periods (5-40 lab)**

□Prerequisites: GRA 199 and concurrent enrollment in GRA 299 Co-op Related Class in GRA.

Continuation of GRA 199. A supervised cooperative work program for second-year students in an occupation related to graphic technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**HEALTH CARE**

**HCA 050 Contemporary Health Issues /3 cr. hrs./2 periods (2 lec.)**

□Prerequisite: None.

Examination of critical health questions in today's society. Includes factually documented issues, research findings, emerging theories and points of controversy.

**HCA 099 Independent Studies in Health Sciences /1-6 cr. hrs./3-18 periods (3-18 lab)**

□Prerequisite: None.

Special health-related projects permitting students to do research and experimental work. Proposals for projects must be submitted to preceptor, and results of projects are presented as agreed in individual written contract.

**HCA 100 Homemaker/Home Health Aide /4 cr. hrs./8 periods (2 lec., 6 lab)**

□Prerequisite: None.

Practical skills in home management, personal care and rehabilitation. Prepares the beginning level health care worker to assist families and individuals in their homes.

**HCA 150 Skills for Allied Health Services /5 cr. hrs./11 periods (2 lec., 9 lab)**

□Prerequisite: None.

A one-semester course providing training in skills for various health services. Upon completion, the student is qualified for employment at a beginning level in health care facilities as a nurse's assistant.

**HCA 154 Introduction to Health Care /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Survey of the health sciences field. Includes the health care delivery systems, health careers, health science fundamentals and how to relate to the patient as a person.

**HCA 155 Introduction to Pharmacology /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Introduction to the action, dosage, side effects and adverse effects of drugs. Includes effects on the anatomy, physiology, pathogenic organisms and individual responses of the patient.

**HCA 199 Co-op Related Class in HCA /1 cr. hr./1 period (1 lec.)**

□Prerequisite: Concurrent enrollment in HCA 199, Co-op Work in HCA.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to health care.) Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**HCA 199 Co-op Work in HCA /1 cr. hr./5 periods (5 lab)**

□Prerequisite: Concurrent enrollment in HCA 199, Co-op Related Class in HCA.

A supervised cooperative work program for first-year students in an occupation related to health care. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of two credit hours.

**HCA 299 Co-op Related Class in HCA /1 cr. hr./1 period (1 lec.)**

□Prerequisite: Concurrent enrollment in HCA 299, Co-op Work in HCA.

Continuation of HCA 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.



**HCA 299 Co-op Work in HCA /1 cr. hr./5 periods (5 lab)**

□ Prerequisite: Concurrent enrollment in HCA 299, Co-op Related Class in HCA.

Continuation of HCA 199. A supervised cooperative work program for second-year students in an occupation related to health care. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of two credit hours.

**HEALTH CONTINUING EDUCATION****HCE 059 Emergency Cardiac Care /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: EMT 051.

Introduction to the definitive management of the cardiac patient in the prehospital setting. Designed as a continuing education course for basic emergency medical technicians. Includes anatomy and physiology of the heart and conductive system, EKG recording and basic interpretation, and physical assessment of the cardiac and respiratory systems. Cardiovascular disease processes are also discussed.

**HCE 110 Approaches to Long-Term Care: An Overview /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of approaches to caring for disabled adults and/or aged persons outside of institutions. Designed for those employed in health care and social service fields. Includes the process of aging, cultural attitudes and perspectives, common health problems, disabilities, adaptive processes, and resources available for long-term care of disabled adults.

**HCE 112 Drugs and Nursing Implications /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Practical knowledge of drug classifications, a review of physiology, and pathophysiology as bases for therapeutic use of drugs, and implications of such use of drugs for nursing.

**HCE 114 Beginning Physical Assessment Skills /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Current employment as an LPN or RN.

Basic interviewing and assessment skills as related to the head, chest, abdomen, and integumentary, musculo-skeletal and nervous systems. Does not cover critical care nursing.

**HCE 118 Renal Nursing Update /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: The student must be one of the following: RN, LPN, currently enrolled nursing student, or dialysis technician.

Review and update of renal anatomy, physiology and pathophysiology. Focus on chronic renal disease processes and treatments, including pharmacologic agents and approaches to nursing care.

**HCE 121 Registered Nurse Refresher /8 cr. hrs./16 periods (4 lec., 12 lab)**

□ Prerequisite: Registration as a nurse in the state of Arizona. The student must not have practiced as a nurse for the past three years.

Review and update of nursing knowledge and skills in both the classroom and clinical setting. Includes a review of various nursing concepts and trends in nursing and health care.

**HCE 140 Medical Law and Ethics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of medical law and ethics. Includes requirements for licensure; medical ethics and etiquette; medical professional liability; legal relationships; and legal forms, letters, and contracts.

**HEALTH EDUCATION****HED 136 Introduction to Health Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Students may select topics such as traumatic injuries, communicable diseases, nutrition, mental health, environmental health problems, or socio-medical problems including venereal diseases, drug use and abuse, alcoholism and abortion. The focus is on preventive health measures and public health services.

**HED 137 Elementary School Health Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HED 136 or consent of instructor.

Course assists the prospective teacher and health worker in developing learning activities, which focus on health information as it pertains to the elementary age student.



## **HISTORY**

### **HIS 050 The American Story—Beginning to 1877 /3 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

The story of America from its prehistoric beginnings to the Centennial Celebration in 1876. Portrays the political leaders, reformers, artisans, farmers, explorers, soldiers, immigrants, industrialists, artists and others who contributed to the panorama of American life.

### **HIS 076 Ghost Towns of the Southwest /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the social and cultural heritage of the Southwest through its past communities—mining, milling, smelting, lumbering, ranching, farming, railroading and military—between the years of 1854 and 1917.

### **HIS 101-102 Introduction to Western Civilization I, II /3-3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Surveys the historic development of Western man, going through the prehistoric age, ancient Greece, Rome, early Middle Ages and Renaissance to the Twentieth Century.

### **HIS 105 Introduction to Chicano Studies I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The totality of Chicano life since 1848 and the struggle for self-determination.

### **HIS 113 Asian Civilizations I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introductory survey of the Traditional Period of Asian civilizations. Origins and development of social, political, and cultural systems in China, Japan and India.

### **HIS 114 Asian Civilizations II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introductory survey of the Modern Period of Asian civilizations. Origins and development of social, political and cultural systems in China, Japan and India.

### **HIS 122 Papago History and Culture /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Where have the Papago people been, who are they, where are they going? In answering these questions, the class examines the history and culture of the Papago. (Same as ANT 122.)

### **HIS 124 History and Culture of the Yaqui People /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the cultural heritage of the Yaqui people and the history of their struggles to protect Yaqui land and culture.

### **HIS 127 History and Culture of the Mexican-American in the Southwest /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Who is the Mexican-American? What is his cultural heritage and what has happened to it in the United States? (Same as ANT 127.)

### **HIS 135 Pre-Columbian Art /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of the art of pre-Columbian Mexico. Students will learn to recognize major art styles and important sites. Course includes a survey of the art of the same time period in Southeastern and Southwestern America, Central America, and Peru. (Same as ANT 135 and ART 135.)

### **HIS 136 Masks /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of traditional masks and sculpture of Africa, North and South America, Asia and Oceania. Major emphasis is on style, function and meaning of the masks of the Northwest Coast Indians and the indigenous peoples of Africa and the South Pacific. (Same as ANT 136 and ART 136.)

### **HIS 141-142 History of the United States I, II /3-3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of U.S. history from Jamestown to the present. Includes the founding and developing of American democracy, minority participation in making of the country, and the role of the United States in world affairs.

### **HIS 143 American Civilization I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A broad look, from an historical perspective, at the American experience with emphasis on the social and cultural aspects before the Civil War.

### **HIS 144 American Civilization II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Continuation of HIS 143. Carries the story from the Civil War to the present.

### **HIS 147 History of Arizona /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of Arizona history as a part of the Arizona-Sonora Desert area, moving from the pre-Columbian period through the Spanish conquest, Mexican Republic, U.S. Territory and statehood.

### **HIS 148 History of Indians of North America /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Origin and distribution of native populations of North America and the historical development and interrelations of cultures. (Same as ANT 148.)

**HIS 150 Afro-American History and Peoples /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A History of Black people in American society. Their past, present and future are explored. Emphasis on their status and special problems as a minority group. (Same as ANT 150.)

**HIS 151 Roots—History of American Blacks /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

History of American Blacks based on Alex Haley's book, *Roots*, which traces an American family through 200 years of history.

**HIS 160 History and Peoples of Latin America I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The history of Latin America from the pre-Columbian period to the present with emphasis on the evolution of nationalism through the struggles of economic, cultural, political and social freedoms. (Same as ANT 160.)

**HIS 161 History and Peoples of Latin America II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The emergence of nationalism and the struggles to achieve economic, social, cultural and political freedoms.

**HIS 165-166 History of Mexico I, II /3-3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The student moves from the pre-Columbian era, through the Spanish conquest and a century of political and social upheaval, to the nation of social and economic stability.

**HIS 165-166 Historia de México I, II /3-3 cr. hrs./3 periods (3 lec.)**

□ Requisito: Ninguno.

Historia de Mexico. Se estudia una panorámica de la época precolonial, colonial y contemporánea.

**HIS 170 History and Peoples of Africa /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A survey of the political and cultural history of Africa south of the Sahara. (Same as ANT 170.)

**HIS 180 Women in Western History /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the various roles women have had in the western world during the classic period, the medieval period and the modern age.

**HIS 190 History of the American West /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the military history, the fact and folklore, and the lifestyle of the American West. Frontier army life, military exploration of the West, lost mines, myths and realities of Western heroes, transportation, ranching, establishment of cattle empires, and the life of the cowboy. Also offered as HIS 190A, B and C.

**HIS 190A Military History of the American West /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Survey of the military history of the American West. Army life, military exploration, development of military strategy and tactics, and major military leaders.

**HIS 190B Fact and Folklore of the American West /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Survey of the fact and folklore of the American West. Lost mines, myths and realities of Western heroes, and transportation.

**HIS 190C Lifestyle of the American West /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Survey of the lifestyle of the American West. Ranching, range life of the cowboy, town life (including that of mining), social life, town merchants and tradesmen.

**HIS 195 History of Technology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Made up of the following three modules.

**HIS 195A Early Development of Technology /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

An examination of technical science in the early stages of development as it responds to the growing complexity of human society. Areas covered are the nature, scope and impact on the technical sciences.

**HIS 195B Comparative Development of Technology /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

An examination of the fundamental principles which contribute to the subsequent invention and innovation of the technical sciences. Areas covered are the approach to science, the adoption of chemicals, and the extension of technology.

**HIS 195C Fundamental Development in Technical Sciences /1 cr. hr./1 period (1 lec.)**

☐ Prerequisite: None.

An examination of major factors contributing to the present condition of technical programs including welding, machine tool, air conditioning, sheet metal and automotive mechanics.

**HIS 201 Independent Studies in History /2-4 cr. hrs./6-12 periods (6-12 lab)**

☐ Prerequisite: Consent of instructor.

Independent history studies or projects arranged by the instructor.

**HIS 201 Estudios independientes en historia /2-4 cr. hrs./6-12 periods (6-12 lab)**

☐ Requisito: La aprobación del instructor.

Este curso consiste en estudios o proyectos independientes de historia preparados por el instructor

**HIS 205 The Adamses in U.S. History /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None. (Recommended: a first-year course in U.S. history.)

Social history of the United States from 1750 to 1900 centered around the lives of four generations of the Adams family, showing their role in the major events of the period.

**HIS 227 Mexican-American Culture and Thought /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

A history of ideas of the Mexican-American from Nahua and Europe to the present. Brings out the evolution of the two into present day concepts such as "Raza de Bronce" and "Aztlán."

**HIS 227 Pensamiento y cultura del México Americano /3 cr. hrs. /3 periods (3 lec.)**

☐ Requisito: Ninguno.

Historia del pensamiento del México Americano desde su pasado nahuatl y europeo hasta el presente. Trae la evolución de ambas culturas hasta los actuales conceptos de "Raza de Bronce" y "Aztlán."

**HOME ECONOMICS**

**HEC 099 Independent Studies in Home Economics /4 cr. hrs./18 periods (18 lab)**

☐ Prerequisite: Consent of instructor.

Students pursue independent study in home economics under the guidance of an instructor.

**HEC 127 Marriage and the Family /3 cr. hr./3 periods (3 lec.)**

☐ Prerequisite: None.

Functions of the family. Emphasis on relationships within the family and how they affect the development of individuals in the home and community. Part I—Background: Kinship, family styles and tradition, sexuality, parenthood, parenthood, working partners and the family today and tomorrow. Part II—The Dialogue: Relationships. (Same as SOC 127.)

**HEC 137 Today's World /3 cr. hr./3 periods (3 lec.)**

☐ Prerequisite: None.

Survey of current issues on the international, national and local levels, and their relationship to the individual. Includes the following research topics: the individual vs. the group, the family, the economy, entertainment as an influence and a reflection, housing, clothing, politics, health, food, medicine, employment and the media. Also includes guest speakers on topics to be chosen by class members.

**HEC 160 Personal and Family Finance /3 cr. hrs./3 periods (3 lec.)**

☐ Prerequisite: None.

Principles to assist individuals and families in making decisions regarding earning, spending and investing money. Includes choosing a career, making major purchases, sources of consumer information and putting one's dollars to work. (Same as ECO 160).

**HONORS**

**HON 300 Honors Independent Study Project /3 cr. hrs.**

☐ Prerequisite: Acceptance in the Honors Program.

Exploration of special interest areas for Honors students. Content to be determined jointly by student and faculty mentor. May be taken four times for a maximum of 12 credit hours.

**HON 301 Honors Seminar /1 cr. hr.**

☐ Prerequisite: Acceptance in the Honors Program.

Exploration of a specialized area of interest. Involves participation in discussions with students and faculty members from various fields of study in order to develop skills in critical and integrative thinking. May be taken four times for a maximum of four credit hours.

**HON 350 Honors Special Topics /3 cr. hrs.**

☐ Prerequisite: Acceptance in the Honors Program.

Advanced class on a special topic in a particular discipline. Cross listed as 350 courses in specific subject areas such as MAC 350 and SPA 350. May be taken four times for a maximum of 12 credit hours.

## HOSPITALITY

### **HOS 211 Hospitality-Tourism Sales and Marketing Application /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: Minimum of one year's experience working in the hospitality-tourism industry.

Principles and techniques of sales and marketing, utilizing current applications within the hospitality-tourism industry.

### **HOS 212 Advanced Hospitality-Tourism Sales and Marketing Application /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: HOS 211 or a minimum of one year's experience working in the hospitality-tourism industry.

Development of a master marketing plan for a specific property, including one- and three-year components and evaluation.

## HOTEL-MOTEL MANAGEMENT

### **HMM 100 Introduction to Hotel-Motel Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of hotel-motel management. For persons having a career interest in the hotel-motel industry and for those wishing to develop or improve their job skills. Includes the history, structure and social and economic background of the industry; the lodging market; the organization of hotel-motel operations; and career opportunities.

### **HMM 101 Front Office Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Operating principles and procedures of innkeeping. For persons who need to develop and improve job skills. Includes guest services, creating a pleasant atmosphere, salesmanship, accounting, control and some legal aspects.

### **HMM 102 Hospitality Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Knowledge of basic math.

Accounting procedures for hospitality businesses. For persons who need greater job skills. Includes basic accounting knowledge, posting transactions, payroll computations, journalizing, financial statements and computer applications of the Uniform System of Accounts of the American Hotel and Motel Association.

### **HMM 204 Hotel-Motel Financial Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 202.

Continuation of HMM 202. Examines various financial principles of foodservice and lodging activities to analyze operations for profit as well as efficient use of funds. Includes an accounting review, financial statement analysis, ratio analysis, internal controls, cost controls, pricing, budgeting and cash management.

### **HMM 103 Supervisory Housekeeping /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to housekeeping management. Includes employee training, record keeping, organization of the department, work methods, laundry equipment, cleaning materials and procedures, room design, linens and safety.

### **HMM 104 Food and Beverage Management Service /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Complete survey of food and beverage operations from purchasing through service. Includes menu planning; receiving, sorting and issuing supplies; food production; food and beverage service; bar operations; budgeting and pre-control; operational analysis; sanitation; equipment layout and selection; and maintenance.

### **HMM 110 Hotel-Motel Operations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 100.

Hotel-motel management responsibilities, administration techniques and problem areas. Includes sales promotion, guest relations, space utilization, accounting and record keeping, operational controls, legal aspects, insurance, labor-management relations and ethics.

### **HMM 111 Hospitality Management Law /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 100.

Examination of the legal aspects of hospitality management. Includes contracts, torts, liability and employee law. Also includes hospitality-industry-related legislation and landmark cases.

### **HMM 199 Co-op Related Class in HMM /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in HMM 199 Co-op Work in HMM.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to hotel-motel management). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**HMM 199 Co-op Work in HMM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in HMM 199 Co-op Related Class in HMM.

A supervised cooperative work program for first-year students in an occupation related to hotel-motel management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**HMM 202 Advanced Hotel-Motel Accounting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 102.

Continuation of HMM 102, providing training in advanced accounting principles and procedures for hotel-motel bookkeepers, accountants and managers. Includes financial accounting, managerial accounting for control and decision making, budgeting and cash control, and audit preparation.

**HMM 203 Marketing of Hospitality Services /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 100.

DA04Description and application of modern marketing techniques and concepts involving food and lodging industries. Includes competitive forces, image and consumer demand, marketing research, strategy planning, advertising and cost-benefit comparison.

**HMM 204 Hotel-Motel Financial Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: HMM 202.

Continuation of HMM 202. Examines various financial principles of foodservice and lodging activities to analyze operations for profit as well as efficient use of funds. Includes an accounting review, financial statement analysis, ratio analysis, internal controls, cost controls, pricing, budgeting and cash management.

**HMM 299 Co-op Related Class in HMM /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: HMM 199 and concurrent enrollment in HMM 299 Co-op Work in HMM.

Continuation of HMM 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**HMM 299 Co-op Work in HMM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: HMM 199 and concurrent enrollment in HMM 299 Co-op Related Class in HMM.

Continuation of HMM 199. A supervised cooperative work program for second-year students in an occupation related to hotel-motel management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**HOUSEKEEPING-EXECUTIVE****HSK 150 Executive Housekeeping I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Practical approaches to institutional housekeeping maintenance. Includes custodial and environmental services, decor selection and quantity purchasing of supplies within budgetary limitations.

**HSK 151 Executive Housekeeping II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Methods for assuring the most efficient and economical utilization of an institutional housekeeping staff and the maximum production with personnel and resources currently available.

**HSK 199 Co-op Related Class in HSK /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in HSK 199 Co-op Work in HSK. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a job related to executive housekeeping). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**HSK 199 Co-op Work in HSK /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in HSK 199 Co-op Related Class in HSK.

A supervised cooperative work program for first-year students in an occupation related to executive housekeeping. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**HSK 299 Co-op Related Class in HSK /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: HSK 199 and concurrent enrollment in HSK 299 Co-op Work in HSK.

Continuation of HSK 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**HSK 299 Co-op Work in HSK /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: HSK 199 and concurrent enrollment in HSK 299 Co-op Related Class in HSK.

Continuation of HSK 199. A supervised cooperative work program for second-year students in an occupation related to executive housekeeping. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.



## **HUMAN DEVELOPMENT EDUCATION**

### **HDE 100 College Success Skills /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None

Development of educational goal setting skills to increase opportunities for success. Includes college and community resources and skill development in problem solving. Separate sections may be taught for special groups.

### **HDE 120 Personal Development /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None

Development of self-awareness for students desiring a better understanding of themselves and others. Includes assessment of personal strengths, values, feelings and attitudes, and development of skills needed for improving self-confidence, relationships with others, problem solving, decision making and goal setting. Separate sections may be taught for special groups.

### **HDE 130 Stress Management /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None

Principles and techniques for understanding and dealing with stress in daily life. Includes information and experiential activities applicable to students and the learning process. Emphasis on the interrelation of physical, mental and emotional health.

### **HDE 140 Assertiveness Training /2 cr. hrs./2 period (2 lec.)**

□ Prerequisite: None

Development and strengthening of assertive skills, including improving self confidence and ability to relate to others. Emphasis on the integration of these skills into daily life. Separate sections may be taught for special groups.

### **HDE 170 Dynamics of Leadership /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None

Supervised practical training for advanced students involved in leadership positions. Provides opportunities to strengthen leadership skills developed in previous courses. May be taken twice for a maximum of four credit hours.

### **HDE 190 Career Exploration /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None

Development of skills necessary to make a career choice. Includes identification of personal strengths, values and motives for making career decisions. Also includes exploration of current and future job opportunities.

### **HDE 195 Securing a Job /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None

Development of the skills and confidence necessary to get a job. Includes locating job openings, resume writing, interview techniques, effectiveness on the job and improving employment opportunities.

## **HUMANITIES**

### **HUM 060 Early Chinese Views of Social Change /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

A study of the I Ching and Taoism in early China.

### **HUM 080 Humanities Through the Arts (TV) /3 cr. hrs./30 periods (30 lec.)**

□ Prerequisite: None.

Survey of seven art forms: film, drama, music, literature, painting, sculpture and architecture. Includes their criticism and evaluation and examination of their historical awareness, elements, form and meaning.

### **HUM 110 Humanities I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Introduction to man's expressions in art, architecture, drama, music, literature, religion and philosophy. Man's ideas and art from the rise of civilization through the Renaissance and Reformation.

### **HUM 111 Humanities II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Introduction to man's expressions in art, architecture, drama, music, literature, religion and philosophy. Man's ideas and art from the rise of modern science through the present.

### **HUM 130 Independent Studies in Humanities /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

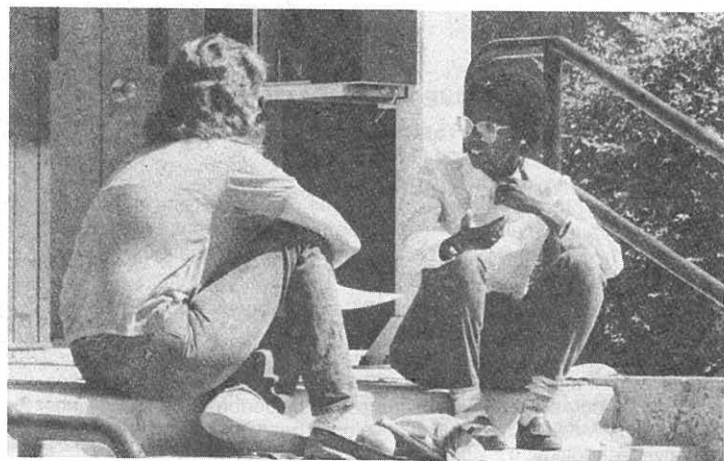
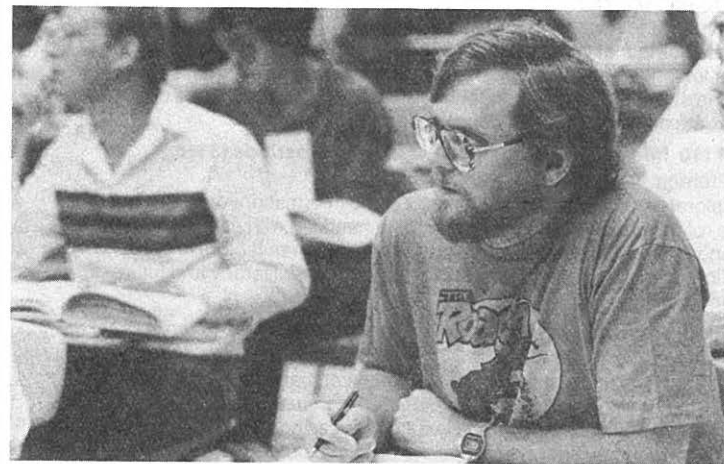
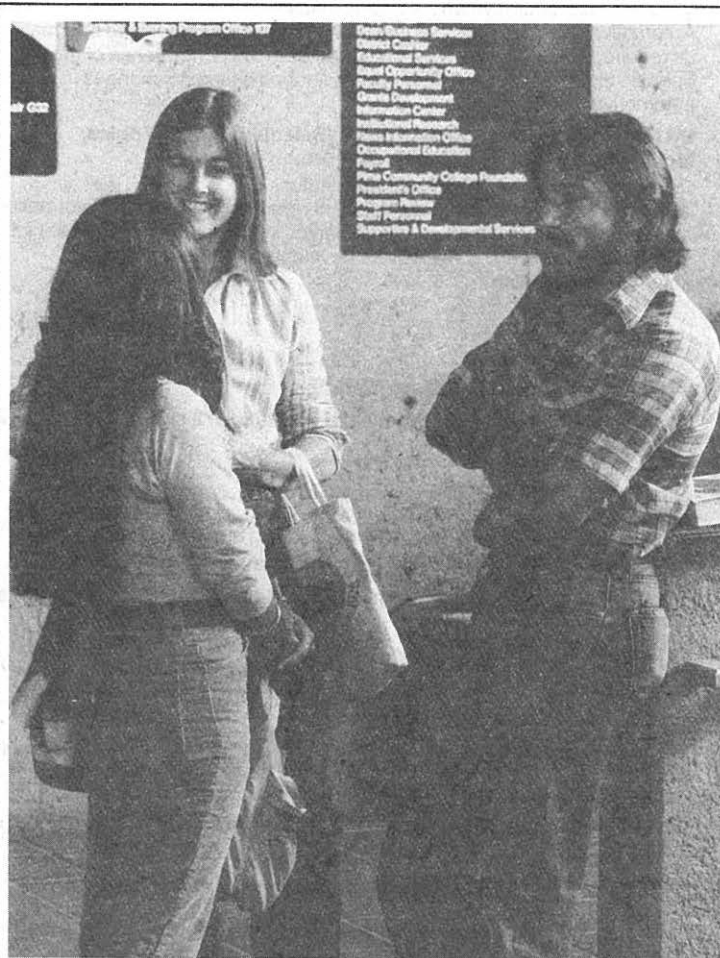
Reading and research projects to be arranged with instructor.

### **HUM 131 Great Ideas /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Topics in humanities. Past studies have included Zen meditation, mythology and mysticism.





## **INFORMATION INDUSTRIES**

### **IIT 100 Fundamentals of Telephony I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the telecommunications industry. Traces significant events and decisions in that industry from 1875 to the present. Includes formation of the first telephone company, licensee companies, the Blake transmitter, advent of the switchboard, independent companies, Vail's objectives, common carriers and the proposed consent decree.

### **IIT 110 Information Industries I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Exploration of the history and impact of the information revolution. Includes the magnitude and development of data handling with emphasis on future trends. Also includes the office of the future, human factors in office automation, future directions of society, computer literacy and future opportunities.

### **IIT 210 Information Industries II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth analysis of the practical problems of management in the information industry. Includes the impact on management, human interface, phases of development, trends in data processing, career management and survival of the business. Emphasis on application of managerial activities to offices of the future.

## **INSTITUTE—AUTOMOTIVE TECHNOLOGY**

### **IAU 110 Automotive Special Topics (Selected Special Topics, Modules A-Z) /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Journeyman mechanic status.

Automotive "new product" diagnosis and repair procedures and information as required by journeyman-level mechanics in the performance of their job. Specific topics, Modules A-Z, will be developed based on changes in automotive technology.

### **IAU 120 Automotive Special Topics (Selected Special Topics, Modules A-Z) /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Journeyman mechanic status.

Automotive "new product" diagnosis and repair procedures and information as required by journeyman-level mechanics in the performance of their job. Specific topics, Modules A-Z, will be developed based on changes in automotive technology.

### **IAU 130 Automotive Special Topics (Selected Special Topics, Modules A-Z) /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Journeyman mechanic status.

Automotive "new product" diagnosis and repair procedures and information as required by journeyman-level mechanics in the performance of their job. Specific topics, Modules A-Z, will be developed based on changes in automotive technology.

### **IAU 140 Automotive Special Topics (Selected Special Topics, Modules A-Z) /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: Journeyman mechanic status.

Automotive "new product" diagnosis and repair procedures and information as required by journeyman-level mechanics in the performance of their job. Specific topics, Modules A-Z, will be developed based on changes in automotive technology.

## **INSTITUTIONAL FOOD SERVICE**

### **IFS 100 Institutional Food Safety and Sanitation /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Principles and practices of sanitary food handling, employee safety, and sanitation regulations and standards. Includes causes and controls of foodborne illnesses, the functions of the local health department and the Center for Disease Control, and accident prevention techniques.

### **IFS 105 Record Keeping for School Food Services /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Introduction to methods of institutional record keeping, including federal and state requirements for school food service. Stresses the importance of accurate record keeping to provide an audit trail.

### **IFS 110 Basic Nutrition for Food Service Personnel /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of nutrition and their application to human needs, including the role of normal nutrition throughout the life cycle.

### **IFS 115 Quantity Food Products /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Principles and methods of institutional food service programs. Preparing, cooking and serving food to retain maximum-nutrients, flavor and appearance.

**IFS 125 Special Nutritional Needs /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: IFS 110.

Nutritional requirements for various disease states such as diabetes, obesity, hyperactivity and malnutrition. Also includes feeding problems of the handicapped.

**IFS 130 Educating the Consumer in Food and Nutrition /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: IFS 110.

Topics and techniques needed to educate consumers in food and nutrition. Includes budgeting, shopping and government regulations.

**IFS 160 Food Purchasing /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Food purchasing principles and procedures for institutions. Includes the role of the food service supervisor in product evaluation, budget, purchasing, regulations and product utilization.

**IFS 199 Co-op Related Class in IFS /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: concurrent enrollment in IFS 199, Co-op Work in IFS.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to institutional food service). Social and psychological reasons for working, method of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**IFS 199 Co-op Work in IFS /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in IFS 199, Co-op Related Class in IFS.

A supervised cooperative work program for first-year students in an occupation related to institutional food service. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**IFS 221 Food Service System Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: IFS 223.

Organization and management of food service systems. Includes planning, preparation, distribution and service of high quality food; scheduling; personnel management; and employee training.

**IFS 223 Menu Planning for Institutions /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: IFS 110.

Principles and techniques of institutional menu planning. Includes operating procedures, merchandising methods, quality control and menu evaluation.

**IFS 299 Co-op Related Class in IFS /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: IFS 199 and concurrent enrollment in IFS 299, Co-op Work in IFS.

Continuation of IFS 199, principles of job success for second-year student. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**IFS 299 Co-op Work in IFS /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: IFS 199 and concurrent enrollment in IFS 299, Co-op Related Class in IFS.

Continuation of IFS 199. A supervised cooperative work program for second-year students in an occupation related to institutional food service. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**INTERNATIONAL BUSINESS COMMUNICATION STUDIES**

**IBC 100 Foreign Language I: (To Be Specified) /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Basic vocabulary and sentence structure which will allow the student to function in a foreign country. Emphasis on developing elementary skills in pronunciation, ease of expression and comprehension.

**IBC 100A Foreign Language I: Basic Language Skills /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Basic vocabulary and sentence structure with emphasis on developing skills in pronunciation, ease of expression and comprehension.

**IBC 100B Foreign Language I: Basic Language Skills /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: IBC 100A.

Continuation of IBC 100A with emphasis on practice drills designed to develop the student's ability to function effectively in the foreign country.

**IBC 110 Foreign Language II: (To Be Specified) /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: IBC 100.

Continuation of IBC 100. More advanced speaking, listening, reading and writing skills used within the social and business environment. (The requirements of IBC 110 may be satisfied by taking IBC 110A and 110B, or IBC 110A and 110C.)

**IBC 110A Foreign Language II: Advanced Language Skills /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: IBC 100.

Continuation of IBC 100. Speaking, listening, reading and writing skills on a more advanced level.

**IBC 110B Foreign Language II: Language Skills for Social Environment /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: IBC 110A.

Continuation of IBC 110A. Language skills training for use in the social environment.

**IBC 110C Foreign Language II: Language Skills for Work Environment /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: IBC 110A.

Continuation of IBC 110A. Language skills training for the work environment.

**IBC 120 Cultural Similarities and Differences Between the United States and the Foreign Country /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of the cultural values of the foreign country in comparison to those of the United States. Social and religious customs; roles of men and women; attitudes toward time, humor, drugs and alcohol; patterns of communication; political, educational and legal structures; health care values; attitudes toward shopping and conducting business; business structure; and ethics and values.

**IBC 130 Living in the Foreign Country /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Entry requirements and basic information for living in a foreign country. Includes passport and immunization; taxes; driving and importation regulations; the monetary, transportation and telephone systems; local housing; medical facilities; support services; and entertainment possibilities. Also covers types of foods available, special food preparation and appropriate dress.

**IBC 140 Basic Techniques of International Trade /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of international trade, including political and legal factors, export documentation, customs regulations, financial considerations, trade zones, trading companies, communications, exporting techniques and case studies.

**IBC 140A Basic Techniques of International Trade: Introduction and Overview /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles of international trade, including political and legal factors, documentation, customs, duty and freight forwarding procedures.

**IBC 140B Basic Techniques of International Trade: Banking, Trade Zones and Trading Companies /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: IBC 140A.

Continuation of IBC 140A. Principles of international trade, including accounting, banking, insurance, foreign trade zones and export trading companies.

**IBC 140C Basic Techniques of International Trade: Communications and Case Studies /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: IBC 140B.

Continuation of IBC 140B. Principles of international trade, including communication with foreign firms and techniques of exporting to specific geographic areas. Topics examined through case studies.

**IBC 150 Cultural Shock Management /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Examination of the stages and symptoms of cultural shock. Methods of acculturation and re-acculturation. Designed to help students manage cultural shock as they enter a new culture and return to their own culture.

**IBC 150A Cultural Shock Management: Entry /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Examination of the stages and symptoms of cultural shock and methods of acculturation. Designed to help students manage cultural shock as they enter a new culture.

**IBC 150B Cultural Shock Management: Re-entry /1 cr. hr./1 period/1 lec.)**

□ Prerequisite: None.

Examination of the stages and symptoms of cultural shock experienced as one re-enters his own culture. Includes methods of coping with this problem. Designed to help students manage cultural shock as they re-enter their own culture upon return from a foreign assignment or visit.

**IBC 160 Hosting Foreign Business Personnel /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Training in hosting foreign business personnel. Emphasis on integrating routine hosting considerations with sensitivity to the culture of the visitor.

## ITALIAN

### **ITA 110 Elementary Italian I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Introduction to the Italian language. Designed to provide proficiency in basic communication (listening, speaking, reading and writing). Emphasis on Italian cultural traditions. A transfer credit course.

### **ITA 111 Elementary Italian II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: ITA 110.

Continuation of ITA 110. Designed to provide increased proficiency in listening, speaking, reading and writing. Continued emphasis on Italian cultural traditions. A transfer credit course.

## LABOR STUDIES

### **LSP 101 Labor Leadership /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Local union structure, democracy and management. Includes the role of the local union in collective bargaining, the basic clauses of collective bargaining agreements, grievance procedures, arbitration and legal requirements. (Also offered as LSP 101A, B AND C).

### **LSP 101A Labor Leadership: The Local Union /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Local union structure, democracy and management from the perspective of the local union leader. Includes craft and industrial unions, problems of union democracy, discrimination issues, characteristics of a shop steward and local executive board responsibilities.

### **LSP 101B Labor Leadership: Collective Bargaining /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Role of the local union in collective bargaining negotiations. Includes the basic clauses of collective bargaining agreements, management rights, union rights, wage differential clauses and contract adjustments.

### **LSP 101C Labor Leadership: Contract Management /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Analysis of contract management. Includes grievance procedures, arbitration of contract problems and review of government reports and other legal requirements of local unions.

## LANDSCAPE TECHNICIAN PROGRAM

### **LTP 100 Landscape Today and Tomorrow /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the landscape contracting industry: its history, current status and projection for the future. Special attention to career opportunities within various specialties.

### **LTP 120 Plant Pathology, Pests and Controls /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: LSC 220.

In-depth study of the pests, insects and diseases which damage shrubs, flowers, ornamental trees, turf grass and interior foliage. Emphasis on identification, control and treatment of the above problems as well as on the theory of utilizing chemicals, pesticides, herbicides and biological control.

### **LTP 130 Soils: Plant Fertility /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Analysis of soil types and fertility requirements of plants. Includes derivation, classification and evaluation of soils and the chemical, biological and physical requirements for plant growth.

### **LTP 150 Landscape Equipment Repair and Maintenance /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Introduction to power equipment used in the field of landscaping. Includes small engine repair and maintenance, general repair procedures for equipment using small engines, fleet maintenance, small loader maintenance, trouble-shooting techniques and economics of preventive maintenance.

### **LTP 160 Plant Usage and Identification /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: LSC 220.

Principles and techniques of plant usage and identification. Designed to familiarize the student with where and how to use plants, plant identification, the history of plant taxonomy and the development of a dichotomous plant key. Emphasis on the fifty most commonly used landscape plants and thirty most commonly used interior plants in Arizona.

### **LTP 199 Co-op Related Class in LTP /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in LTP 199 Co-op Work in LTP.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to landscape technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.



**LTP 199 Co-op Work in LTP /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in LTP 199 Co-op Related Class in LTP.

A supervised cooperative work program for first-year students in an occupation related to the landscape technician program. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**LTP 200 Landscape Management Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of planning and implementing landscape projects. Includes management information systems, foreman duties, customer relations and contract laws. Also includes at least one site visit. Prepares the student to manage all phases of a landscape project.

**LTP 205 Irrigation Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Design of turf, ornamental and drip (emitter) irrigation systems. Includes establishment of design criteria, selection and application of system components, preparation of irrigation plans and specifications, and basic estimating procedures. Intended for students and professionals interested in irrigation systems.

**LTP 210 Irrigation Installation /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: LTP 205.

Introduction to turf, ornamental and drip (emitter) irrigation systems. Designed for technicians in the landscape and irrigation industries. Includes materials, equipment, installation techniques, blueprint reading, and basic maintenance and repair procedures.

**LTP 215 Interior Plantscape Design/Maintenance /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Design and maintenance of the total interior horticultural environment. Prepares the student to work with interior plantscapers, interior designers, architects and clients. Emphasis on the creative aspects of the process.

**LTP 230 Landscape Maintenance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of management and technical skills required to operate a commercial landscape business.

**LTP 240 Nursery Operations and Maintenance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Technical and management factors involved in producing and marketing nursery stock and supplies.

**LTP 260 Basic Landscape Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Designing residential and light commercial landscape sites. Includes drafting tools and techniques, site planning, preparation of working drawings and specifications, and construction cost estimating.

**LTP 299 Co-op Related Class in LTP /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: LTP 199 and concurrent enrollment in LTP 299 Co-op Work in LTP.

Continuation of LTP 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**LTP 299 Co-op Work in LTP /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: LTP 199 and concurrent enrollment in LTP 299 Co-op Related Class in LTP.

Continuation of LTP 199. A supervised cooperative work program for second-year students in an occupation related to the landscape technician program. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**LEGAL ASSISTANT PROGRAM****LAS 101 Introduction to Legal Assistant Careers /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Responsibilities and ethical standards governing legal assistants. Includes procedures in a law or corporate office and in the court and administrative systems. Emphasis on terminology, research and trial preparation.

**LAS 102 Legal Systems and Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and procedures used in various court systems. Includes jurisdiction, venue, pleading, interviewing and investigation, and initiation of lawsuits in federal, state and appellate courts.

**LAS 103 Legal Research /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: WRT 101 and LAS 101 or employment in the legal or a related field.

Principles and techniques of legal research. Includes law library familiarization, research skills, methods, terminology and basic techniques of writing research memoranda and reports.



**LAS 104 Judgment, Analysis and Ethics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: LAS 101 and 103.

Basic rules and principles of judgment, analysis and ethics. Includes judgment and decision making, analysis of factual situations and ethical problems in specific areas of law practice.

**LAS 105 Corporate Law Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 200 (or concurrent enrollment) or LAS 101 or employment in the legal or related field.

The role and responsibilities of a legal assistant regarding the procedures and document drafting necessary for incorporation and the requirements for maintaining corporate legal status. Includes incorporation and maintenance, corporate power theories and defenses, stocks, voluntary dissolution and takeovers.

**LAS 106 Civil and Criminal Evidence /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 103 or concurrent enrollment.

Federal and Arizona rules of evidence, their use in preparing for trial, and their application during civil and criminal litigation. Includes the application of the rules and procedures involving witnesses, exhibits and demonstrative evidence.

**LAS 107 Real Estate Legal Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 101 (or concurrent enrollment) or employment in the legal field or a real estate license.

Application of legal procedures and requirements in real estate transactions and litigation. Includes drafting of documents and pleadings with emphasis on contracts, closings, deeds, leases, liens and foreclosures. (Same as RLS 107.)

**LAS 199 Co-op Related Class in LAS /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in LAS 199 Co-op Work in LAS.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to legal assistance). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**LAS 199 Co-op Work in LAS /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in LAS 199 Co-op Related Class in LAS.

A supervised cooperative work program for first-year students in an occupation related to the legal assistant program. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**LAS 201 Consumer Litigation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 200.

Examination of procedures involved in litigation between consumers and business entities or governmental agencies. Includes governmental regulation of business, consumer credit transactions and debtor/creditor rights, obligations and remedies.

**LAS 202 Discovery and Trial Preparation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 102.

Procedures and methods of discovery, gathering and organizing evidence and preparation for trial. Includes discovery procedures, documentary evidence and authentication, witness preparation, pretrial motions and memoranda, trial proceedings, post-trial motions and entry of judgment, executions and appeal.

**LAS 203 Personal Injury, Malpractice, Products Liability and Complex Litigation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: LAS 101 and 102.

Procedures used in the preparation of cases involving civil liability and complex litigation techniques. Includes personal injury, medical malpractice, products liability, comparative/contributory negligence and an overview of workman's compensation law as it relates to civil personal injury actions.

**LAS 204 Probate Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Analysis of Arizona probate law regarding wills, trusts and the administration of estates. Includes the estates of descendants, minors and persons under disability, and tax-related matters.

**LAS 205 Asset Analysis, Collection, Management and Distribution /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 204.

Analysis of the various forms of assets and their classification, valuation, administration and disposition. Includes inventory, accounting and tax return preparations.

**LAS 206 Criminal Trial Procedures I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Criminal trial process from first court appearance through pretrial procedures. Includes plea bargaining, ethical considerations, initial appearance, probable cause, discovery and pretrial motions.

**LAS 207 Criminal Trial Procedures II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 106.

Criminal trial process from jury selection through appellate procedures. Includes motions in limine, jury selection, opening statements, direct and cross examinations, objections, closing arguments and post-trial and appellate procedures.

**LAS 208 Domestic Relations and Family Law /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Employment in the legal or a related field or enrollment in the Legal Assistant Program.

Legal procedures related to domestic matters and family relationships. Includes dissolution of marriage, community property, adoption and other family law procedures.

**LAS 209 Bankruptcy Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 101 or employment in the legal or a related field. Procedures for individual and business bankruptcy proceedings. Includes preparation of basic bankruptcy documents and review of creditor and debtor remedies under the bankruptcy laws.

**LAS 250 Legal Assistant Internship /3 cr. hrs./15 periods (15 lab)**

□ Prerequisites: WRT 101, BUS 200 and a minimum of 45 credit hours in the Legal Assistant Program including two courses in one specialty area and LAS 104 and 202.

Volunteer legal assistant work experience at an approved work site. Designed for students in their final semester of course work in the Legal Assistant Program.

**LAS 299 Co-op Related Class in LAS /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: LAS 199 and concurrent enrollment in LAS 299 Co-op Work in LAS.

Continuation of LAS 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**LAS 299 Co-op Work in LAS /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: LAS 199 and concurrent enrollment in LAS 299 Co-op Related Class in LAS.

Continuation of LAS 199. A supervised cooperative work program for second-year students in an occupation related to the legal assistant program. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**LIFE SCIENCES**

**LSC 030 Oceanus: The Marine Environment /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The marine environment as a unique feature of the planet Earth. Includes investigation of areas of scientific and public concern and the pervasiveness of the ocean and its effect on the Earth's weather; its stunning physical size and diversity of contained life forms; its contributions to the physical and historical development of man; its impact on geopolitical and economic matters; the impact of oceanic pollutants and the potential exploitation of marine resources.

**LSC 099 Anatomy and Physiology Review /1-3 cr. hrs./1-3 periods (3 lec.)**

□ Prerequisite: None.

Review of basic anatomy and physiology. Primarily for students who have taken a traditional course but may need a review and additional information about anatomy and physiology.

**LSC 102 Principles of Human Anatomy and Physiology /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Not for biology or pre-med majors. Examination of the systems of the human body. For students in health occupation programs which require a one-semester anatomy and physiology course or to fulfill a one-semester lab science requirement. Either the LSC 102 and 103 sequence or the LSC 103 and 104 sequence can be taken to satisfy the liberal arts requirement of 8 hours of lab science.

**LSC 103 General Biology I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Not for biology or pre-med majors. Introduction to biology through a survey of the living world. Cell structure and function, genetics, the diversity of living organisms, and plant structure and function. Either the LSC 102 and 103 sequence or the LSC 103 and 104 sequence can be taken to satisfy the liberal arts requirement of 8 hours of lab science.

**LSC 104 General Biology II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Not for biology or pre-med majors. Continuation of LSC 103. Human structure and function, evolution and ecology. Either the LSC 102 and 103 sequence or the LSC 103 and 104 sequence can be taken to satisfy the liberal arts requirement of 8 hours of lab science. (Students who need only one semester of laboratory science should enroll in this course.)

**LSC 106 Survey of Human Diseases /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: LSC 102.

Examination of disease processes and their effects on the systems of the human body. Primarily for students in the health occupation programs, but also open to students who wish to take a lab-science course.

**LSC 112 Biology for Education Majors /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Not for science majors. General biological principles for education majors and general interest students.

**LSC 116 Natural History of the Desert /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Plants and animals of the Sonoran Desert, one of the world's richest desert ecosystems. Includes identification, distribution, adaptation, behavior and ecology.

**LSC 117 Communicable Diseases /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Causes and control of infectious and communicable diseases. Designed for students in health occupations, but open to others.

**LSC 120 Human Anatomy and Physiology I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: REA 100 series and CHM 110.

Not for biology or pre-med majors. Examination of the structure and function of the body for students in health careers. Includes an introduction to cells and tissues and to the skeletal, muscular, nervous, and endocrine systems. Emphasis on cellular and biochemical aspects.

**LSC 121 Human Anatomy and Physiology II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: LSC 120.

Continuation of LSC 120. Includes the circulatory, respiratory, digestive, urinary and reproductive systems.

**LSC 140 Environmental Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of environmental problems created in our ecosystems by use of our natural resources.

**LSC 150 Ecology I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: LSC 103 and 104 or one year of biology.

Not for science majors. Basic principles and concepts of ecology. Includes ecological vocabulary, methodology and techniques of ecological study and relative position of groups of organisms with respect to food chains, predator-prey relations, energy cycles and physical and biological factors.

**LSC 151 Ecology II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: LSC 150.

Quantitative and qualitative study of geographical biomes. Includes a survey of evolution, distribution, speciation, specific niches and size of population in each biome.

**LSC 171 Survey of Western Flora /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Examination of western flora, especially local plants. Plant adaptation, distribution and environmental implications are stressed.

**LSC 174 Introduction to Watershed Problems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Enrollment in Natural Resources option of the Recreation Program.

The efficiency, development and management practices of watershed areas. How biological agents of forest diseases and insects are related to the physical factors of local soil type, topography and geology.

**LSC 185 The Wildlife of North America /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Introduction to the mammals, birds, fish, reptiles, amphibians and selected invertebrates of North America. Native Arizona species are stressed in lab. Includes national, state and private wildlife agencies.

**LSC 196 Independent Studies in Life Sciences /1-4 cr. hrs./3-12 periods (3-12 lab)**

□ Prerequisite: None.

Studies or projects under the direction of an instructor. Subject matter and approaches vary with student interests and reasons for enrolling. The range is from exploratory students wanting to gain insights into biology to honors biology majors wishing to do advanced work.

**LSC 200 Biological Anthropology /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

The interaction of human biology and culture as found among various people and their environment. (Same as ANT 200.)

**LSC 205 Organismic Biology I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: CHM 120 and concurrent enrollment in CHM 121.

Examination of plants and animals primarily at the organ-system level of observation. For biology, pre-medical, pre-veterinary, and science majors. Includes chemical structure and functions of cells and tissues. Emphasis on plant structure and development.

**LSC 206 Organismic Biology II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: High school biology.

Includes comparative anatomy, physiology, embryology, phylogeny and systematics of animal taxa. Emphasis on animal physiology and development.

**LSC 207 Microbiology I /4 cr. hrs./7 periods (3 lec., 4 lab)**

□ Prerequisite: None.

Characteristics of microbes. Emphasis on the influences of microbes on man and his environment and of man on the microbial environment.

**LSC 208 Microbiology II /4 cr. hrs./7 periods (3 lec., 4 lab)**

□ Prerequisite: LSC 207.

Medical implications of microbes. Includes infection and immunity by a variety of microbial agents on a variety of hosts.

**LSC 210 General Genetics /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: LSC 205-206, CHM 120-121, CHM 240 and concurrent enrollment in CHM 241.

Basic principles and concepts of genetics for the student planning to major in biology.

**LSC 220 Botany I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: LSC 103 and 104 or one year of biology.

Comparative survey of each system of the plant kingdom. Morphology, physiology, systematics, growth and propagation. Special section on "plants useful to man."

## LITERATURE

**LIT 080 Papago Literature Workshop /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Exploration of oral and written Papago tales and legends in the native language. Those in oral form will be written down and translated into English. Tales from different villages are compared and contrasted as to content and dialect.

**LIT 090 Shakespeare in Performance (TV) /3 cr. hrs./30 periods 930 lec.)**

□ Prerequisite: None.

Introduction to Shakespeare as a dramatist through six of his plays in performance.

**LIT 130 Afro-American Literature /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of Afro-American literature, its cultural and historical roots and its relationship to other ethnic literature in America.

**LIT 131 Introduction to Shakespeare /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Familiarization with a number of Shakespeare's major dramas. Includes relevant history, social conditions and literary background. Some attention is given to plays as stage vehicles.

**LIT 161 Introduction to Literature I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Introduction to drama, fiction and poetry to promote appreciation and understanding of these forms. Some major works are explored in depth through analysis and discussion.

**LIT 162 Introduction to Literature II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Exploration of a variety of literary treatments of a single theme or literary type. Possible areas of study include women in literature, folklore in literature, death and dying, science fiction, modern drama and mystery fiction. Emphasis on works of high literary merit.

**LIT 166 Themes in American Literature /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Exploration of a single theme in American literature such as individualism, nature or the outsider. Includes works of major authors plus a variety of genres appropriate to the theme, including novels, drama and poetry.

**LIT 241 Introduction to World Literature I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Introduction to classic European literature with major authors studied in depth. Covers ancient and medieval works.

**LIT 242 Introduction to World Literature II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Introduction to classic European literature with major authors studied in depth. Covers works from the Renaissance to the present.

**LIT 265 Major American Authors /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Survey of selected works by major American authors from the colonial period to the present. May be taken as a humanities elective.

**LIT 270 Survey of English Literature I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Survey of English literature from the Anglo-Saxon period through the 18th century. Some major authors are studied in depth.

**LIT 271 Survey of English Literature II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Survey of English literature from the end of the 18th century to the present. Some major authors are studied in depth.

**LIT 272 Major British Writers /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites for transfer credit: WRT 101 and 102; for non-transfer credit: None.

Representative selection of works by major authors exclusive of Shakespeare. Includes a broad range of periods and types of literature. May be taken as a humanities elective.

**MACHINE TOOL TECHNOLOGY**

**MAC 101 Machine Tool Laboratory Training I /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: None.

Laboratory training for Machine Tool Technology Block Program.

**MAC 103 Applied Career Mathematics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Practical mathematics as applied to machine tool technology problems.

**MAC 110 Machine Shop for Technicians I /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: None.

Introduction to basic machine shop practices. Includes safety, tooling, equipment and applications in modern machining centers.

**MAC 120 Machine Shop for Technicians II /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisites: MAC 103 and 110.

An in-depth, hands-on course in the application of modern machine practices and procedures as found in today's machining centers.

**MAC 130 Basic Metallurgy /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of metallurgy. Includes steel classifications, heat treatment procedures, properties of ferrous and nonferrous metals and nondestructive testing.

**MAC 135 Physical Metallurgy /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: MAC 130.

The behavior of metals as used in industry during heating, cooling, shaping, forming and stress. Includes mechanical properties and tests to determine values, heat treatment of steel, pure metals and manner of crystallization, theory of alloys, nonferrous metals and quality control procedures involving magnaflux, magnaglow, dye penetrants and x-ray techniques.

**MAC 199 Co-op Related Class in MAC /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in MAC 199 Co-op Work in MAC.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to machine tool technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**MAC 199 Co-op Work in MAC /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in MAC 199 Co-op Related Class in MAC.

A supervised cooperative work program for first-year students in an occupation related to machine tool technology. Teacher coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**MAC 201 Machine Tool Laboratory Training II /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: MAC 101.

Advanced laboratory training for Machine Tool Technology Block Program. Designed to give students job oriented, hands-on training and skill development in the application and operation of machine tools.

**MAC 203 Machine Shop for Technicians III /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: MAC 120.

Advanced shop practice in machine tool setup and operations which completes the student's preparation for employment in the machine tool industry.

**MAC 210 Jig and Fixture Designing I /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: MAC 120.

Design and application of tools, jigs and fixtures for basic metalworking and electrical discharge processes.

**MAC 220 Jig and Fixture Designing II /4 cr. hrs./8 periods (2 lec., 6 lab)**

□ Prerequisite: MAC 210.

Design layout of machine parts, application of fixture components and inspection of equipment. Includes introduction to mold preparations and plastic injection equipment.



**MAC 225 Manufacturing Concepts /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MAC 130.

Processes and concepts involved in modern manufacturing and automated production.

**MAC 230 Machine Shop Inspector Skills /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Development of skills necessary to become a machine shop inspector. Includes precision measurement methods and techniques, with emphasis on the theory, application and manipulation of inspection equipment used in a standard machine shop.

**MAC 235 Quality Control Certification Refresher /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: Background and experience in quality control engineering. Refresher course in preparation for the Quality Control Engineer certification offered through the American Society for Quality Control.

**MAC 250 Introduction to Numerical Control /4 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisites: MTH 120 and MAC 120.

Introduction to numerical control and its application to machines and manufacturing processes. Includes manual programming of computer numerical control machinery for contouring and point-to-point operations.

**MAC 255 Numerical Controlled Machines /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: MAC 250.

Continuation of MAC 250, examining more advanced concepts and techniques of computer numerical control programming. Includes do loops, subroutines, mirror imaging and polar rotations.

**MAC 299 Co-op Related Class in MAC /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: MAC 199 and concurrent enrollment in MAC 299 Co-op Work in MAC.

Continuation of MAC 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**MAC 299 Co-op Work in MAC /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: MAC 199 and concurrent enrollment in MAC 299 Co-op Related Class in MAC.

Continuation of MAC 199. A supervised cooperative work program for second-year students in an occupation related to machine tool technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**MANAGEMENT**

**MAN 110 Human Relations in Business and Industry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Organizational structure and how its functioning is affected by many human factors. Includes motivation, problem solving techniques, group process and organization environment.

**MAN 122 Supervision /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of personnel supervision. Historical development; recruitment, training and evaluation of employees; decision making; and the role of labor unions.

**MAN 124 Small Business Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Analysis of the practical problems of organizing and managing a successful small business. Includes practical problems in quantitative analysis, causes of business failure, record keeping, sales promotion, marketing, budgeting, employee relations, and small business case studies. Emphasis on the managerial activities of the entrepreneur and their application to good business practice.

**MAN 199 Co-op Related Class in MAN /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in MAN 199 Co-op Work in MAN. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to management. Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**MAN 199 Co-op Work in MAN /3-6 cr. hrs./15-30 periods (15-30 lab)**

□ Prerequisite: Concurrent enrollment in MAN 199 Co-op Related Class in MAN.

A supervised cooperative work program for first-year students in an occupation related to management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 12 credit hours.

**MAN 276 Personnel Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 100.

Practical aspects of managing personnel. For the practitioner in personnel management as well as the general manager. Includes recruiting, selection, testing, rating systems, promotion, discipline, training, labor relations, job evaluation and manpower planning.



**MAN 278 Labor/Management Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: BUS 100.

Examination of basic principles and current status of labor/management relations in the United States. History, development of American unionism, government of trade unions, collective bargaining, public policy and bargaining power. Reviews legal framework regulating labor/management relations. Emphasis on contemporary issues and problems involved in building a sound relationship between management and labor.

**MAN 280 Business Organization and Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: BUS 100 and any other MAN course.

Nature and functions of business organization and management. The role of management in business and other human endeavors; management as a total system within constraints imposed by society, government, technology and ideology; management as a practical integration of diverse philosophies.

**MAN 299 Co-op Related Class in MAN /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: MAN 199 and concurrent enrollment in MAN 299 Co-op Work in MAN.

Continuation of MAN 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**MAN 299 Co-op Work in MAN /3-6 cr. hrs./15-30 periods (15-30 lab)**

□ Prerequisites: MAN 199 and concurrent enrollment in MAN 299 Co-op Related Class in MAN.

Continuation of MAN 199. A supervised cooperative work program for second-year students in an occupation related to management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 12 credit hours.

**MARKETING**

**MKT 111 Marketing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of moving goods and services from producer to consumer. Functions of marketing in relation to manufacturing, wholesaling and retailing.

**MKT 113 Salesmanship /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles and techniques of selling and their practical application. Types of customers, products, presentation of information, determination of customer's wants and needs, meeting customer objections, and opportunities in selling.

**MKT 125 Advertising /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic principles of the various aspects of advertising including its planning and creation.

**MKT 127 Advertising Layout and Design /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MKT 125.

Workshop in present day creative advertising layout and design techniques with practice in all current media. Includes practical application, criticism and field trips.

**MKT 139 Retailing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The organization and operation of a retail store. Includes trends in the field and problems involved in the retailing of goods and services.

**MKT 150 Physical Distribution Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of methods of distributing goods. Physical warehousing, inventory control, materials handling, industrial packaging, order processing and location analysis. Includes managerial responsibilities and recent transportation regulation actions. (Same as TTM 204.)

**MKT 199 Co-op Related Class in MKT /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in MKT 199 Co-op Work in MKT.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to marketing). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**MKT 199 Co-op Work in MKT /3-6 cr. hrs./15-30 periods (15-30 lab)**

□ Prerequisite: Concurrent enrollment in MKT 199 Co-op Related Class in MKT.

A supervised cooperative work program for first-year students in an occupation related to marketing. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 12 credit hours.

**MKT 299 Co-op Related Class in MKT /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: MKT 199 and concurrent enrollment in MKT 299 Co-op Work in MKT.

Continuation of MKT 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**MKT 299 Co-op Work in MKT /3-6 cr. hrs./15-30 periods (15-30 lab)**

□ Prerequisites: MKT 199 and concurrent enrollment in MKT 299 Co-op Related Class in MKT.

Continuation of MKT 199. A supervised cooperative work program for second-year students in an occupation related to marketing. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 12 credit hours.

**MATHEMATICS**

All students enrolling in their first mathematics course with the college are requested to take the mathematics assessment tests. All new, full-time students are required to take the tests as are students enrolling in MTH 060, 070 or 090. Students with an earned degree or advanced certificate from an accredited college are not required to take the tests. (A satisfactory assessment test score may be requested in lieu of, or in addition to, the listed prerequisites for any course. Students who have credit in any college mathematics course equivalent to or above MTH 060 will not receive credit for MTH 060 or any of its components—without permission of the mathematics area.)

**MTH 060 Introductory Mathematics /3 cr. hrs./3 periods (3 lec.)**

Mathematics 060A through 060C together constitute MTH 060.

**MTH 060A Introductory Mathematics—Whole Numbers /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Introduction to whole numbers. Includes practice with the four basic arithmetic operations and exploration of the principles of place value, order of operations, divisibility, prime factorization and least common multiple.

**MTH 060B Introductory Mathematics—Fractions and Decimals /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 060A or concurrent enrollment.

Introduction to decimals and fractions. Includes practice with the four basic arithmetic operations using decimals and fractions.

**MTH 060C Introductory Mathematics—Percent, Ratio and Measurement /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 060B or concurrent enrollment.

Introduction to percent, ratio, measurement and signed numbers. Includes exploration of the principles of proportion, measures (including the metric system) and their applications, and signed numbers.

**MTH 065 Health Careers Mathematics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Mathematical skills for nursing and chemistry. Includes fractions, decimals, scientific notation, dosages, concentrations, logarithms and conversions in apothecary, metric and household measures.

**MTH 070 Algebra I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 060 or satisfactory score on the math assessment test. Mathematics 070A through 070C together constitute MTH 070.

**MTH 070A Algebra I—Linear Equations and Graphs /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 060 or concurrent enrollment in MTH 060C or satisfactory score on math assessment test.

Introduction to inverse operations, linear equations and polynomials. Includes practice with basic operations on signed numbers, order of operations and applying inverse operations to solving linear equations.

**MTH 070B Algebra I—Factoring, Rational Expressions and Graphs /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 070A or concurrent enrollment.

Introduction to factoring, rational expressions, graphing linear equations and inequalities.

**MTH 070C Algebra I—Systems of Equations, Radicals and Quadratic Functions /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 070B or concurrent enrollment.

Introduction to systems of equations, radicals and quadratic equations.

**MTH 090 Elementary Geometry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070.

Introduction to geometry. Primarily for students who lack credit in high school geometry. Includes angles, parallel and perpendicular lines, triangles, quadrilaterals, circles, congruence, similar figures, geometric constructions and deductive proofs.

**MTH 110 Technical Mathematics I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 060 or satisfactory score on math assessment test. Mathematics 110A through 110C together constitute MTH 110.

**MTH 110A Technical Mathematics I: Arithmetic and Geometry /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 060 or concurrent enrollment in MTH 060C or satisfactory score on math assessment test.

Technical arithmetic and geometry. Includes a review of arithmetic operations, percent, measurements, and basic geometry involving perimeters, areas and volumes.

**MTH 110B Technical Mathematics I: Algebra, Part I /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 110A or concurrent enrollment.

Introduction to technical algebra. Includes basic algebraic operations, linear equations and factoring.

**MTH 110C Technical Mathematics I: Algebra, Part II /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 110B or concurrent enrollment.

Continuation of MTH 110B. Includes algebraic fractions, graphs of equations and systems of linear equations.

**MTH 115 Electronics Mathematics I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070.

Introduction to electronics mathematics. Includes algebra, the electronic calculator, simultaneous equations, Kirchoff's law, trigonometry and AC circuit analysis.

**MTH 120 Technical Mathematics II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 110.

Mathematics 120A through 120C together constitute MTH 120.

**MTH 120A Technical Mathematics II: Exponents and Radicals /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 110 or concurrent enrollment in MTH 110C. Exponents and radicals for technical applications. Includes area review of graphing and scientific notation.

**MTH 120B Technical Mathematics II: Roots, Radicals and Quadratic Equations /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 120A or concurrent enrollment.

Roots, radicals and quadratic equations for technical applications.

**MTH 120C Technical Mathematics II: Basic Trigonometric Functions /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 120B or concurrent enrollment.

Trigonometric functions for technical applications. Includes graphs, vectors, and solutions of right and oblique triangle problems.

**MTH 125 Electronics Mathematics II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 115.

Continuation of MTH 115. Includes computer number systems, determinants, vector analysis, advanced AC circuit analysis, logarithms and decibels.

**MTH 130 Algebra II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 070 or satisfactory score on math assessment test. Mathematics 130A through 130C together constitute MTH 130.

**MTH 130A Algebra II—Linear Equations /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 070 or concurrent enrollment in MTH 070C or satisfactory score on the math assessment test.

Includes real number properties, linear equations and systems of linear equations.

**MTH 130B Algebra II—Factoring, Fractions and Radicals /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 130A or concurrent enrollment.

Includes products, factoring, rational expressions, fractional equations, exponents and radicals, and complex numbers.

**MTH 130C Algebra II—Quadratic Equations and Logarithms /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 130B or concurrent enrollment.

Includes quadratic equations, functions and graphs, variation, exponential and logarithmic functions, inequalities and sets.

**MTH 134 Statement Problems /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 070.

Writing and solving first and second degree equations from problems in work, motion, mixture, etc. To assist students in translating verbal statements into mathematical equations.

**MTH 135 Survey of Math Thought /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 130.

Examination of the role of mathematics in society through the nature of mathematics, utilizing historical and cultural approaches with computational examples.

**MTH 140 Math for Elementary Education Majors I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 130.

Examination of mathematical concepts taught in elementary grades. For students majoring in elementary education. Includes sets, arithmetic operations and their properties, measurements, metric system, percents, decimals and fractions.

**MTH 145 Math for Elementary Education Majors II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 140.

Continuation of MTH 140. For students majoring in elementary education. Includes angular measures, geometry, graphing, probability, statistics and computer literacy.

**MTH 150 College Algebra /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 130 or satisfactory score on math assessment test. Mathematics 150A through 150C together constitute MTH 150.

**MTH 150A College Algebra: Equations and Functions /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 130 or concurrent enrollment in MTH 130C or satisfactory score on math assessment test. College-level algebraic equations and functions. Includes linear, quadratic and radical equations; relations, functions and transformations; equations of a line; and graphing the parabola.

**MTH 150B College Algebra: Linear Systems, Matrix Operations and Certain Functions /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 150A or concurrent enrollment. College-level linear systems, matrix operations and certain functions. Includes exponential and logarithmic functions, linear systems of equations and inequalities, determinants, matrix operations and inverses.

**MTH 150C College Algebra: Polynomials, Inequalities, Sequences and Series /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 150B or concurrent enrollment. College-level polynomials, inequalities, sequences and series. Includes complex numbers, theory of polynomials, sequences, series, binomial expansion, induction and inequalities in two variables.

**MTH 155 Trigonometry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 150 or concurrent enrollment. Mathematics 155A through 155C together constitute MTH 155.

**MTH 155A Trigonometry: Algebraic and Circular Functions /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 150 or concurrent enrollment. Introduction to trigonometry. Includes functions, tests for symmetry, graphical methods involving the use of transformations, and definitions of the six circular functions and their graphs.

**MTH 155B Trigonometry: Angles, Identities, Inverse Functions and Equations /1 cr. hr./1 period/(1 lec.)**

□ Prerequisite: MTH 155A or concurrent enrollment. Continuation of MTH 155A. Includes trig functions of angles, proving identities, inverse trig functions and trig equations.

**MTH 155C Trigonometry: Applications, Vectors, Polar Coordinates and Complex Numbers /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: MTH 155B or concurrent enrollment. Continuation of MTH 155B. Includes solving triangles, vectors, polar coordinates and complex numbers.

**MTH 160 College Algebra and Trigonometry /5 cr. hrs./5 period/(5 lec.)**

□ Prerequisite: MTH 130 or satisfactory score on math assessment test. College-level algebra and trigonometry. Includes all topics in MTH 150 and 155. Recommended for students planning to take analytic geometry and calculus.

**MTH 170 Finite Mathematics /3 cr. hrs./3 period/(3 lec.)**

□ Prerequisite: MTH 150. Mathematics for students majoring in business. Includes set theory, partitions, permutations, combinations, probability, Bernoulli trials, Markov chains and the simplex method of linear programming.

**MTH 175 Topics in Calculus /3 cr. hrs./3 period/(3 lec.)**

□ Prerequisite: MTH 150. For students majoring in business. Calculus for business applications. Includes limits, continuity, differentiation and integration of algebraic functions and separable differential equations.

**MTH 180 Analytic Geometry and Calculus I /3 cr. hrs./3 period/(3 lec.)**

□ Prerequisites: MTH 150 and 155, or MTH 160. Introduction to analytical geometry and calculus. Includes limits, continuity, differentiation and integration of algebraic and basic trigonometric functions, and applications of differentiation and integration.

**MTH 185 Analytic Geometry and Calculus II /3 cr. hrs./3 period/(3 lec.)**

□ Prerequisite: MTH 180. Continuation of MTH 180. Includes differentiation and integration of logarithmic and exponential functions, techniques and applications of integration and infinite series.

**MTH 210 Introductory Statistics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 130 or satisfactory score on math assessment test. Introduction to statistics. Includes averages, standard deviation, frequency distributions, central limit theorem, confidence intervals, correlations, probability, normal curve and tests of hypothesis.

**MTH 215 Analytic Geometry and Calculus III /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: MTH 185.

Continuation of MTH 185. Includes conic sections, polar coordinates, solid geometry, two and three dimensional vectors, moments, partial derivatives and multiple integration.

**MTH 219 Differential Equations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MTH 215.

Introduction to differential equations. Includes differential equations of the first order with exact solutions, numerical approximations and systems, explicit methods for solving equations of higher order including series and Laplace transforms, and physical applications of first and second order differential equations.

**MTH 220 Linear Algebra and Differential Equations /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: MTH 215.

Introduction to differential equations. Includes differential equations of the first order with exact solutions, numerical approximations and systems, explicit methods for solving equations of higher order including series and Laplace transforms, and physical applications of first and second order differential equations. Also includes vector spaces and subspaces, dimension, bases, linear independence and transformations and matrices.

**MEDIA COMMUNICATION**

**MEC 101 Introduction to Reporting and Media Writing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to news reporting. Includes evaluation of news, news gathering methods, writing leads, organization of stories, interviewing and writing various types of news stories. Requires considerable amount of writing.

**MEC 102 Survey of Media Communications /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of today's mass communications, their nature, function and impact on society. Includes a review and evaluation of important journalists' work and of performances by newspapers, radio, television, advertising and magazines. One major writing project is required.

**MEC 125 Television Production I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and techniques of television production. Includes operation and application of all the basic tools, equipment and techniques used in television production. Designed to give students practical experience as part of a production team.

**MEC 145 Equipment Repair and Maintenance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Electrical and mechanical repair and maintenance of instructional media technology equipment, including tape recorders, projectors and mechanical graphic arts devices.

**MEC 155 Instructional Media Technology I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Functions and responsibilities of the media specialist in an industrial or educational audio-visual department. Includes ordering, inventory, maintenance, budgeting, equipment evaluation, facilities design, copyright law and career opportunities.

**MEC 170 Journalism Workshop /3 cr. hrs./9 periods (9 lab)**

□ Prerequisite: MEC 101.

Laboratory course in which students produce the college's weekly student newspaper. Includes news gathering, writing, editing, photography, advertising and other publication activities.

**MEC 175 Cinematography /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic techniques of motion picture production. Includes camera operation, animation application, film editing and motion picture lab processes. The class is involved in the conception and production of two films.

**MEC 180 Newspaper Business Procedures /1 cr. hr./1 periods (1 lec.)**

□ Prerequisite: None.

Principles and practice of newspaper advertising, sales, circulation, record keeping and accounting.

**MEC 185 Television Production Workshop I /3 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: MEC 125.

Studio course in which students configure the studio, lighting and set for the college's television news program. Students also shoot and edit news content.

**MEC 190 Newspaper Graphics /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles and techniques of basic newspaper art work, typography and photography.



**MEC 199 Co-op Related Class in MEC /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in MEC 199 Co-op Work in MEC. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to media communication). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**MEC 199 Co-op Work in MEC /2-3 cr. hrs./10-15 periods (10-15 lab)**

□ Prerequisite: Concurrent enrollment in MEC 199 Co-op Related Class in MEC.

A supervised cooperative work program for first-year students in an occupation related to media communication. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**MEC 225 Television Workshop /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: MEC 125.

Laboratory course in which students produce various types of television programs. Includes the utilization of television equipment in remote and on-location sites as well as in studio operation. Emphasis on the production of special programs for educational community and industrial use.

**MEC 230 Advanced Reporting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MEC 101.

Advanced news writing and related activities. Includes investigative reporting, feature and editorial writing, copy-editing, headline writing, make-up and advertising. A required course for journalism majors.

**MEC 235 Broadcast Journalism /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MEC 101.

Survey of radio and television journalism. Includes broadcast news media, electronic journalism and the broadcast news process.

**MEC 240 Copy Editing and Design /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MEC 101.

Principles and techniques of newspaper copy editing and design. Includes newsroom settings, copy editing, proofreading, page layout, typography and design.

**MEC 255 Instructional Media Technology II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MEC 155.

Advanced principles and techniques of instructional media technology. Includes still projection, motion picture projection, graphic arts, record players, tape recorders, broadcast sound systems, educational TV, programmed instruction, supporting equipment for instructional media and non-projected instructional media materials.

**MEC 260 Magazine and Feature Writing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MEC 101.

Writing magazine and newspaper feature articles for publication. Each student is required to research, write and attempt to market an article or series of features.

**MEC 265 Implications of Media Technology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The effects of media technology on the individual and his society. Includes multimedia systems, computer managed instruction, computer assisted instruction, audio-tutorial systems, television, radio, film, programmed instruction, dial-access systems and man-machine relationships in learning systems.

**MEC 270 Media Advertising and Public Relations /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MEC 101.

Principles and techniques of media advertising and public relations. Includes planning, sales and production. Students work in groups to produce a national and local advertising campaign and a public relations campaign.

**MEC 275 Basic Audio Production /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MEC 101.

Fundamentals of audio production for radio and television programs. Using multi-track recording and mixing, students produce audio for advertisements, a song for a record and narration for a slide show. Students may work in college radio or television productions.

**MEC 280 Photojournalism /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MEC 101.

Reporting and interpreting news through pictures. Includes application of basic photography techniques to mass media, analysis of photographs, some layout, and writing cutlines and captions.

**MEC 285 Television Production Workshop II /3 cr. hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: MEC 125.

Studio course in which students collect, write and produce materials for the college's television news program.

**MEC 290 Applied Photojournalism /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Practical application of photojournalistic techniques. Includes news value, pictorial quality, handling assignments and the picture story.



**MEC 299 Co-op Related Class in MEC /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: MEC 199 and concurrent enrollment in MEC 299 Co-op Work in MEC.

Continuation of MEC 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**MEC 299 Co-op Work in MEC /2-3 cr. hrs./10-15 periods (10-15 lab)**

□ Prerequisites: MEC 199 and concurrent enrollment in MEC 299 Co-op Related Class in MEC.

Continuation of MEC 199. A supervised cooperative work program for second-year students in an occupation related to media communication. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

**MICROCOMPUTER APPLICATIONS****MAP 106 Introduction to Microcomputers /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Microcomputer uses with emphasis on hardware, specific microcomputer uses and evaluation of application software.

**MAP 207 Developing Microcomputer Applications /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: MAP 106 or equivalent experience.

Principles and techniques of developing microcomputer applications.

Includes software review and evaluation, authoring systems, introduction to popular programming languages (e.g., PILOT and LOGO) and production of software.

**MAP 267 Microcomputer Center Operations /3 cr. hrs./15 periods (15 lab)**

□ Prerequisite: MAP 207 or equivalent experience.

In-depth microcomputer applications experience. Intended for those whose major responsibility will be maintenance of a microcomputer laboratory.

**MICROELECTRONICS****MRE 100 Introduction to Microelectronics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to all areas of microelectronics technology. For students interested in working in the microelectronics industry. Includes employment opportunities, historical development, economic rationale and current state of the art. Also includes overview of technical areas, including thick and thin film materials and processes, monolithic IC's, hybrid assembly and packaging, art work and design, and quality control and reliability.

**MRE 116 Microelectronic Assembly: Wire Bond /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Development of skills required in the wire bond task of the microelectronics component assembly process. Includes wire bond machine setup, operation and trouble-shooting, bonding processes, schematic reading and translation to job tasks.

**MRE 117 Microelectronics Assembly: Die Attach /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Development of skills required in the die attach task of the microelectronic component process. Includes die attach machine setup, operation and trouble-shooting, bonding processes, die orientation and placement from substrate schematics.

**MRE 118 Microelectronic Assembly: Wire Bond and Die Attach /4 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: None.

Development of skills required in the wire bond and die attach tasks of the microelectronic components process. Includes die attach and wire bond machine setup, operation and trouble-shooting, bonding processes, die orientation and placement, wire placement, schematic reading and translation to job tasks.

**MRE 150 Introduction to Microelectronics Materials /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: MRE 100, and MTH 115 or 130.

Introduction to materials used to fabricate microelectronic circuits and the relationship of materials selection and processing to their electrical and mechanical performance in the circuit. Includes thick and thin film conductor, resistor and dielectric systems; monolithic IC deposition systems; solders, brazes, glasses and organic adhesive used in attaching components and leads and those used in final packaging. Emphasis on economic environment and technical considerations involved in selecting materials.

**MRE 160 Introduction to Microelectronic Equipment /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: MRE 100. and MTH 115 or 130.

Introduction to microelectronic processing and assembly equipment. Includes equipment operation, setup, trouble-shooting and maintenance of equipment utilized in hybrid assembly, thick film processing and monolithic (thin film and water) fabrication. Equipment reviewed includes screen printers, wire bonders, laser trimmers, furnaces, vacuum deposition units and automatic test equipment.

**MRE 199 Co-op Related Class in MRE /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in MRE 199 Co-op Work in MRE. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to microelectronics). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**MRE 199 Co-op Work in MRE /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in MRE 199 Co-op Related Class in MRE.

A supervised cooperative work program for first-year students in an occupation related to microelectronics. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**MRE 200 Microelectronic Photolithographic Processes /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisites: MRE 100 and DFT 170. (DFT 170 may be taken concurrently.)

The image-forming processes required to produce integrated circuits. Includes imaging systems, photoresist technology, pattern transfer and process-control monitors.

**MRE 210 Quality Control and Reliability for Microelectronics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: MRE 150 and 160 and DFT 170.

Examination of quality control and reliability techniques through the application of probability, statistics and sampling for microelectronic process control and failure analysis. Military standards and reliability documents will be used to evaluate product performance and identify causes of failure.

**MRE 220 Microelectronics Packaging /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisites: MRE 150 and 160.

Principles and practical application of microelectronics packaging. Includes packaging of materials, processing methods, economics, device specification, documentation, reliability, and failure analysis.

**MRE 230 Microelectronics Circuit Fabrication /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: MRE 220.

Fabrication of a thick or thin film microelectronic circuit. Includes circuit design, component selection, layout generation, photo fabrication, screens, masks, screen printing, deposition, testing, etching and attaching components, packaging and critique.

**MRE 299 Co-op Related Class in MRE /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: MRE 199 and concurrent enrollment in MRE 299 Co-op Work in MRE.

Continuation of MRE 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**MRE 299 Co-op Work in MRE /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: MRE 199 and concurrent enrollment in MRE 299 Co-op Related Class in MRE.

Continuation of MRE 199. A supervised cooperative work program for second-year students in an occupation related to microelectronics. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**MILITARY SCIENCE - AIR FORCE**

**MLA 101 History of Airpower I /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Review of the history, functions and organization of the Air Force, Air Force doctrine, national strategy, and strategic offensive forces. (Course offered in cooperation with the University of Arizona.)

**MLA 102 History of Airpower II /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Strategic defensive forces, U.S. general purpose forces, and the support commands and operating agencies of the Air Force. (Course offered in cooperation with the University of Arizona.)

**MLA 203 Air Force Today I /2 cr. hrs./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Chronological development of air power from the advent of the air age through World War II. (Course offered in cooperation with the University of Arizona.)

**MLA 204 Air Force Today II /2 cr. hrs./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

The development of the Air Force from 1946 to the present. (Course offered in cooperation with the University of Arizona.)

**MILITARY SCIENCE—ARMY**

**MSC 101 Introduction to ROTC /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Review of the history, organization and mission of the ROTC; and the military and civilian obligation of the citizen. Includes an introduction to weapons and a leadership laboratory. (Course offered in cooperation with the University of Arizona.)

**MSC 102 Defense Establishment in National Security /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

History, mission and organization of the defense establishment. Includes the role of the military in cold, limited and general warfare; and a leadership laboratory. (Course offered in cooperation with the University of Arizona.)

**MSC 203 American Military History /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Principles of war and a survey of American military history from colonial times to 1966. Includes leadership laboratory. (Course offered in cooperation with the University of Arizona.)

**MSC 204 Military Map Reading and Tactics /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Introduction to maps, map reading, the lensatic compass and small unit tactics. Includes leadership laboratory. (Course offered in cooperation with the University of Arizona.)

**MUSIC**

**MUS 035 Opera Chorus /1 cr. hr./3 periods (1 lec., 2 lab)**

□ Prerequisite: Students chosen by audition.

Examination and practice of great operatic literature. Students form a selected group of mixed voices for study, rehearsal and performance. Performances scheduled throughout the academic year.

**MUS 041 Piano Class I—Non-Music Major /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Basic principles and techniques of piano playing in a group situation. Designed for non-music majors.

**MUS 042 Piano Class II—Non-Music Major /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Continuation of MUS 041. Expansion and refinement of piano playing techniques. Designed for non-music majors.

**MUS 043 Piano Class III—Non-Music Major /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 042.

Continuation of MUS 042. Group piano for non-music majors.

**MUS 044 Piano Class IV—Non-Music Major /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 043.

Continuation of MUS 043. Group piano for non-music majors.

**MUS 045 Applied Music—Private Instruction /2 cr. hrs./5 period (.5 lec.)**

□ Prerequisite: None.

Private weekly lessons in the sections listed below. Course of study jointly determined by the instructor and student. Development of performance skills is stressed. May be taken four times for a maximum of eight credit hours.

Section 1—Brass

Section 2—Guitar

Section 3—Organ

Section 4—Percussion

Section 5—Piano

Section 6—Strings

Section 7—Voice

Section 8—Woodwinds

**MUS 050 Rhythmic Performance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Analysis and performance of rhythmic notation. Emphasis on rhythmic reading skills, terminology, group performance and notation.

**MUS 054 Jazz Improvisation /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 102.

Techniques of jazz improvisation on various instruments. Includes rhythmic, melodic and harmonic aspects of jazz styles. Emphasis on progressive development of musical skills through interpretation of musical literature. Enrollment determined by audition with instructor. Course may be taken two times for a maximum of two credit hours.

**MUS 091 Guitar Class I /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Beginning instruction and development of basic guitar playing skills for both hands. Emphasis on fingering and picking styles, chords and melodic reading in first position.

**MUS 092 Guitar Class II /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 091.

Continuation of MUS 091 with more detailed study of chord structures, scales and melodic reading through the fourth position.

**MUS 102 Introduction to Music Theory /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to fundamentals of music designed to develop basic literacy in music. For those who have little or no background in music. Includes study of notation, melody, harmony, rhythm and musical terminology. Nontransferable as music major credit.

**MUS 120 Band /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Students chosen by audition.

Participation in regular rehearsals and performance. Emphasis on progressive development of musical skills through interpretation of literature. Course may be taken four times for a maximum of 12 credit hours.

**MUS 121 Jazz Band /1 cr. hr./3 periods (1 lec., 2 lab)**

□ Prerequisite: Students chosen by audition.

Rehearsal and performance of many styles of music in the jazz idiom. Emphasis on progressive development of musical skills through interpretation of literature. Course may be taken four times for a maximum of four credit hours.

**MUS 125 The Structure of Music I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic structures of music and fundamental musical terminology. Includes scales, intervals, keys, chords, notation, tonality, form and part writing.

**MUS 126 The Structure of Music II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 125.

Structure and terminology of modal and contrapuntal music. Includes modal harmony, non-western music, analysis and 18th century counterpoint.

**MUS 127 Aural Perception I /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Development of aural techniques through dictation and performance of intervals and melodic and simple rhythmic structures. Also includes general techniques of listening to music. Required of all music majors.

**MUS 128 Aural Perception II /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 127.

Continuation of MUS 127. Development of aural techniques through dictation and performance of intervals, chord progressions and melodic and rhythmic structures. Includes general techniques of listening to music. Required of all music majors.

**MUS 130 Chorale (SATB) /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Students chosen by audition.

Selected group of mixed voices for interpretation of a wide variety of styles of music in concerts throughout the academic year. Emphasis on progressive development of musical skills through interpretation of literature. Course may be taken four times for a maximum of 12 credit hours.

**MUS 131 College Singers (SATB) /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Small choral ensemble. Repertory and performance throughout the academic year includes best literature from all styles and periods. Emphasis on progressive development of musical skills through interpretation of literature. Course may be taken four times for a maximum of 12 credits.

**MUS 132 Women's Chorus /1 cr. hr./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Rehearsal and performances of choral literature written for women's voices. Minimum of one performance per semester. Emphasis on progressive development of musical skills through interpretation of literature. A short audition is necessary for selection and voice placement. Course may be taken four times for a maximum of four credit hours.

**MUS 133 Concert Choir (SATB) /1 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Rehearsal and performance of choral literature. Emphasis on progressive development of musical skills through interpretation of literature. A short audition is necessary for selection and voice placement. Course may be taken four times for a maximum of four credits.

**MUS 134 Vocal Ensemble /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: Students chosen by audition.

Rehearsal and performance of literature for various combinations of voices. Emphasis on progressive development of musical skills through interpretation of literature. Course may be taken four times for a maximum of four credits.

**MUS 136 Voice Class I /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Practical training in basic skills and singing without specialization. Includes breathing, diction, tone, rhythm and sight singing.

**MUS 137 Voice Class II /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 136.

Continuation of MUS 136. Practical training in basic skills and singing without specialization. Includes breathing, diction and interpretation of song literature.

**MUS 141 Piano Class I—Music Majors /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Beginning piano instruction and techniques employing group and individual practice in an electronic lab. For music majors. Includes development of keyboard technique, musical notation, key signatures and other basic theoretical concepts.

**MUS 142 Piano Class II—Music Majors /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 141.

Continuation of MUS 141. Intermediate piano instruction utilizing group and individual practice in an electronic lab. For music majors. Focus on more advanced theoretical and technical applications to the piano.

**MUS 143 Piano Class III—Music Majors /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 142.

Continuation of MUS 142. Advanced intermediate piano instruction utilizing group and individual practice in an electronic lab. For music majors. Focus on further study of theoretical and applied techniques at the piano.

**MUS 144 Piano Class IV—Music Majors /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 143.

Continuation of MUS 143. Advanced piano instruction utilizing group and individual practice in an electronic lab. For music majors. Advanced application of theory and technique, including scales, arpeggios, harmonizations, transpositions and an in-depth study of repertoire and style.

**MUS 145 Applied Music—Private Instruction /2 cr. hrs./5 period (.5 lec.)**

□ Prerequisite: None.

Private weekly lessons in the sections listed below. Includes participation in student recitals and jury exams. Students chosen by audition.

Section 1—Brass

Section 2—Guitar

Section 3—Percussion

Section 4—Piano

Section 5—Strings

Section 6—Voice

Section 7—Woodwinds

**MUS 146 Applied Music—Private Instruction /2 cr. hrs./1/2 period (1/2 lec.)**

□ Prerequisite: MUS 145.

Continuation of MUS 145. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams. (See MUS 145 for sections offered.)

**MUS 151 Exploring Music /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to various musical styles with emphasis on listening and application of the basic elements of music (melody, rhythm, harmony, form and timbre) to each style.

**MUS 201 History and Literature of Music I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 102.

Music literature from the ancient Greek period through the Baroque with emphasis on specific works as representative of musical evolution.

**MUS 202 History and Literature of Music II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 102.

Music literature from the end of the Baroque period through the present day with emphasis on specific works as representative of musical evolution.

**MUS 207 Music Composition /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 125.

Composition of music. Includes techniques, notational systems and exposure to and analysis of new music.

**MUS 211 Basic Conducting Techniques /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 125.

Development of fundamental conducting skills. Includes basic techniques, organizational problems, materials and interpretation of representative literature.



**MUS 225 The Structure of Music III /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 125.

Chromatic harmony, melody and associated contrapuntal and rhythmic structure. Includes Schenkerian analysis, advanced tertian harmonies, chromatic modulation and in-depth analysis of selected works.

**MUS 226 The Structure of Music IV /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: MUS 125.

Twentieth century musical structure. Includes analysis of and composition with atonality, serialism, polymodality, polymeter, microtones, improvisation, chance, instrument exploration, new harmonic structures, new scales and new aesthetics.

**MUS 227 Aural Perception III /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 128.

Continuation of MUS 128. Development of aural techniques through dictation and performance of tonal and atonal melodies, chord progressions and rhythmic structures. Includes general techniques of listening to music. Required of all music majors.

**MUS 228 Aural Perception IV /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: MUS 227.

Continuation of MUS 227. Development of aural techniques through dictation and performance of tonal and atonal melodies, chord progressions and rhythmic structures. Emphasis on 20th century musical contexts. Required of all music majors.

**MUS 247 Applied Music—Private Instruction /2 cr. hrs./5 period (.5 lec.)**

□ Prerequisite: MUS 146.

Continuation of MUS 146. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams. (See MUS 145 for sections offered.)

**MUS 248 Applied Music—Private Instruction /2 cr. hrs./5 period (.5 lec.)**

□ Prerequisite: MUS 247.

Continuation of MUS 247. Private weekly instrumental lessons. Includes further development of performance skills and participation in student recitals and jury exams. (See MUS 145 for sections offered.)

**MUS 290A Independent Studies in Music /1 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: Instructor's consent.

Composition and/or in-depth study in an area of the student's choice with approval by the supervising instructor.

**MUS 290B Independent Studies in Music /1 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: Instructor's consent.

Continuation of MUS 290A. Composition and/or in-depth study in an area of the student's choice with approval by the supervising instructor.

**MUS 290C Independent Studies in Music /1 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: Instructor's consent.

Continuation of MUS 290B. Composition and/or in-depth study in an area of the student's choice with approval by the supervising instructor.

## **NURSING**

**NRS 070 Practical Nursing I /8 cr. hrs./16 periods (4 lec., 12 lab)**

□ Prerequisite: Admission granted by the Allied Health Services Selection Committee.

Introduction to comprehensive, patient-centered nursing, utilizing an understanding of health, total needs, major health problems, and nursing processes. Basic knowledge and skills required to render quality nursing and to implement therapeutic techniques, integrated into the three components of the course: theory, skills, and supervised clinical practice. A systematic approach to decision making providing a framework for learning the roles and responsibilities of the practical nurse.

**NRS 072 Practical Nursing II /9 cr. hrs./19 periods (4 lec., 15 lab)**

□ Prerequisite: NRS 070.

Using the nursing process to assess problems and needs that frequently occur in pregnancy, infancy, childhood, adolescence and adulthood. Includes planning individualized patient care, growth and development, nutrition, drug therapy, and cultural influence, all integrated into the three components of the course: theory, skills and supervised clinical practice.

**NRS 170 Fundamentals of Nursing (Eight-Week Module) /4 cr. hrs./16 periods (4 lec., 12 lab)**

□ Prerequisite: Admission to A.D. Nursing Program.

Introduction to the role of the RN as a member of the health team and to the conceptual framework of the ADN Program, namely, man, wellness-illness continuum, and the nursing process.

**NRS 171 Introduction to Medical-Surgical Nursing (Eight-Week Module) /4 cr. hrs./16 periods (4 lec., 12 lab)**

□ Prerequisite: Admission to the ADN Program.

Introduction to the nursing process as a tool for providing nursing care. Fundamental nursing techniques related to oxygenation, hydration, nutrition, elimination, and mobility.



**NRS 172 Medical-Surgical Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisites: NRS 170 and 171.

Expands the student's exposure to basic principles of medical-surgical nursing. Nursing management of the surgical client and of clients experiencing commonly occurring interferences in nutrition and elimination.

**NRS 173 Intermediate Medical-Surgical Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisites: NRS 170, 171 and 172.

Introduction to more complex nursing techniques. Nursing care of hospitalized adult medical-surgical clients experiencing commonly occurring interferences in respiration, renal function and circulation. Includes concepts of cancer nursing.

**NRS 280 Pediatric Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisites: NRS 172 and 173.

Introduction to the nursing process as it relates to child growth and development. Knowledge and skills utilized in the care of children with commonly occurring health problems.

**NRS 281 Obstetrical Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisite: NRS 173.

Principles of maternity nursing. The nursing process as it relates to the family and infant growth and development. The main emphasis is on the normal aspects of maternal newborn care with some information about the complications of maternity and the newborn, and the effects of these complications upon the family.

**NRS 282 Advanced Medical-Surgical Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisites: NRS 280 and 281.

Complex client care and principles of management within a hospital setting. Includes trends, issues and legal and ethical responsibilities of the registered nurse.

**NRS 283 Psychiatric Nursing (Eight-Week Module) /5 cr. hrs./20 periods (5 lec., 15 lab)**

□ Prerequisites: NRS 280 and 281.

Psychiatric nursing care in a variety of hospital and community settings. Includes the mental health-illness continuum and its interventions.

## OFFICE EDUCATION

**OED 021 Beginning Forkner Shorthand /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisite: OED 111. (Recommended: OED 151 or concurrent enrollment.)

Introduction to Forkner Shorthand theory using the symbol and alphabetic system. Includes development of dictation speed and typewritten transcription of business correspondence with emphasis on improved spelling, grammar and punctuation.

**OED 022 Advanced Forkner Shorthand /3 cr. hrs./4 periods (3 lec., 1 lab)**

□ Prerequisites: OED 021, OED 151 or concurrent enrollment, and entry speed of 40 to 50 wpm.

Dictation, business vocabulary and technical terms. Includes development of dictation speed and further development of transcription skills, including punctuation, grammar and typing techniques.

**OED 051 Notehand /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Intensive course in a shorthand system to be used for personal notetaking. Practice in taking useful, well-organized lecture and conference notes.

**OED 061 StenoscRIPT I /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: Keyboarding knowledge.

The basic system of alphabetic shorthand. Theory, brief forms, phrasing, vocabulary, grammar, punctuation, letter styles and transcription techniques.

**OED 062 StenoscRIPT II /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: OED 061, and OED 111 or keyboarding knowledge.

Advance system of alphabetic shorthand. Theory, brief forms, phrasing, vocabulary, grammar, punctuation, letter styles and transcription.

**OED 071 Typing Refresher /3 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: OED 111 or equivalent.

Review of typing techniques for students knowing how to type. Includes speed/accuracy drills and mailable production of letters, forms, tables and manuscripts.

**OED 071A Typing Refresher: Skill Building /1 cr. hr./1 period (.7 lec., .3 lab)**

□ Prerequisite: OED 111 or equivalent.

Review course for students knowing how to type. Emphasis on the practice of using the keyboard, speed drills and accuracy drills.

**OED 071B Typing Refresher: Formatting /1 cr. hr./1 period (.7 lec., .3 lab)**

□ Prerequisite: OED 111 or equivalent.

Review course for students knowing how to type. Emphasis on producing letters, manuscripts, tabulations and forms.

**OED 071C Typing Refresher: Special Applications /1 cr. hr./1 period (.7 lec., .3 lab)**

□ Prerequisite: OED 111 or equivalent.

Review course for students knowing how to type. Emphasis on preparation of forms, multiple copies and memorandums in special areas of interest, including legal, medical and general.

**OED 081 Shorthand Refresher /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 101 or equivalent.

Review of the principles of shorthand with emphasis on new words, transcription and speed building.

**OED 091 Upgrading Office Skills /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 111 or keyboarding knowledge.

New techniques and personal improvement in office skills and human relations. Includes assessment, evaluation, new technology and review.

**OED 095 Taquigrafía I /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Requisito: Mecanografía I o inscripción concorrente.

Un curso de primer semestre de taquigrafía en español. El curso está diseñado para desarrollar las destrezas en tomar dictado sencillo y transcribirlo en la máquina con énfasis en el español escrito.

**OED 101 Shorthand I /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisites: OED 111, and OED 151 or concurrent enrollment.

First-semester shorthand. Designed to develop skills in taking dictation and transcribing at the keyboard. Emphasis on the mechanics of written English.

**OED 102 Shorthand II /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisites: OED 151 or concurrent enrollment, and OED 101 or one year high school shorthand or dictation speed of 40 to 50 wpm with keyboard transcription at minimum of 95 percent accuracy.

Review of shorthand through dictation practice, speed development and accuracy in typed transcription. Emphasis on progressive speed development, grammar, spelling, punctuation and production of mailable correspondence.

**OED 111 Typing I /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: None.

Introduction to touch typing. Basic formatting of business correspondence. Emphasis on mastery of the keyboard and speed/accuracy drills.

**OED 111A Typing I: Keyboard Presentation and Basic Techniques and Procedures (Five-Week Module) /1 cr. hr./1.7 periods (1 lec., .7 lab)**

□ Prerequisite: None.

Introduction to the basic techniques of touch keyboard mastery. Emphasis on technique, speed and accuracy.

**OED 111B Typing I: Basic Correspondence and Centering (Five-Week Module) /1 cr. hr./1.7 periods (1 lec., .7 lab)**

□ Prerequisite: OED 111A.

Basic centering and correspondence. Emphasis on technique, speed and accuracy.

**OED 111C Typing I: Correspondence and Manuscripts (Five-Week Module) /1 cr. hr./1.6 periods (1 lec., .6 lab)**

□ Prerequisite: OED 111B.

Tabulation, correspondence and manuscripts. Emphasis on technique, speed and accuracy.

**OED 112 Typing II /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: OED 111.

Further development of typing techniques, skill and knowledge. Includes letters, manuscripts, tabulations, memorandums and business forms. Accurate proofreading and mailability are stressed.

**OED 121 Calculating Machines /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: BUS 051.

Operation of the electronic calculator for mathematical computation in the modern business world. Includes practical business applications such as discounts, commission, percentage, proration, interest and markup.

**OED 131 Records Management: Development of a Program /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of controlling all types of records within an organization, from creation to final disposition. Includes guidelines for the establishment, implementation and maintenance of records control programs.

**OED 132 Records Management: Filing Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and procedures of filing and practice in the basic filing systems. Includes methods of storing and retrieving information and plans for retention, transfer and disposal of records.

**OED 132A Records Management: Filing Systems A /1 cr. hrs./1 period (1 lec.)**

□ Prerequisite: None.

Indexing, coding, cross-referencing and alphabetizing of personal and business names.

**OED 132B Records Management: Filing Systems B /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: OED 132A.

Indexing, coding, cross-referencing and alphabetizing of governmental agencies and other names. Includes alphabetical correspondence, methods of storing and retrieving information, and plans for retention, transfer and disposal of records.

**OED 132C Records Management: Filing Systems C /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: OED 132B.

Filing procedures used in subject, numeric and geographic filing.

**OED 141 Legal Terms /3 cr. hrs./3 period (3 lec.)**

□ Prerequisite: None.

Legal terminology for students interested in working in legal offices as legal secretaries or technicians. Emphasis on pronunciation, spelling and definitions.

**OED 142 Legal Secretarial Procedures I /3 cr. hrs./3 period (3 lec.)**

□ Prerequisite: OED 211.

Terminology and procedures of a law office involving wills, domestic relations cases and foreclosures. Includes human relations and the code of ethics for legal secretaries. Typing proficiency is stressed.

**OED 151 Business English /3 cr. hrs./3 period (3 lec.)**

□ Prerequisite: Minimum assessment test score for WRT 100.

In-depth study of English fundamentals essential for modern business communication. Includes application of grammar rules, punctuation, spelling, word usage, sentence structure and capitalization.

**OED 161 Medical Office Procedures /4 cr. hrs./5 period (3 lec. 2 lab)**

□ Prerequisite: OED 112 or concurrent enrollment and OED 162.

Duties typical of an assistant in a medical office. Designed for students planning to work in a physician's office, clinic or hospital. Includes keeping patient records, preparation and handling of insurance forms and medical reports, and handling patients.

**OED 162 Medical Terms I /3 cr. hrs./3 period (3 lec.)**

□ Prerequisite: None.

Terminology essential to the medical business office. Emphasis on understanding and ease in using medical terms.

**OED 181 Machine Shorthand /3 cr. hrs./4 period (3 lec., 1 lab)**

□ Prerequisite: OED 111 or concurrent enrollment or one year typing.

Basic touch shorthand theory with speed developed to 80 wpm. Emphasis on shorthand reading skills and transcription.

**OED 199 Co-op Related Class in OED /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in OED 199 Co-op Work in OED.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to office education). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be repeated once for credit.

**OED 199 Co-op Work in OED /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in OED 199 Co-op Related Class in OED.

A supervised cooperative work program for first-year students in an occupation related to office education. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be repeated once for credit.

**OED 201 Shorthand III /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisites: OED 102 or two years high school shorthand or dictation speed of 60 to 70 wpm with typewriter transcription at minimum of 95 percent accuracy, and OED 151 or concurrent enrollment.

Continuation of OED 102. Further development of shorthand transcription. Includes both timed and office-style dictation. Emphasis on progressive speed development, modern business English and production of mailable correspondence.

**OED 202 Shorthand IV /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: OED 201.

Continuation of OED 201. Production course for developing techniques and skills of high quality. Includes transcription, modern English usage, proofreading, editing and specialized application.

**OED 211 Typing III /3 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: Two years of typing or 40 wpm.

High-level skills in touch typing. Includes office typing problems with manuscripts, correspondence, tables, business forms, executive and legal work. Emphasis on a standard of mailability for all production work. Independent performance is encouraged. It is recommended that OED 151 be taken before this course.

**OED 220 Word/Information Processing Concepts /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: None.

Introduction to principles, procedures and equipment of the automated office. Includes historical background and current developments in word/information processing.

**OED 221 Word Processing /4 cr. hrs./6 periods (4 lec., 2 lab)**

□ Prerequisite: OED 112, or typing speed of 40 wpm and ability to type letters, manuscripts and tables.

Procedures, methods and equipment used in the automated office in typing, transcribing and producing copy. Variety of equipment used. (See OED 221 A,B,C,D for specific content.) It is recommended that OED 151 be taken before this course.

**OED 221A Word Processing—Reprographics /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: OED 112, or typing speed of 40 wpm and ability to type letters, manuscripts and tables.  
Survey of copy processing. Techniques of copy preparation and reproduction, including duplicating, printing, copying and imaging devices. It is recommended that OED 151 be taken before this course.

**OED 221B Word Processing—Equipment /1 cr. hr./1.5 periods (1 lec., .5 lab)**

□ Prerequisite: OED 112, or typing speed of 40 wpm and ability to type letters, manuscripts and tables. (OED 151 recommended.)  
Work on display and nondisplay word processors. May be taken four times for a maximum of four credit hours.

**OED 221C Word Processing—Beginning Machine Transcription /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: OED 112, or typing speed of 40 wpm and ability to type letters, manuscripts and tables.  
Techniques and equipment for basic transcription. Includes development of punctuation, grammar and spelling skills using general business correspondence. It is recommended that OED 151 be taken before this course.

**OED 221D Word Processing—Advanced Machine Transcription /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: OED 221C.  
Further development of machine transcription techniques. Includes legal, medical, and general business correspondence. Emphasis on mailability and transcription speed.

**OED 231 Records Management: Forms Management, Micrographics Management and Automated Retrieval /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 131.  
Analysis, design and control of forms. Includes design, selection and operation of micrographic systems and equipment in information management. Also includes study and use of automated storage and retrieval systems.

**OED 232 Records Management: Supervision /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 131.  
Practical approach to office organization and administrative management. Management of administrative services, physical resources, human resources, systems and procedures.

**OED 242 Legal Secretarial Procedures II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 142, or law office experience including typing.  
Terminology and procedures for a law office, including personal injury, probate, corporate and criminal law; human relations; and the code of ethics for legal secretaries. Typing proficiency is stressed.

**OED 251 Business Communications /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: OED 151.  
General principles of effective communication and techniques of business correspondence. Includes social and business writing, claim and adjustment letters, interoffice memorandums, sales letters, credit letters, collection letters, letters of application and data sheets.

**OED 252 Bilingual Commercial Correspondence /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Speaking and writing proficiency in Spanish and English.  
The use of Spanish and English in business. Specially designed for bilingual secretaries or office personnel. Acquisition of business terminology in English and Spanish and application of these in a variety of business communications such as letters and memos. Includes practice in taking dictation, transcribing and translating in both languages.

**OED 252 Correspondencia comercial Bilingüe /2 cr. hrs./2 periods (2 lec.)**

□ Requisito: Saber leer y escribir en Inglés y español.  
Este curso consiste en el uso del español e inglés en los negocios. Especialmente diseñado para secretarías bilingües o personal de oficina. Adquirir y ampliar la terminología comercial en inglés y español y emplearla en la redacción de cartas y memorandums. También incluye la práctica de tomar dictado, transcribir y traducir en ambos idiomas.

**OED 262 Medical Terms II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: OED 162.  
Concentrated study of terminology essential to the medical field. Includes the body systems, radiology, nuclear medicine and pharmacology.

**OED 263 Medical Transcription /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: OED 162, or knowledge of medical terminology and typing speed of 40 wpm.  
Development of medical transcription skills. Speed and accuracy in typing, skill in using transcribing equipment, and expansion of medical terminology. Practice in transcribing medical reports and correspondence is emphasized.

**OED 271 Office Procedures /4 cr. hrs./5 periods (3 lec., 2 lab)**

□ Prerequisite: OED 112.  
Functions and procedures used in a wide range of office activities. Includes analysis of the secretarial profession, information processing, oral and written communications, transmittal services, planning travel and conferences, preparing reports, financial and legal tasks, and placement and advancement in employment.

**OED 299 Co-op Related Class in OED /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: OED 199 and concurrent enrollment in OED 299 Co-op Work in OED.

Continuation of OED 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be repeated once for credit.

**OED 299 Co-op Work in OED /1-8 cr. hr./5-40 periods (5-40 lab)**

□ Prerequisites: OED 199 and concurrent enrollment in OED 299 Co-op Related Class in OED.

Continuation of OED 199. A supervised cooperative work program for second-year students in an occupation related to office education. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be repeated once for credit.

**OPHTHALMIC DISPENSING****ODT 051 Optical Orientation I /6 cr. hrs./8 periods (5 lec., 3 lab)**

□ Prerequisite: Acceptance into Optical Program.

Overview of the ophthalmic field. Includes roles of opticians, optometrists and ophthalmologists, basic information regarding lenses, eyeglass frames, refractive errors and their corrections, prescriptions and laboratory equipment and organization.

**ODT 052 Optical Orientation II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: ODT 051.

Continuation of ODT 051. Introduction to procedures governing frame measurements, methods of reading prescriptions, methods of eliminating specific optical problems, fitting and alignment procedures and uses of single vision and multifocal lenses.

**ODT 053 Optical Laboratory /3 cr. hrs./7 periods (1 lec., 6 lab)**

□ Prerequisite: ODT 051.

Principles and techniques of preparing finished eyewear. Includes specific practice in lens neutralization, layout, thickness computations, edging, hardening, assembly and verification.

**ODT 054 Optical Dispensing I /6 cr. hrs./10 periods (4 lec., 6 lab)**

□ Prerequisites: ODT 051, 052 and 053.

Physically and theoretically adapting eyewear to the patient's face through application of ophthalmic dispensing principles, techniques and procedures. Includes facial measurements and planes, frame selection, vocational requirements, quality lens design and ocular pupillary measurements.

**ODT 055 Contact Lenses I /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisites: ODT 051, 052 and 053.

Introduction to principles and practice of contact lens fittings. Includes ocular anatomy and physiology, lens types and structures, specific ophthalmic measuring equipment, and procedures for ensuring the patient's comfort.

**ODT 056 Ophthalmic Assistant /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: ODT 051, 052 and 053.

Duties of the ophthalmic assistant. Includes optical instrumentation, field charting, visual skills, tangent screens, case histories, office procedures, ocular surgery, telebinocularly and perimetry.

**ODT 057 Contact Lenses II /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: ODT 055.

Continuation of ODT 055. Theory and practice of contact lens fitting optics. Includes hard lens, gas permeable, soft extended wear, bifocal and toric types. Also includes adjustments, problem solving and patient education.

**ODT 058 Optical Dispensing II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisites: ODT 054.

Continuation of ODT 054. Principles and techniques of fitting and assembling metal eyewear, cataract prescriptions, problem, corrections and ophthalmic dispensing organization.

**ODT 059 Ophthalmic Seminar /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: ODT 051 through 056.

Complete review of all material for state board examination. Includes professional ethics, state and national laws, guest speakers and program evaluation.

**ODT 299 Co-op Related Class in ODT /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in ODT 299 Co-op Work in ODT.

Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**ODT 299 Co-op Work in ODT /3 cr. hrs./15 periods (15 lab)**

□ Prerequisite: Concurrent enrollment in ODT 299 Co-op Related Class in ODT.

A supervised cooperative work program for second-year students in optical dispensing. Interning with a co-op supervisor for 240 hours, students are evaluated and critiqued by the supervisor and faculty representative while in an ophthalmic setting. May be taken two times for a maximum of six credit hours.



## PAPAGO

### **PGO 050 Conversational Papago I /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: None.

Designed for persons with no previous knowledge of Papago. Primary focus on listening to and speaking elementary Papago. A non-transfer credit course.

### **PGO 051 Conversational Papago II /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: PGO 050 or equivalent.

Designed for persons able to ask and respond to simple questions relevant to self and to the environment. A non-transfer credit course.

## PHILOSOPHY

### **PHI 101 Introduction to Philosophy I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of abstract reasoning and their application to life. Provides a thorough foundation through some of the main themes and figures in the history of Western philosophy. May be taken as humanities option.

### **PHI 120 An Introduction to Logic /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The basic requirements and processes of valid thinking, decision making and communication. Emphasis on "informal" logic (i.e., the fallacious reasoning encountered in daily life). Includes recognizing and countering logical fallacies. Also includes use of Venn diagrams and truth tables. Real-life arguments are analyzed so the tools of logic can be better understood.

### **PHI 130 Introductory Studies in Ethics and Social Philosophy /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the study of principles and standards of conduct and morality. Includes such matters as judgments of approval and disapproval, the rightness and wrongness of our acts, and the desirability or wisdom of our actions. Emphasis on classical and contemporary meanings of ethical statements, their truth and falsity, their objectivity and subjectivity.

### **PHI 140 Philosophy of Religion /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the philosophical study of religion. Includes comparative study of Hinduism, Taoism, Confucianism, Buddhism, Christianity, etc. (Same as REL 140.)

### **PHI 145 Historical Philosophy /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of various figures or movements in the history of philosophy. Designed to respond to student interest in the study of particular topics. Past studies have included Plato, Hume, aesthetics, philosophy of feminism, philosophy of law, etc.

## PHYSICAL EDUCATION

### **PED 100 Introduction to Bailes Folkloricos Mexicanos /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: None.

Introduction to basic techniques of the zapateado (footsteps). Includes symbols, costumes and well-known traditional dances from different regions of Mexico.

### **PED 100 Bailes folklóricos mexicanos /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Requisito: Ninguno.

Curso básico de introducción a los bailes folklóricos mexicanos con énfasis en pasos, movimientos, símbolos, trajes y los bailes más tradicionales de México.

### **PED 101-119 Professional Activities**

□ Prerequisite: None.

A series of 13 activities from which the physical education major or minor must select a minimum of eight. These courses emphasize skill, strategy, learning theory and evaluation methods beyond the beginning level.

### **PED 101 Badminton /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 103 Basketball /2 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 104 Field Hockey /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 105 Racquetball /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 106 Self Defense /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 107 Soccer /2 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 108 Softball /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 112 Volleyball /2 cr. hrs./3 periods (1 lec., 2 lab)**

### **PED 114 Archery /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 115 Tennis /2 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 116 Track and Field /2 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 118 Weight Training /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 119 Aerobics /1 cr. hr./3 periods (1 lec., 2 lab)**

### **PED 110 Folkloric Mexican Dance I: Oaxaca /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: PED 100.

Introduction to the folkloric Mexican dance, focusing on the regional dance of the state of Oaxaca in its different forms and the practice of couple dances, female dances and male dances of the region.

### **PED 111 Folkloric Mexican Dance II: Michoacan /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: PED 100.

Introduction to the folkloric Mexican dance, focusing on the regional state of Michoacan in its different forms and the practice of couple dances and Indian male and female dances of the region.



**PED 117 Bailes Folkloricos Mexicanos: Vera Cruz /2 cr. hrs./3 periods (1 lec., 2 lab)**

□ Prerequisite: PED 100.

Advanced Mexican folkloric dances, especially traditional dances of the state of Vera Cruz. Includes theory and practices of the dances, symbolism of costumes, style and techniques of steps.

**PED 120 Facilities for Physical Education and Recreation /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Survey of available physical education and recreation facilities in Pima County. Includes size, space, site planning, design, construction materials and techniques, cost, competitive bidding and other facility problems. Field trips are a large part of the course.

**PED 122 Adaptive and Corrective Programs /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of various programs of physical rehabilitation in recreation and physical education. Includes techniques of instruction.

**PED 125 Introduction to Sports Injury Management /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Introduction to principles and techniques of preventing, treating and rehabilitating sports related injuries. Includes recognition of sports injuries, therapeutic methods, mechanisms of sports injuries, nutrition, and taping and wrapping techniques.

**PED 130 Elementary School Physical Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic skills in and knowledge of materials and methods for teaching physical activities, games and sports. Includes relays and theoretical basis of the movement education approach to physical education.

**PED 139 Introduction to Leisure Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of opportunities in, qualifications for and general orientation to the fields of health, physical education and recreation. For prospective professionals in these fields.

**PED 142 Motor Development /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Examination of developmental changes in motor patterns for children and adults. Includes methods used in evaluating motor skill performance and the selection of appropriate movement experiences.

**PED 144 Folk and Square Dance /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Introduction to folk and square dance for physical education majors and minors.

**PED 145 Sports Officiating /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Familiarization with and application of the rules of various sports from the standpoint of an official. Includes current methods and materials to develop competency in executing official rules. Also includes actual experience through service in the college's intramural program and other agencies. (Same as REC 145.)

**PED 146 Designed Exercise /2 cr. hrs./3 periods (2 lec., 1 lab)**

□ Prerequisite: None.

Principles of designing various exercise programs. Includes lab experience in personal fitness performance and testing. Emphasis on the relationship of these exercise programs to the total physical education curriculum.

**PED 147 Intramural Sports and Equipment /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Examination of intramural organization and administration with practical experience in the college's intramural program. Includes repair techniques and equipment purchasing, inventory control and maintenance procedures.

**PED 148 Dance: Country Swing /1 cr. hrs. 2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Basic country swing steps and movements for recreational or professional use.

**PED 149 History of Physical Education /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Examination of the historical development of physical education. Includes social, political, religious and cultural influences as they shaped the physical activities of man from prehistoric times to the present. Emphasis on the leaders of physical education in each major time period.

**PED 150-215 General Activities**

A series of activity classes designed for non-majors. A wide variety of activities, ranging from beginning to advanced skill levels, are available. Students wishing to take intermediate or advanced classes should have skills above the beginning level and/or permission of the instructor.

**PED 150 Beginning Archery /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 151 Intermediate Archery /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 152 Advanced Archery /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 153 Beginning Badminton /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 156 Beginning Baseball /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 159 Beginning Basketball /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 160 Intermediate Basketball /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 161 Advanced Basketball /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 162 Beginning Bowling /1 cr. hr./2 periods (1 lec., 1 lab)**

**PED 165 Beginning Dance /1 cr. hr./2 periods (1 lec., 1 lab)**

- PED 167 Advanced Dance /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 168 Defensive Tactics /2 cr. hrs./3 periods (2 lec., 1 lab)  
 PED 171 Deportes Billigües /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 172 Beginning Fencing /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 174 Advanced Fencing /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 175 Field Hockey /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 177 Fitness /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 180 Beginning Golf /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 181 Intermediate Golf /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 182 Advanced Golf /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 183 Beginning Gymnastics /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 185 Advanced Gymnastics /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 186 Beginning Judo /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 188 Advanced Judo /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 189 Life Saving /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 190 Beginning Racquetball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 191 Intermediate Racquetball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 192 Advanced Racquetball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 193 Self-Defense for Women /2 cr. hrs./3 periods (2 lec., 1 lab)  
 PED 195 Square Dancing /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 196 Soccer /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 198 Softball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 199 Swimming /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 202 Beginning Tennis /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 203 Intermediate Tennis /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 204 Advanced Tennis /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 205 Track and Field /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 208 Beginning Volleyball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 209 Intermediate Volleyball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 210 Advanced Volleyball /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 211 Water Safety Instructor /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 212 Beginning Weight Training /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 213 Intermediate Weight Training /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 214 Advanced Weight Training /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 215 Wrestling /1 cr. hr./2 periods (1 lec., 1 lab)  
 PED 290 Independent Studies in Health, Physical Education and Recreation /3 cr. hrs./9 periods (9 lab)

□ Prerequisite: Consent of instructor.

Students independently continue their development in health, physical education and recreation with the help of a faculty member. May be take two times for a maximum of six credit hours.

## PHYSICS

### PHY 101 Technical Physics I /3 cr. hrs./4 periods (2 lec., 2 lab)

□ Prerequisite: None.

Specific applications of physics to automotive, air conditioning and other technical fields. Designed for the technologist. Includes all math for these applications.

### PHY 102 Technical Physics II /3 cr. hrs./4 periods (2 lec., 2 lab)

□ Prerequisites: PHY 101 and MTH 070.

Continuation of PHY 101. Application of electronics to the technologies.

### PHY 105 Introduction to Optics /4 cr. hrs./6 periods (3 lec., 3 lab)

□ Prerequisite: High school algebra.

Introduction to optics and light. Intended for students of ophthalmic dispensing and others interested in light and its physical properties.

### PHY 112 General Physics for Education Majors /3 cr. hrs./5 periods (3 lec., 2 lab)

□ Prerequisite: High school algebra.

Introduction to general physics. Designed for students majoring in education. Includes mechanics, heat, light, sound, electricity, magnetism and atomic and nuclear physics.

### PHY 121 Introductory Physics I /5 cr. hrs./7 periods (4 lec., 3 lab)

□ Prerequisite: High school algebra.

A non-calculus introduction to general physics for programs requiring a one-year, non-calculus-based physics course. Includes mechanics, heat, waves and sound.

### PHY 122 Introductory Physics II /5 cr. hrs./7 periods (4 lec., 3 lab)

□ Prerequisite: PHY 121.

Continuation of PHY 121. Includes light, electricity, magnetism and atomic and nuclear physics.

### PHY 131 Introductory Physics with Calculus I /5 cr. hrs./7 periods (4 lec., 3 lab)

□ Prerequisites: MTH 180, and high school physics or equivalent.

A calculus-based introduction to general physics for programs requiring a two-semester, calculus-based physics course. Includes mechanics, fluids and thermodynamics.

### PHY 132 Introductory Physics and Calculus II /5 cr. hrs./7 periods (4 lec., 3 lab)

□ Prerequisites: PHY 131, and MTH 185 or concurrent enrollment.

Continuation of PHY 132. Includes light, electricity, magnetism, and atomic and nuclear physics.

**PHY 170 Practical Applied Physics /1-3 cr. hrs./1-3 periods (1-3 lec.)**

□ Prerequisite: Will vary according to topics selected by students.  
Application of physical laws to selected topics. Topics available include how things work, physics of musical instruments, science and society, holography, energy and independent study.

**PHY 210 Introductory Mechanics /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisites: MTH 180, and high school physics or equivalent.  
A calculus-based introduction to mechanics. Designed for physics, mathematics, electrical engineering and computer science majors. Includes kinematics, dynamics, energy and momentum.

**PHY 216 Introductory Electricity and Magnetism /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisites: PHY 210 and MTH 185.  
A calculus-based introduction to electricity and magnetism. Designed for physics, mathematics and electrical engineering majors. Includes electric and magnetic field theory, Gauss's Law, circuit theory, potential theory, Ampere's Law, Faraday's Law and Maxwell's equations.

**PHY 221 Introduction to Waves and Heat /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: PHY 210 and MTH 185.  
Principles of wave motion and heat. Includes fluids, heat and thermodynamics, wave motion, simple harmonic motion, and physical and geometric optics.

**PHY 230 Introduction to Modern Physics /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: PHY 210 and 216 or PHY 131 and 132, and MTH 180 and 185.  
Introduction to atomic and nuclear physics. Includes relativity, atomic and nuclear physics, radioactivity, quantum physics and elementary particles.

**POLITICAL SCIENCE**

**POL 050 Immigration Law and Practices /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Basic principles and procedures of immigration law. The legal and political status of immigrants from Mexico, the process of immigration and counseling for the immigrant.

**POL 050 Derecho, Conceptos y Proceso de Emigración/3 cr. hrs./3 periods (3 lec.)**

□ Requisito: Ninguno.  
Este curso consiste en los principios y procedimientos básicos de la ley de emigración. El estado legal y político de los inmigrantes de México, el proceso de emigración y consejos para el inmigrante.

**POL 100 Introduction to Political Science /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Basic concepts of political science. The nature of politics, its significance in daily life, and how political systems change.

**POL 110 American National Government and Politics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Survey of the institutions of American government and the evolution of our political system. Includes the Constitution, roles of political parties, interest groups, public opinion and voting behavior. Special attention to the positions of economic, ethnic and religious minorities in American society. For University transfer or PCC degree, credit is allowed for either POL 110 or POL 112, but not for both.

**POL 111 American State and Local Governments and Politics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Survey of state and local governments and politics. Includes state constitutions, political parties, interest groups, elections, and major institutions of state governments. Emphasis on Arizona's political culture, the state's politically relevant economic and ethnic groups, and its current political trends.

**POL 112 National and State Constitutions /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Examination of the nature of national and state constitutions. Historical background, organization and functions of the national, state and local governments based on the constitutions of the United States and Arizona. Satisfies the requirements for teacher certification. For university transfer or PCC degree, credit is allowed for either POL 110 or POL 112, but not for both.

**POL 120 Introduction to Comparative Politics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.  
Examination of the basic concepts and methods of comparative political analysis and their application to the political systems of Western Europe, the Soviet Union, Eastern Europe, and developing areas.

**POL 130 Introduction to International Relations /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

General examination of international relations, including the elements of national power; the economic, social and psychological determinants of international political behavior; formation of foreign policy; international law; and international and regional organizations.

**POL 140 Minority Groups and the Political Process /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Investigation of the position of various minority groups in the American political system, including their general political attitudes and voting behavior, patterns of political organization, party activity, and their role in the formation of public policy.

**POL 149 Independent Study in Political Science /2-4 cr. hrs./2-4 periods (2-4 lec.)**

□ Prerequisite: None.

Independent readings or special projects to be arranged with the instructor.

**POL 190 Political Revolution and Violence /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of the causes of political revolution and violence, using historical, psychological and sociological data to explain how violent changes in political power come about.

**POL 250 Political Science Internship /3 cr. hrs./15 periods (15 lab)**

□ Prerequisites: WRT 101 and 6 credit hours in political science. Internship with the City of Tucson or other local governmental unit, designed to give students practical experience in government.

**POSTAL SERVICE MANAGEMENT**

**PSM 100 Postal History and Organization /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of postal history and organization. Includes delivery of written communication and merchandise from earlier eras to the present; comparison of private, corporate and governmental agencies responsible for mail service; and postal organization, philosophies, policies, procedures, rules and regulations.

**PSM 120 Postal Service Labor-Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of laws and practices related to Postal Service management of labor. Includes development and current status of the postal labor union, problems and issues, national and local agreements, bargaining units and associations, grievance and disciplining procedures, and the National Labor Relations Board.

**PSM 130 Postal Employee Services /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of postal personnel office services, policies and practices. Includes selection, placement, training, promotion, self-development, equal employment, insurance and retirement benefits, salary schedules, awards, and safety and health programs.

**PSM 140 Mail Processing I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles and practices of mail processing. Includes mail classification and rates, service standards, postal terminology, mail processing functions, distribution systems, objectives, responsibilities, mail preparation, manual distribution, revenue protection and bulk mail centers.

**PSM 199 Co-op Related Class in PSM /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in PSM 199 Co-op Work in PSM. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to Postal Service management). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**PSM 199 Co-op Work in PSM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in PSM 199 Co-op Related Class in PSM.

A supervised cooperative work program for first-year students in an occupation related to Postal Service management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**PSM 200 Postal Service Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of Postal Service finance. Includes sources, receipt and control of postal revenue; procedures of the Board of Governors and the Postal Rate Commission; budgeting; financial accounting and reporting; time keeping; travel regulations; the Postmaster General's annual report; and Administrative Services.

**PSM 210 Mailroom Procedures and Mailing Techniques /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of business mailroom procedures and techniques. Includes mailroom setup, equipment, personnel administration, time management and U.S. Postal Service requirements for all classes of mail. Prepares student for employment in a business mailroom.

**PSM 240 Mail Processing II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: PSM 140.

Continuation of PSM 140. Survey of mail processing. Includes postal mechanization, machine distribution, human resources management, reporting systems, data analysis, operational planning, scheduling, staffing, budgeting and functional coordination with customer services.

**PSM 250 Postal Service Delivery and Collection /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Functional study of mail delivery and collection systems within the U.S. Postal Service. Includes duties, responsibilities and skills needed in carrier crafts; management of rural delivery service; and Fair Labor Standards Act requirements. Emphasis on methods of improvement, standard operating procedures, and route inspections and evaluations.

**PSM 260 Postal Problems Analysis /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Analysis and solution of actual postal problems using systematic approaches. Includes problem identification, determination and analysis of dimensions, probable causes, adverse consequences, alternative solutions, and specification and defense of best solution.

**PSM 270 Postal Customer Services /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of all services for postal customers. Includes customer relations, retailing postal products, non-postal services and duties of customer service representatives. Emphasis on means to achieve and manage a professional window service operation.

**PSM 280 Management of Small Post Offices /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of the management of small post offices within the U.S. Postal Service. Includes duties, responsibilities and skills necessary to manage these offices in a productive and responsive manner.

**PSM 299 Co-op Related Class in PSM /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: PSM 199 and concurrent enrollment in PSM 299 Co-op Work in PSM.

Continuation of PSM 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**PSM 299 Co-op Work in PSM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: PSM 199 and concurrent enrollment in PSM 299 Co-op Related Class in PSM.

Continuation of PSM 199. A supervised cooperative work program for second-year students in an occupation related to Postal Service management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**POTABLE WATER TECHNOLOGY**

**PWT 202 Water Treatment Processes /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Unit processes involved in the treatment of both ground and surface water. Includes pretreatment, coagulation, mixing, flocculation, sedimentation, filtration, disinfection, colored turbidity removal, softening, chlorination, fluoridation, and taste and odor removal.

**PROFESSIONAL DEVELOPMENT**

**PRD 050 The Arizona Community College /3 cr. hrs. /3 periods (3 lec.)**

□ Prerequisite: None.

An exploration of the philosophy and functions of the Arizona community college. Includes goals, legislation, curriculum, board and administration functions, grantsmanship, student personnel services and continuing education.



## PROFESSIONAL FIRE SCIENCE

### PFS 191 Fire Chief Training I /4 cr. hrs./4 periods (4 lec.)

□ Prerequisite: None.

Preparation for professional fire personnel to become chief officers. Includes incident command, communications and disaster management.

### PFS 192 Chief Training II /4 cr. hrs./4 periods (4 lec.)

□ Prerequisite: None.

Preparation for professional fire personnel to become chief officers. Includes fire management techniques, disaster management, battalion assistance and deputy fire chief's responsibilities.

## PSYCHOLOGY

### PSY 050 The Psychology of Death and Loss /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Adjustment to death and loss. Current social and attitudinal considerations are reviewed.

### PSY 090 Psicología chicana /3 cr. hrs./3 periods (3 lec.)

□ Requisito: Ninguno.

Una introducción a los conceptos básicos de la psicología de los chicanos. Se le dará énfasis a las determinaciones e implicaciones de las diferencias en la psicología tradicional y chicana.

### PSY 095 Understanding Human Behavior /3 cr. hrs./2 periods (2 lec.)

□ Prerequisite: None.

The scientific approach to the study of psychology, surveying the physiological, intrapsychic and social-behavioral views of human thought and behavior. Includes sensation and perception, motivation, learning and memory, maturation and development, personality theory and psychotherapy.

### PSY 100 Introduction to Psychology I /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Survey of psychology. Growth of the individual, behavior disorders, social psychology, learning and history of the field.

### PSY 100 Introducción a la psicología I /3 cr. hrs./3 periods (3 lec.)

□ Requisito Ninguno.

Este curso trata del estudio panorámico de la psicología. También estudia el desarrollo del individuo, el comportamiento anormal, la psicología social, su aprendizaje e historia en el campo de la psicología.

### PSY 101 Introduction to Psychology II /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Survey of psychology. Biological bases of behavior, sensation, perception, motivation, emotion and stress.

### PSY 102 Introduction to Social Psychology /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Basic theories and concepts of social psychology and the individual's experience in group situations.

### PSY 103 Normal Personality I /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Psychological functioning and coping behaviors for normal personality development.

### PSY 104 Introduction to Behavior Modification /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Introduction to the principles of behavior modification. Emphasis on application in practical situations.

### PSY 105 Psychology of Women /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Biological and sociological explanations of female development and behavior. Includes women's relationships to power, changing roles, and implications for human liberation. Emphasis on experiences which are unique to women.

### PSY 115 Human Sexuality /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Human sexual experience throughout the life cycle viewed from sociological and psychological perspectives. (Same as SOC 115.)

### PSY 203 Normal Personality II /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: PSY 103.

Continuation of PSY 103. Further study of normal personality through participation in groups. A variety of approaches for self-understanding and personal growth are available, depending on the instructor and the class. For further information regarding specific semester offerings, contact the behavioral sciences area.

### PSY 205 Introduction to Individual Differences and Testing /3 cr. hrs./3 periods (3 lec.)

□ Prerequisite: None.

Survey of individual differences and related assessment techniques (how to interpret test results and what they reveal and don't reveal).



**PSY 240 Futures: A Psychological Perspective /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the rapidly expanding discipline of futurism. Why think about the future; how to think about the future; what to do about the future; and careers in futurism. Includes lectures, readings, class discussions and simulations of the future.

**PSY 296 Individual Studies in Psychology /3-6 cr. hrs./3-6 periods (3-6 lec.)**

□ Prerequisite: None.

Exploration of special interest areas. Content to be determined by student and facilitator/instructor.

**PSY 298 Social Psychology Practicum /1-6 cr. hrs./3-18 periods (3-18 lab)**

□ Prerequisite: None.

Familiarization with specific areas of social psychology through are view of pertinent research, directed observation, and personal participation in relevant experimental or natural settings.

**PUBLIC ADMINISTRATION**

**PAD 060 Time Management /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Techniques and procedures to manage time effectively. Discussion sessions identify time wasting behaviors.

**PAD 105 Introduction to Public Administration /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Major issues, problems and options facing public sector policy-makers and administrators.

**PAD 204 Introduction to the Analysis of Data for Decision Making /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Informal and exploratory approaches to the analysis of empirical data in a managerial decision making context.

**PUBLIC BUILDING MAINTENANCE**

**PBM 055 Building Maintenance /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

All phases of the care and cleaning of buildings. Includes fixtures, furnishings and various types of building interiors.

**PUBLIC TRANSPORTATION MAINTENANCE**

**PTM 101 Applied Electrical Systems /4 cr. hrs./8 periods (3 lec., 5 lab)**

□ Prerequisite: None.

Basic theory and application in the servicing and maintenance of electrical systems on public transportation vehicles. Includes reading schematics, use of test equipment and repair procedures.

**PTM 102 Brake Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Maintenance, service and repair of brake systems on public transportation vehicles.

**PTM 103 Air Systems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Operation, diagnosis, maintenance and repair of air-operated systems on public transportation vehicles.

**PTM 104 Diesel Engine Basics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Theory of operation, tune-up procedures and preventive maintenance for the diesel engine.

**PTM 105 Air Conditioning Systems /4 cr. hrs./8 periods (3 lec., 5 lab)**

□ Prerequisite: PTM 101.

Basic theory and application in diagnosing servicing and overhauling components of air conditioning systems in public transportation vehicles.

**PTM 106 Automatic Transmission VH and VS /4 cr. hrs./8 periods (3 lec., 5 lab)**

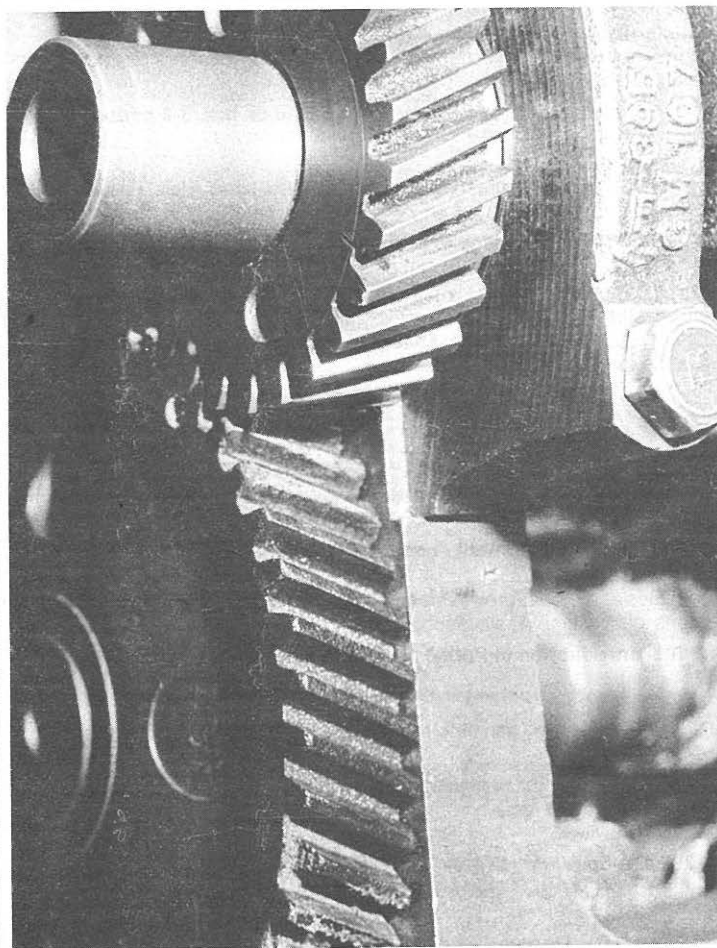
□ Prerequisite: None.

Diagnosis, maintenance, servicing and overhauling of the VH and VS automatic transmission in public transportation vehicles.

**PTM 199 Co-op Related Class in PTM /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in PTM 199 Co-op Work in PTM.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to public transportation maintenance technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.



**PTM 199 Co-op Work in PTM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in PTM 199 Co-op Related Class in PTM.

A supervised cooperative work program for first-year students in an occupation related to public transportation maintenance technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**PTM 201 Automatic Transmission V-730 /4 cr. hrs./8 periods (3 lec., 5 lab)**

□ Prerequisite: None.

Diagnosis, maintenance, servicing and overhauling of the V-730 automatic transmission in public transportation vehicles.

**PTM 202 Diesel Engine Overhaul /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: PTM 103.

Theory and application of diesel engine overhaul. Includes disassembly, reassembly, evaluation of parts, and use of special equipment.

**PTM 203 Rear Ends and Differentials /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overhaul procedures for the rear axle and propeller shaft. Includes diagnosis, removal, adjustment and replacement procedures.

**PTM 204 Front End Alignment and Steering Gears /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Theory and application of front end alignment and steering gears. Includes steering geometry, diagnosis and repair of steering gears. Also includes proper procedures for overhauling power and manual steering gears and front axle assemblies.

**PTM 299 Co-op Related Class in PTM /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: PTM 199 and concurrent enrollment in PTM 299 Co-op Work in PTM.

Continuation of PTM 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken twice for a maximum of two credit hours.

**PTM 299 Co-op Work in PTM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: PTM 199 and concurrent enrollment in PTM 299 Co-op Related Class in PTM.

Continuation of PTM 199. A supervised cooperative work program for second-year students in an occupation related to public transportation maintenance technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**RADIOLOGIC (X-RAY) TECHNOLOGY****RAD 071 Radiologic Fundamentals /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: Admission into program.

Introduction to radiographic equipment, theory and practice. Includes film processing and positioning the upper extremities. Emphasis on patient care and radiation protection.

**RAD 072 Radiographic Processing and Technique /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 071 and consent of program coordinator.

Technical factors and processing techniques utilized in the formation of the diagnostic x-ray image. Includes factors affecting and controlling radiographic quality, film characteristics, film processing and quality assurance.

**RAD 073 Radiographic Positioning I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 071 and consent of program coordinator.

Demonstration and practice of routine and special radiographic positioning for visualization of the bones of the skeleton (exclusive of those of the skull) and the viscera of the chest and abdomen. Includes radiographic examinations which demonstrate the principles of exposure and anatomical positioning.

**RAD 081 Radiographic Positioning II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 071, 072 and 073.

Routine radiographic positioning for visualization of the bony structures of the skull and the visceral organs of the abdomen. Includes general radiographic and fluoroscopic procedures, mobile radiography, use of positive and negative contrast media and patient care.

**RAD 082 Medical Imaging Physics /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 071, 072 and 073.

Basic physical principles for medical imaging. Includes fundamentals of matter and x-ray production and major components of medical imaging systems.

**RAD 083 Clinical Education I /2 cr. hrs./6 periods (6 lab)**

□ Prerequisite: RAD 071, 072 and 073.

Application of acquired skills (routine radiographic procedures and related studies) in clinical education centers under direct supervision of clinical supervisors and/or registered radiologic technologists.

**RAD 084 Radiation Biology and Therapy /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: RAD 071, 072 and 073.

Introduction to radiation biology, radiation protection and the specialty of radiation therapy. Includes biologic effects of radiation on human tissues, current methods of minimizing exposure, and the equipment and technology utilized in radiation therapy for the treatment of various diseases.

**RAD 085 Radiographic Positioning III /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 081, 082, 083 and 084.

Continuation of RAD 081. Specialized radiographic procedures for examination of the skull, chest and abdomen. Includes general pediatric studies and working in a sterile environment. Emphasis on proper use of contrast media and patient care.

**RAD 086 Clinical Education II /2 cr. hrs./6 periods (6 lab)**

□ Prerequisites: RAD 081, 082, 083 and 084.

Continuation of RAD 083. Application of advanced skills (emergency and specialized medical imaging procedures) in clinical education centers under direct supervision of clinical supervisors and/or registered radiologic technologists.

**RAD 088 Medical Imaging Systems /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisites: RAD 081, 082, 083 and 084.

Theory and application of medical imaging systems and imaging techniques.

**RAD 091B Clinical Education III /8 cr. hrs./24 periods (24 lab)**

□ Prerequisites: Required first and second year RAD courses.

Continuation of supervised clinical education related to students' program of study in Radiologic Technology.

**RAD 092 Clinical Seminar I /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: RAD 091 and concurrent enrollment in RAD 093.

Hospital related procedures and patient care. Includes preparation for securing employment.

**RAD 093 Clinical Education IV /8 cr. hrs./24 periods (24 lab)**

□ Prerequisites: RAD 091 and concurrent enrollment in RAD 092.

Continuation of RAD 091 with emphasis on advanced medical imaging procedures.

**RAD 094 Clinical Seminar II /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: RAD 093 and concurrent enrollment in RAD 095.

Continuation of RAD 092 with emphasis on the theory of medical imaging procedures.

**RAD 095 Clinical Education V /8 cr. hrs./24 periods (24 lab)**

□ Prerequisites: RAD 093 and concurrent enrollment in RAD 094.

Continuation of RAD 093. Emphasis on the application of specialized medical imaging procedures.

**READING**

**REA 068 Techniques of Vocabulary /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Vocabulary improvement through a variety of methods such as structural analysis and context clues. Emphasis on understanding word roots and derivatives to enable students to expand their existing vocabularies and use words correctly.

**REA 071 Spelling /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Improvement of spelling skills through application of spelling principles.

**REA 073 Understanding What You Read /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Methods and techniques for reading with greater understanding. Various levels of comprehension are explained and applied to diverse reading materials. Emphasis on following directions, recognizing main ideas and supporting details, recognizing sequence, making inferences, drawing conclusions, and differentiating between fact and opinion.

**REA 077 Study Skills /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Comprehension score of 9.0 or higher on the college reading assessment test.

Development of skills in listening, remembering, notetaking, outlining, applying study methods and interpreting pictorial aids.

**REA 078 Test-Taking Techniques /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Comprehension score of 9.0 or higher on the college reading assessment test.

Techniques of preparing for and taking various types of tests as found in a college setting.

**REA 100 Reading Series /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisite: College reading assessment test scores.

Students recommended for Reading should register for REA 100. Specific placement in one of the six courses below is determined by diagnostic testing and teacher evaluation after enrollment.

**REA 100—Reading Fundamentals**

**REA 101—Reading Improvement**

**REA 110—Reading Techniques**

**REA 111—Developmental Reading I**

**REA 112—Developmental Reading II**

**REA 120—Critical Reading**

Group and individual instruction in vocabulary, comprehension, study skills and reading speed are included in each of the six courses. Students may register in the REA 100 Series courses up to four times for credit. Non-native speakers of English who are not fluent in English should enroll in the English as a Second Language courses.

**REA 125 Speed Reading /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Comprehension score of 12.0 on the college reading assessment test.

Improvement of reading rate. Emphasis on comprehension and analysis of written passages using various visual perception techniques.

**REAL ESTATE****RLS 101 Real Estate Principles /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to real estate, including associated rules and regulations. The Arizona Department of Real Estate accepts this course as satisfying the pre-licensing educational requirements.

**RLS 102 Real Estate Practices /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: RLS 101 or Arizona Real Estate Salesman's License.

Real estate practices and government involvement as they affect individuals and business firms. Includes urban redevelopment, urban planning, property rights, ownership, financing, brokerage and evaluation.

**RLS 107 Real Estate Legal Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: LAS 101 (or concurrent enrollment) or employment in the legal field or a Real Estate License.

Application of legal procedures and requirements in real estate transactions and litigation. Includes drafting of documents and pleadings with emphasis on contracts, closings, deeds, leases, liens and foreclosures. (Same as LAS 107.)

**RLS 120 Real Estate Escrow Principles /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The concept and fundamental principles of real estate escrow. Includes opening, processing and closing escrow accounts.

**RLS 121 Real Estate Escrow Practices /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: RLS 120

In-depth study of unusual and difficult types of real estate escrow and their possible solutions. Designed for persons currently performing escrow duties. Strong emphasis on specific real estate transactions.

**RLS 160 Real Estate License Update I /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Recent changes in legislation, real estate laws and appraisal techniques. Designed to update practicing real estate professionals.

**RLS 161 Real Estate License Update II /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Continuation of RLS 160. Current information on real estate funding packages, contract negotiation and IRA rulings. Designed to update practicing real estate professionals.

**RLS 201 Real Estate Law /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: RLS 101.

Basic principles and application of real estate law. Includes freehold estates, landlord and tenant, concurrent ownership, easements, profits, licensing, deeds and conveyances, and recording.

**RLS 202 Real Estate Appraisals /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: RLS 101.

Basic principles and practical application of real estate appraisals. Includes valuation terms, market analysis, classification of data, and income and cost factors.

**RLS 205 Real Estate Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of real estate finance from the viewpoint of the home mortgage loan officer. Includes the mortgage market, acquisition of a mortgage portfolio, mortgage plans and procedures, mortgage loan processing and servicing, and duties of the mortgage loan officer. (Same as FIN 205.)

**RLS 210 Real Estate Escrow Problems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: RLS 121.

Advanced real estate escrow principles, practices and problems. Emphasis on avoiding the adverse consequences of improper escrow practices.

**RECREATION****REC 051 Arts and Crafts /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Practical experience in creative craft projects. Includes ceramics, metal, weaving, woodworking and junk art. Projects are selected to meet individual interests and levels of skill development.

**REC 074 Public Relations and Communicatronics /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Communicating information about recreational programs to the public through graphic techniques, i.e., flyers, brochures, pamphlets and bulletin boards. Includes mock radio and television public service announcement and written news releases.

**REC 101 Introduction to Parks and Recreation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the development and roles of parks and recreation in society. Includes theories of leisure; changing recreation due to changes in time, income and mobility; and models of various types of recreational experience.



**REC 102 Group Leadership /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Principles of recreational group leadership. Includes goals of human leisure, group dynamics, leadership qualities and techniques of effective leadership.

**REC 103 Recreation Administration and Finance /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of administration and finance of parks and recreational areas. Includes personnel selection, public relations, use of community resources and legal aspects of recreation administration.

**REC 114 Program Planning and Organization /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Essential elements and basic principles of planning and organizing various types of recreation programs and services. Includes supervision, promotion and evaluation of such programs and services.

**REC 115 Outdoor Recreation Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of outdoor recreation, including history and development of the field, principles of conservation and organized camping. Camp craft skills are taught during field trips.

**REC 116 Recreation for Special Groups /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to various recreation programs for special groups. Includes organizing and planning recreational activities for the handicapped and aged.

**REC 118 Survival /2 cr.hrs./4 periods (1 lec., 3 lab)**

□ Prerequisite: None.

Wilderness survival techniques. Includes how to build fires and shelters, how to find water and edible foods and the principles of orienteering with emphasis on basic use of maps and the magnetic compass. Also includes philosophical aspects of survival in any environment.

**REC 119 Recreational Games /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Principles and techniques of teaching children's games, both team and individual, in a recreational setting. Designed primarily for the prospective recreation leader.

**REC 121 First Aid /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

First aid and emergency care procedures. Includes lifesaving steps, splints, bandages, and treating drug overdose and heat- and cold-related injuries. The American Red Cross Standard First Aid certificate may be awarded to qualified students.

**REC 145 Sports Officiating /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: None.

Familiarization with and application of the rules of various sports from the standpoint of an official. Includes current methods and materials to develop competency in executing official rules. Also includes actual experience through service in the college's intramural program and other agencies. (Same as PED 145.)

**REC 150 Camping and Hiking /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Instruction and experience in camping and hiking. Includes field trips, camp cooking, camp selection and backpacking.

**REC 152 Beginning Marksmanship /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

Introduction to firearms. Includes moral and legal aspects of firearms, safety and range practice. (Same as AJS 152.)

**REC 160 Recreational Map Use /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: None.

The basics of scale (distance), direction, elevation and location. Includes practical aspects of route selection and compass use.

**REC 199 Co-op Related Class in REC /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in REC 199 Co-op Work in REC.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to recreation). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**REC 199 Co-op Work in REC /1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisite: Concurrent enrollment in REC 199 Co-op Related Class in REC.

A supervised cooperative work program for first-year students in an occupation related to recreation. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 6 credit hours.

**REC 252 Advanced Marksmanship /1 cr. hr./2 periods (1 lec., 1 lab)**

□ Prerequisite: REC 152.

Advanced techniques of competitive shooting. Includes extensive range practice with rifle, pistol and shotgun. Emphasis on safety and competition.



**REC 299 Co-op Related Class in REC /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: REC 199 and concurrent enrollment in REC 299 Co-op Work in REC.

Continuation of REC 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**REC 299 Co-op Work in REC /1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisites: REC 199 and concurrent enrollment in REC 299 Co-op Related Class in REC.

Continuation of REC 199. A supervised cooperative work program for second-year students in an occupation related to recreation. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 6 credit hours.

**RELIGION****REL 120 Old Testament /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Major books of the Old Testament with emphasis on their religious, moral, historical and literary significance.

**REL 121 New Testament /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

The major books of the New Testament with emphasis on their religious, moral, historical and literary significance.

**REL 125 Islam /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

History and literature of Islam from the prophet Mohammed to the present. Emphasis on the poetry and practices of the Sufis.

**REL 130 Comparative Religions: Oriental /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Exploration of Hinduism, Buddhism, Zoroastrianism, Confucianism, Taoism, Shintoism and Zen Buddhism through readings, discussions and movies. Christianity is compared through discussions.

**REL 140 Philosophy of Religion /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the philosophical study of religion. Includes comparative study of Hinduism, Taoism, Confucianism, Buddhism, Christianity, etc. (Same as PHI 140.)

**RESPIRATORY THERAPY****RTH 071 Introduction to Respiratory Therapy /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: Admission to the RTH core curriculum or instructor's consent.

Overview of respiratory therapy as it is currently practiced. Includes a brief history of medicine as it relates to respiratory therapy, concepts in respiratory physiology, and introduction to basic nursing arts, medical terminology and utilization of the medical record. Students practice interpersonal skills and discuss aspects of death and dying as well as legal and ethical aspects of delivering health care. Students also learn CPR techniques and may receive AHA basic CPR certification.

**RTH 073 Pharmacology for Respiratory Therapists /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: RTH 071 and CHM 111.

Introduction to general principles of pharmacology, drug dose calculations and methods of administration. Specific emphasis on drugs used by respiratory therapists and other drugs used in the treatment of cardiopulmonary disorders.

**RTH 082 Respiratory Physiology /4 cr. hrs./4 periods (4 lec.)**

□ Prerequisites: LSC 102 and RTH 071.

In-depth study of the cardiopulmonary system, associated structures and principles involved in ventilation and gas transport.

**RTH 083 Basic Therapeutics in Respiratory Care /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisite: RTH 071.

Basic respiratory care therapeutics, equipment used and their clinical indication. Includes medical gas administration, humidity and aerosol therapy, IPPB therapy and its alternatives, chest physiotherapy, advanced life support techniques, blood sampling and gas analysis.

**RTH 084 Critical Care Therapeutics /5 cr. hrs./7 periods (4 lec., 3 lab)**

□ Prerequisites: RTH 073, 082, and 083.

Principles of critical care procedures. Includes airway management, continuous mechanical ventilation of the adult, monitoring techniques, and associated equipment used for ventilation and monitoring.

**RTH 085 Diagnostic Studies /3 cr. hrs./4 periods (3 lec., 1 lab.)**

□ Prerequisite: RTH 082.

Diagnostic procedures and testing techniques employed in the detection, monitoring and treatment of adult and pediatric cardiorespiratory disorders.

**RTH 086 Cardiorespiratory Disorders I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: RTH 073, 082 and 083.

Examination of commonly encountered respiratory disorders in the adult patient. Case studies of specific disorders are presented by students.

**RTH 087 Advanced and Specialty Therapeutics /5 cr. hrs./7 periods (4 lec., 3 lab.)**

□ Prerequisites: RTH 084 and concurrent enrollment in RTH 089 and O92. Basic and advanced respiratory care for special cases. Includes the pediatric and neonatal patient, pulmonary rehabilitation and home care procedures, functioning of a respiratory therapy department, and recent advances in respiratory care therapeutics and diagnostics, e.g., computerization of respiratory therapy equipment.

**RTH 089 Cardiorespiratory Disorders II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: RTH 086 and concurrent enrollment in RTH 087 and O92. Continuation of RTH 086. Examination of pathophysiology of cardiorespiratory disorders and treatment. Case studies of specific disorders are presented by students.

**RTH 091 Clinical Procedures I /4 cr. hrs./16 periods (16 lab)**

□ Prerequisites: RTH 073, 082 and 083. Clinical application of all prerequisite respiratory therapy course work with emphasis on basic respiratory care therapeutics.

**RTH 092 Clinical Procedures II /6 cr. hrs./24 periods (24 lab)**

□ Prerequisites: RTH 084, 085, 086 and 091. Clinical application of all prerequisite respiratory therapy course work with emphasis on adult critical care therapeutics.

**RTH 093 Clinical Procedures III /4 cr. hrs./16 periods (16 lab.)**

□ Prerequisite: RTH 092. Clinical practice in hospitals and selected health related agencies. Emphasis on adult and pediatric critical care therapeutics and monitoring. Also includes specialty therapeutics, techniques in rehabilitation, home care and management.

**RESTAURANT, CULINARY AND FOOD MANAGEMENT**

**RCF 101 Introduction to Restaurant and Food Service /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None. Fundamentals of organizing a quantity food preparation kitchen, work stations and personnel. Emphasis on methods, sanitation and safety.

**RCF 102 Food Service Specialties I/Culinary Preparation /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None. Preparation of cuisine specialties. Includes meat, fish, seafood, poultry, vegetables, soups, sauces and gravies. Also includes organizing, planning and writing menus.

**RCF 103 Food Service Specialties II/Baking /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None. Essentials of baking. Includes preparation of yeast rolls, breads, cakes, cookies, tarts, doughnuts and desserts. Emphasis on use and care of equipment, sanitation, safety and hygiene.

**RCF 104 Food Service Specialties III/Garde-Manger /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: RCF 103 or concurrent enrollment. Creation and storage of salads, sandwiches and appetizers. Includes eye appeal, texture, color contrast, artistic touch and harmony of combinations.

**RCF 105 Advanced Techniques in Garde-Manger /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: RCF 104. Techniques for preparing aspics, pates, terrines, gelatines, chaudfroids and carvings. Includes the use of tallow, salt and sugar. Manipulation of garde-manger tools is stressed.

**RCF 106 Advanced Techniques in Gourmet Dining /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: RCF 105 or concurrent enrollment. Preparation of haute cuisine. Includes proper accounting techniques and principles of purchasing, receiving and storing food. Emphasis on proper use of flavorings, spirits, seasonings, garnishes and flambe in gourmet food preparation.

**RCF 199 Co-op Related Class in RCF /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in RCF 199 Co-op Work in RCF. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to restaurant, culinary and food management). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**RCF 199 Co-op Work in RCF /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in RCF 199 Co-op Related Class in RCF. A supervised cooperative work program for first-year students in an occupation related to restaurant, culinary and food management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**RCF 201 Catering and Banquet Sales and Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: RCF 101 and/or one year experience working in the hospitality-tourism industry.

Techniques of food preparation and service as applied to catering and banquet operations and management.

**RCF 299 Co-op Related Class in RCF /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: RCF 199 and concurrent enrollment in RCF 299 Co-op Work in RCF.

Continuation of RCF 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**RCF 299 Co-op Work in RCF /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: RCF 199 and concurrent enrollment in RCF 299 Co-op Related Class in RCF.

Continuation of RCF 199. A supervised cooperative work program for second-year students in an occupation related to restaurant, culinary and food management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**SAFETY EDUCATION**

**SED 090 Driving Training/3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: None.

Fundamentals of safe driving. Includes Arizona law and defensive driving techniques. Students spend their laboratory periods under the supervision of a licensed instructor.

**SHEET METAL**

**SML 110 Sheet Metal I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Basic sheet metal techniques. Includes safe use of hand and machine tools, soldering, riveting, spot welding, and fabricating sheet metal projects.

**SML 120 Sheet Metal II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: SML 110.

Continuation of SML 110. Sheet metal practices dealing with duct fabrication and duct connections used in air conditioning and solar space heating.

**SML 130 Sheet Metal Pattern Layout I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Basic techniques of pattern layout. Includes parallel line development and geometric construction.

**SML 135 Sheet Metal Pattern Layout II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SML 130.

Continuation of SML 130 with emphasis on radial line development. Includes pattern layout of such forms as cones, pyramids and other one-piece tapered fittings.

**SML 199 Co-op Related Class in SML /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in SML 199 Co-op Work in SML. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to sheet metal work). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**SML 199 Co-op Work in SML /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in SML 199 Co-op Related Class in SML.

A supervised cooperative work program for first-year students in an occupation related to sheet metal work. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**SML 210 Sheet Metal Pattern Layout III /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SML 135.

Continuation of SML 135. Triangulation and simplified triangulation. Includes the layout of rectangular fittings such as the square-to-round, round-to-round and square-to-square.

**SML 220 Architectural Sheet Metal /3 cr. hrs./4 periods (2 lec., 2 lab)**

□ Prerequisite: SML 110 and 130.

Fabrication of gutterwork, valleys, range hoods, flashing and ornamental work. Emphasis on various designing problems in sheet metal.

**SML 299 Co-op Related Class in SML /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: SML 199 and concurrent enrollment in SML 299 Co-op Work in SML.

Continuation of SML 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**SML 299 Co-op Work in SML /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: SML 199 and concurrent enrollment in SML 299 Co-op Related Class in SML.

Continuation of SML 199. A supervised cooperative work program for second-year students in an occupation related to sheet metal work. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**SIGN LANGUAGE****SLG 055 Conversational Sign Language II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 050 or intermediate sign skills.

An intermediate course in American Sign Language. Includes expressive and receptive practice in ASL.

**SLG 100 The Community and the Exceptional Person /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of handicapping conditions, including major physical and mental handicaps and the effect of handicapping conditions on educational and social development. Also includes field trips, agency visitations and guest speakers.

**SLG 101 American Sign Language I /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: None.

Beginning American Sign Language: principles, methods and techniques of communicating manually with the deaf. Includes development of expressive sign skills, manual alphabet and numbers, basic sign vocabulary and practice in the language lab. Each student spends a minimum of three hours per week in the lab working with an assigned instructor.

**SLG 102 American Sign Language II /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: SLG 101.

Intermediate American Sign Language: principles, methods and techniques of communicating manually with the deaf. Includes development of receptive sign skills, the manual alphabet and numbers, increasing sign vocabulary and practice in language lab. Each student spends a minimum of three hours per week in the lab working with an assigned instructor.

**SLG 105 Expressive/Receptive Fingerspelling and Numbers /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Concurrent enrollment in SLG 101 or 102.

Refinement of receptive and expressive sign language skills with the manual alphabet and numbers. Includes methodology, theory and application.

**SLG 120 History of Deafness /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Status of deaf individuals in Western cultures from early civilizations to the present. Includes treatment, education and legal status, and political and philosophical stances supporting each.

**SLG 150 Principles of Etiology and Audiology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Examination of hearing and hearing loss. Includes the normal ear and its function, normal audition and its measurement, the most common causes of hearing loss and their effects, and hearing aids and their functions and limitations.

**SLG 180 Psychosocial Aspects of Deafness /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 101.

Overview of the psychological and social aspects of deafness and hearing impairment. Includes different types of hearing losses, their effects on the functioning and status of the deaf and hearing-impaired individual (physical, educational and social) and the multiple-handicapped deaf and hearing-impaired individual.

**SLG 201 American Sign Language III /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: SLG 102.

Advanced American Sign Language. Includes idioms, sign language linguistics, body language, mime forms of nonverbal communication, syntax, grammar and practice in language lab. Each student spends a minimum of three hours per week in the lab working with an assigned instructor.

**SLG 202 American Sign Language IV /4 cr. hrs./6 periods (3 lec., 3 lab)**

□ Prerequisite: SLG 201.

Advanced American Sign Language. Includes idioms, linguistics, reading techniques and practice in language lab. Each student spends a minimum of three hours per week in the lab working with an assigned instructor.

**SLG 203 American Sign Language V /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 202 or concurrent enrollment.

Introduction to the linguistic structure of American Sign Language. Includes semantics, morphology, phonology and syntax of the language in light of current research.

**SLG 220 Interpreting I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 201 or concurrent enrollment.

Introduction to theories, principles and special settings of interpreting. Includes code of ethics, definitions, role playing and simulated interpreting.

**SLG 240 Practicum /3 cr. hrs./5 periods (1 lec., 4 lab)**

□ Prerequisite: SLG 220 or concurrent enrollment.

Development of interpreting and transliterating skills in various real-life settings. Students may facilitate communication in these situations after consulting with practicum advisor.

**SLG 250 Interpreting II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: SLG 220 and 201.

Development of expressive and receptive interpreting skills in educational and community situations. Special emphasis on situations involving platform, conference, interview, television, medical, legal and deaf-blind interpreting.

**SLG 260 Oral Interpreting /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 250 or concurrent enrollment.

Oral interpreting techniques, including use of natural gestures, word substitution and nonverbal components. For interpreting with hearing-impaired or deaf individuals who rely on lip-reading and choose not to utilize a sign language for communication.

**SLG 270 Sign-to-Voice "Reverse Interpreting" /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 202 or concurrent enrollment.

Principles and techniques of "sign-to-voice" sign language interpreting. Emphasis on gradual improvement of skills involved.

**SLG 280 Interpreting III /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SLG 250.

Skill development in the following specialized areas of interpreting and transliterating: legal, educational, medical, religious, minimal language competency, deaf-blind and dramatic.

**SLG 290 Practicum /6 cr. hrs./16 periods (1 lec., 15 lab)**

□ Prerequisites: SLG 201 and 220.

Development of practical interpreting skills in various settings and under varying conditions. Students may select the setting in which they wish to work after consultation with the proper advisor. May be taken concurrently with SLG 202 and 250.

**SOCIAL SERVICES****SSE 115 Drugs in American Society /3 cr. hrs.**

□ Prerequisite: None.

General introduction to the current drug situation in the United States. Includes philosophical exploration of drug use, interpretation within the social context, physical and psychological effects of drugs, and review of current drug programs and research.

**SSE 116 Introduction to Alcohol Abuse /3 cr. hrs.**

□ Prerequisite: None.

Introduction to past and present use and abuse of alcohol, including identification and treatment of the abuser and alcoholic. Emphasis on treatment alternatives and resources available to abusers, alcoholics and their family members.

**SSE 127 Political and Legal Aspects of Drug Use /3 cr. hrs.**

□ Prerequisite: None.

Overview of the political and legal aspects of drug use and abuse, both current and historical. Emphasis on the influence of political pressure, economics, civil liberties, court decisions and current thinking affecting drug use.

**SSE 133 Introduction to Social Welfare /3 cr. hrs.**

□ Prerequisite: None.

Introduction to the social welfare system: what it is, has been, and may become nationally and locally. Emphasis on local community agencies and resources, welfare policies and case histories.

**SSE 134 Casework Methods I /3 cr. hrs.**

□ Prerequisite: SSE 133 or concurrent enrollment.

Theory and practice of casework within the context of the Southwest. Includes interviewing, case history and review, and development of helping relationships. Case examples from various social service settings are examined.

**SSE 135 Group Work /3 cr. hrs.**

□ Prerequisite: None.

Examination of group dynamics. Includes development of skills in group development and functioning, such as leadership, decision making and problem solving. Emphasis on experiential learning. Case examples are observed and discussed.

**SSE 199 Co-op Related Class in SSE /1 cr. hr.**

□ Prerequisites: Concurrent enrollment in SSE 199C Co-op Work in SSE, SSE 134 and consent of instructor.

Introduction to cooperative education for Social Service majors. Focuses on social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of the student's cooperative work experience. May be taken two times for a maximum of two credit hours.



**SSE 199 Co-op Work in SSE /3 cr. hrs.**

□ Prerequisites: Concurrent enrollment in SSE 199 Co-op Related Class in SSE, SSE 134 and consent of instructor.

A supervised cooperative work program for students in Social Services. Teacher-coordinators work directly with students and their supervisors at the job location. Students must spend 225 hours on the job site to receive credit. May be taken two times for a maximum of six credit hours.

**SSE 216 Community Organization and Development /3 cr. hrs.**

□ Prerequisite: SSE 133.

Principles and techniques of organizing to effect change. Includes role of the professional organizer, nature of institutions, causes of change or failure to change, and strategies for effective change.

**SSE 216 Organización y desarrollo de la comunidad /3 cr. hrs.**

□ Requisito: SSE 133.

Este curso trata de las teorías y técnicas de la organización para efectuar un cambio. También incluye el papel que desempeña el organizador profesional, las clases de instituciones, causas del cambio o la incapacidad de hacer cambios, y las estrategias para un cambio efectivo.

**SSE 218 Treatment of the Drug Abuser /3 cr. hrs.**

□ Prerequisite: None.

Principles and techniques of treating the drug abuser. Includes the following methods of treatment: therapeutic communities, day care programs, methadone maintenance, detoxification and psychotherapy.

**SSE 234 Casework Methods II /3 cr. hrs.**

□ Prerequisite: SSE 134.

Advanced techniques in interviewing, case recording and evaluation of client situations. Students participate in interview sessions.

**SSE 236 Crisis Intervention, Theory and Techniques /3 cr. hrs.**

□ Prerequisite: SSE 134.

Basic principles and practice of crisis intervention. Includes techniques of intervention, referrals and diagnosis utilized in resolving crisis situations encountered in social services.

**SSE 237 Group Technique Applications /3 cr. hrs.**

□ Prerequisite: SSE 135.

Continuation of SSE 135. Further experience and skill development in analyzing, working in and facilitating groups using major group approaches. Students use groups in the community as case examples.

**SSE 290 Social Services Field Experience /3 cr. hrs.**

□ Prerequisite: SSE 134 and consent of instructor.

Supervised placement in community social services agencies so that students gain experience in the delivery of social services. In class seminars, students discuss pertinent theory and issues raised through the field experience. May be taken two times for a maximum of six credit hours.

**SSE 298 Topics in Community Involvement /3 cr. hrs.**

□ Prerequisite: SSE 134 and consent of instructor.

Strategies for effective social change through participation in community affairs. Students work individually or in small teams through consultation with faculty advisors. Students employed or volunteering in agencies or groups may get credit for social change activities. (Same as SOC 298)

**SSE 299 Co-op Related Class in SSE /1 cr. hr.**

□ Prerequisites: SSE 134, 199, concurrent enrollment in SSE 299 Co-op Related Work in SSE and consent of instructor.

Continuation of SSE 199. Principles of job success for Social Services majors. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**SSE 299 Co-op Work in SSE /3 cr. hrs.**

□ Prerequisites: SSE 134, 199, concurrent enrollment in SSE 299, Co-op Related Class in SSE, and consent of instructor.

Continuation of SSE 199. A supervised cooperative work program for Social Services majors for a total of 225 on-site hours. Teacher-coordinators work directly with students and their supervisors at the job location. May be taken two times for a maximum of 6 credit hours.

**SOCIOLOGY****SOC 052 Sociological Forces in Later Life /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Sociological problems faced by the elderly, including the intellectual, cognitive and behavioral aspects of the aging process. Also includes the social and transmatic concerns of the aged and retired.

**SOC 100 Introduction to Sociology /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the basic concepts of sociology and sociological analysis with emphasis on group, status, personality, role, socialization, social processes, institutions, social organization and social change.

**SOC 101 Current United States Social Problems /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: SOC 100.

Analysis of such forms of social disorganization as crime, mental illness and urban problems as they relate to modern American society. Problems are studied within the context of the international community.



**SOC 103 Explorations in Prejudice /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: SOC 100 for University of Arizona transfer.  
Why we hate each other. What we, as participants in this course, do about our own prejudice and prejudice in the community.

**SOC 105 World Population /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Basic concepts involved in population studies. Analysis of environmental factors affecting social trends, problems and solutions in both advanced and developing nations.

**SOC 110 Introduction to Cities and Community Planning /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: SOC 100.  
Introduction to the study of the urban environment, including its history, structure and dynamics. Special emphasis on understanding the function of cities on the local level.

**SOC 115 Human Sexuality /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Examination of human sexual experience throughout the life cycle, viewed from sociological and psychological perspectives. (Same as PSY 115.)

**SOC 127 Marriage and the Family /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Functions of the family. Emphasis on relationships within the family and how they affect the development of individuals in the home and community. Part I—Background: Kinship, family styles and tradition, sexuality, marriage, parenthood and childhood. Part II—The Dialogue: Communication in marriage. (Same as HEC 127.)

**SOC 166 Social Gerontology I /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Introduction to the bio-cultural and holistic study of aging, dying, and death. The bio-social process of aging, factors in longevity and the social meaning of death.

**SOC 167 Social Gerontology II /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Continuation of SOC 166. The psycho-social foundation of aging, retirement crisis, sociocultural factors, economics of aging and cross-cultural perspectives.

**SOC 201 Ghetto Society /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None or SOC 100 for University of Arizona transfer.  
Minority socialization and the life of urban disadvantaged groups.

**SOC 202 Introduction to Civil Rights Practices /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Explanation of legal practices and regulations with emphasis on the welfare system, financial contracting, health and building codes, and administrative processes in the schools. May include applied field work.

**SOC 203 Sociology of Utopia /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
An exploration of life in the ideal society. Includes "alternative lifestyles" and the history of the communal movement in America with special emphasis on the literature of Utopia and modern communal experimentation.

**SOC 204 Women in Society /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Examination of the status of women in society. Includes the legal, social, economic, religious and psychological factors affecting their status.

**SOC 289 Individual Studies in Sociology /3-6 cr. hrs./3-6 periods (3-6 lec.)**

□Prerequisite: Consent of instructor.  
Exploration of special interest areas. Content to be determined by conference between student and instructor.

**SOC 298 Topics in Community Involvement /1-3 cr. hrs./1-3 periods (1-3 lec.)**

□Prerequisite: Consent of instructor.  
Direct, constructive student involvement in community problems. Students work individually or in small teams through guidance and periodic consultations with faculty advisors. Special activities also will be determined by advisors. Students employed or working as volunteers with agencies or groups may receive course credit for those activities.

**SOLAR ENERGY TECHNOLOGY**

**SET 100 The Sun and Solar Energy /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Basic concepts and applications of passive solar energy. Includes structural design, landscaping, orientation of building and component selection.

**SET 101 Solar Energy Fundamentals /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Basic solar collector systems. Includes residential heating and cooling systems, refrigeration and evaporative cooling systems, solar system sizing and energy costs.

**SET 102 Solar Design and Installation /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: None.

Design and installation of an active water and space heating system. Includes sizing and selecting components and installing the system, using proper techniques of plumbing, electricity and mechanical crafts.

**SET 103 Solar Maintenance and Repair /4 cr. hrs./6 periods (3 lec., 3 lab)**

□Prerequisite: None.

Maintenance and repair of active hydronic and air solar systems, including trouble-shooting, collector and energy transport evaluation, and backup system controls.

**SET 104 Uniform Solar, Building and Electrical Code /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Use of current uniform solar energy, building and electrical codes, including application to actual construction practices.

**SET 105 Uniform Plumbing Code and Application /3 cr. hrs./5 periods (2 lec., 3 lab)**

□Prerequisite: None.

Use of the current uniform plumbing code as related to solar applications. Includes local and state plumbing codes for hydronic installations and designing and fabricating efficient liquid solar systems.

**SET 201 Energy Conservation /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Energy conservation and use. Includes sources of energy, energy analysis, energy and the environment, and descriptions of job functions typical of energy technicians.

**SET 202 Solar and Energy Assessment /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Examination and evaluation of solar energy as a practical source of power. Includes alternative heating and cooling, insulating, power and lighting systems, and economic feasibility for use in single family residences.

**SPANISH**

**SPA 050 Conversation for Beginners I /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: None.

Listening to and speaking elementary Spanish, emphasizing prevailing local and regional terminologies. Designed for persons with no previous knowledge of Spanish. Transferable as elective credit.

**SPA 051 Conversation for Beginners II /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 050 or equivalent.

Designed for persons able to ask and respond to simple questions relevant to self and to the environment. Transferable as elective credit.

**SPA 052 Advanced Conversational Spanish /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 051 or 111.

Continued practice in listening to and speaking Spanish. Designed for persons with essential knowledge of Spanish. Classes are conducted in Spanish. Transferable as elective credit.

**SPA 070 Spanish for Medical Personnel /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Conversational practice in a medical context. Designed to develop speaking and listening techniques essential for basic medical situations, stressing expressions of courtesy and medical terminology. Non-transferable course.

**SPA 110 Elementary Spanish I /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: None.

Skill development to provide proficiency in basic communication (listening, speaking, reading and writing), emphasizing an examination of Spanish cultural traditions. A transfer credit course.

**SPA 111 Elementary Spanish II /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 110.

Continuation of SPA 110. Designed to provide increased proficiency in listening, speaking, reading and writing. Includes continued study of Spanish cultural traditions. A transfer credit course.

**SPA 201 Spanish for Native Speakers I /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: Speak Spanish.

Skill development designed to prepare native speakers for composition and Spanish literature courses through grammatical review and comprehensive reading and writing in Spanish.

**SPA 201 Español para nativos I /4 cr. hrs./4 periods (4 lec.)**

□Requisito: Hablar español.

Es un curso planeado especialmente para responder a las necesidades del estudiante de habla hispana. Para leer se usan particularmente lecturas con fondo cultural mexicano y México-americano. El maestro ayuda al estudiante a leer y a escribir mejor, también lo instruye en lo que respecta a conjugar verbos, acentuar palabras, aumentar el conocimiento del vocabulario. Crédito transferible.

**SPA 202 Spanish for Native Speakers II /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 201.

Intensified continuation of SPA 201. Major emphasis on literature and grammar. A transfer credit course.

**SPA 202 Español para nativos II /4 cr. hrs./4 periods (4 lec.)**

□Requisito: SPA 201 o tener estudios previos en otra institución.  
En SPA 202 se continúa SPA 201 con mayor participación en la literatura y en la gramática. Credito transferible.

**SPA 205 Imaginative Writing I /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Principles and practice of creative writing. Includes study and application of literary techniques used in works of local and other authors. Also includes the oral tradition of local legends. Students' best works are published in Lluve Tlaloc, the bilingual literary magazine. A transfer credit course.

**SPA 205 Literatura creativa I /3 cr. hrs./3 periods (3 lec.)**

□Requisito: Ninguno.  
Literatura creativa es un curso que ayudara técnicamente a los estudiantes que tengan vocación de escritores, propiciando el desarrollo de sus facultades creativas. Como materia prima para desarrollar cuentos se revisará la narrativa oral, tanto local como la que viene de fuera, incluyendo anécdotas del diario vivir. También se observarán diversas técnicas literarias como posibles estructuras para dar forma a la narrativa. Los estudiantes se ejercitan llenando "esqueletos" de relatos, para hacer descripciones, diálogos, etc. Se publican los trabajos más sobresalientes en Lluve Tlaloc. Curso transferible.

**SPA 206 Imaginative Writing II /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: SPA 205.  
Continuation of SPA 205. Further study of literary techniques and development of students' writing abilities. The best writings are published at the end of the school year in Lluve Tlaloc, the bilingual literary magazine. A transfer credit course.

**SPA 206 Literatura creativa II /3 cr. hrs. 3 periods (3 lec.)**

□Requisito: SPA 205.  
En este curso se continúa la labor del SPA 205. Se discute de teoría y técnicas literarias. La producción de los estudiantes cobra mayor desarrollo. Los mejores relatos integran la revista Lluve Tlaloc, que aparece a fin del año escolar. Curso transferible.

**SPA 210 Intermediate Spanish I /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 111 or two years of high school Spanish.  
Continuation of SPA 111. Intensive review of grammar in addition to reading selected authors and writing short compositions. Emphasis on continued practice in speaking Spanish. A transfer credit course.

**SPA 211 Intermediate Spanish II /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SPA 210.  
Continuation of SPA 210. Intensive review of grammar in addition to reading selected authors and writing short compositions. Emphasis on efficient and contemporary language usage. A transfer credit course.

**SPA 217 Spanish for Business Communications /4 cr. hrs./4 periods (4 lec.)**

□Prerequisites: SPA 210 or equivalent and BUS 100 or equivalent, or permission of instructor.  
Spanish for general use in business. Business terminology, situations, and correspondence in Spanish, including cultural differences that can affect business transactions. Provides contact with bilingual business people who lecture throughout the semester in Spanish in their area of expertise. A transfer credit course.

**SPA 230 Introduction to Literature in Spanish /4 cr. hrs./4 periods (4 lec.)**

□Prerequisites: SPA 102 or 211.  
Survey of literature written in Spanish. Designed to give students a broader knowledge of the language through literature selected from representative Spanish, Latin American and Chicano writers. A transfer credit course.

**SPA 240 Independent Study in Spanish Language /1-4 cr. hrs./1-4 periods (1-4 lec.)**

□Prerequisite: Consent of instructor.  
Independent Spanish readings or other projects under the supervision of an instructor. May be taken four times for a maximum of 16 credit hours. A transfer credit course.

**SPA 249 Cultura chicana /3 cr. hrs./3 periods (3 lec.)**

□Requisito: Permiso del maestro.  
Este curso trata los siguientes temas Chicanos: proceso histórico, el fenómeno social y la creación literaria del chicano. Curso transferible.

**SPEECH****SPE 102 Introduction to Oral Communication /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.  
Introduction to basic concepts and skills of oral communication in interpersonal and public address situations. Includes communication barriers, research techniques and norms of speech delivery.

**SPE 105 Voice and Diction /2 cr. hrs./2 periods (2 lec.)**

□Prerequisite: None.  
Training in basic voice production. Includes speech and personality, the physiological system and general speech standards.

**SPE 110 Public Speaking /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Training in public speaking. Includes reading and speech assignments focusing on research, organization, logic, analysis and delivery as techniques of audience adaptation.

**SPE 111 Parliamentary Procedures /2 cr. hrs./2 periods (2 lec.)**

□Prerequisite: None.

Rules and motions according to Robert's Rules of Order. Designed for student leaders and others interested in elementary parliamentary law and procedure. Includes modern changes and practices.

**SPE 115 Voice and Articulation for the Stage /2 cr. hrs./2 periods (2 lec.)**

□Prerequisite: None.

Training in basic voice production as required for the stage. Includes norms and techniques of stage diction, characterizations, dialects and sight reading.

**SPE 120 Business and Professional Communication /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Training in communication situations and problems within the organizational complex. Includes oral reports, interviewing, problem solving, conference groups, listening and persuasion.

**SPE 120 Comunicación comercial y profesional /3 cr. hrs./3 periods (3 lec.)**

□Requisito: Ninguno.

Estudio y entrenamiento en situaciones comunicativas y problemas dentro del sistema de la organización. Los trabajos básicamente consisten en reportes orales, entrevistas, solución de problemas y grupos de conferencias, escuchar y persuadir.

**SPE 124 Argumentation and Debate /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Principles and practice of argumentation. Includes basic forms of analysis, evidence, proof reasoning and refutation.

**SPE 125 Forensics /1 cr. hr./1 period (1 lec.)**

□Prerequisite: None.

Individualized instruction and practice in speech competition skills. Includes debate, oral interpretation, and persuasive, extemporaneous and impromptu speaking. Each student must participate in at least one intercollegiate speech tournament. May be taken four times for a maximum of four credit hours.

**SPE 130 Small Group Discussions /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Training in group participation and leadership. Includes the nature and uses of group discussion, problem solving groups, norms of group interaction and group relations.

**SPE 136 Oral Interpretation of Literature /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Training in the oral presentation of literature. Includes analysis techniques, use of voice and body, role of the interpreter, characterization, literary conventions and oral interpretation modes.

**SPE 149 Independent Study in Speech /1-4 cr. hrs./1-4 periods (1-4 lec.)**

□Prerequisite: Six credit hours in speech.

Under individual guidance of an instructor, students research some aspect of communication not available through regular course offerings such as nonverbal communication, communication theory, mass media, rhetorical criticism, etc.

**SWAHILI****SWA 050 Conversational Swahili I /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: None.

Designed for persons with no previous knowledge of Swahili. Primary focus on listening to and speaking elementary Swahili. A non-transfer credit course.

**SWA 051 Conversational Swahili II /4 cr. hrs./4 periods (4 lec.)**

□Prerequisite: SWA 050.

Designed for persons able to ask and respond to simple questions relevant to self and to the environment. A non-transfer credit course.

**TRAINING FOR SPECIAL EDUCATION****TSE 130 Techniques for Teaching Multiple Handicapped /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Teaching techniques and related practices designed to minimize the disabilities of persons with multiple handicaps. Includes appropriate tasks and materials, behavior control, adaptive equipment and therapeutic motor training.

**TSE 132 Behavior Modification Techniques for Special Education I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Major theories of personality development and methods of changing inappropriate behavior. Major theories include Clinical Behavior Modification and Adlerian Psychology.

**TSE 142 Special Speech and Language Techniques /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of speech and language disorders and their remediation. Includes components involved in normal speech and language development.

**TSE 150 Behavior Modification Techniques for Special Education II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: TSE 132.

Continuation of TSE 132. Methods of changing inappropriate behavior through the use of behavior modification techniques, including positive, extinction and aversive contingency systems.

**TSE 190 Special Education Practicum I /3 cr. hrs./15 periods (15 lab)**

□ Prerequisite: None.

Training of special education aides. Combines theory and practical experience. Includes program planning for children with special needs.

**TSE 199 Co-op Related Class in TSE /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in TSE 199 Co-op Work in TSE. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to special education). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**TSE 199 Co-op Work in TSE /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in TSE 199 Co-op Related Class in TSE.

A supervised cooperative work program for first-year students in an occupation related to special education. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**TSE 236 Assessment, Instructional and Motivational Techniques of Special Education /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Selection of educational materials and teaching methods for the special needs learner. Includes developing behavioral contingency management plans, academic assessment techniques and selection of materials and resources.

**TSE 238 Characteristics of Learning Disabilities I /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Principles of learning as related to learning disabilities. Includes definition of learning disabilities, characteristics of specific learning disabilities, and diagnostic procedures for remediation of learning disabilities.

**TSE 239 Characteristics of Learning Disabilities II /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: TSE 238.

Continuation of TSE 238. Remediation techniques and materials for specific learning disabilities. Includes a review of the definition and characteristics of learning disabilities.

**TSE 240 Techniques for Teaching the Mentally Handicapped Student /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Prescribed techniques, materials and procedures for teaching the mentally handicapped. Designed for para-professionals who assist teachers of mentally handicapped students.

**TSE 250 Classroom Communication Skills /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Development and application of communication skills for improved interpersonal relations in the classroom. Includes interpersonal communication processes and patterns, evaluating interpersonal communication skills and application of techniques for promoting effective interpersonal communication skills.

**TSE 290 Special Education Practicum II /3 cr. hrs./15 periods (15 lab)**

□ Prerequisite: TSE 190.

Continuation of TSE 190.

**TSE 299 Co-op Related Class in TSE /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: TSE 199 and concurrent enrollment in TSE 299 Co-op Work in TSE.

Continuation of TSE 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**TSE 299 Co-op Work in TSE /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: TSE 199 and concurrent enrollment in TSE 299 Co-op Related Class in TSE.

Continuation of TSE 199. A supervised cooperative work program for second-year students in an occupation related to special education. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.



## **TRAFFIC MANAGEMENT**

### **TTM 101 Fundamentals of Transportation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Domestic freight and passenger transportation systems and the role played by the users, carriers and government. Includes the most significant changes and historical trends in transportation, present systems, supply and demand, shipper problems, regulatory systems and transportation policy. Provides the minimum transportation background necessary for general business activity in the transportation industry.

### **TTM 102 Economics of Transportation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Development of the economic and philosophic bases of transportation as a regulated industry. Includes a critical analysis of the impact of regulatory decisions on managerial options.

### **TTM 104 Rates and Tariffs /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of transportation costs and freight rates. Includes the following topics relating to rates and tariffs: economic and legal aspects, regulation, application, terminology and structures.

### **TTM 199 Co-op Related Class in TTM /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in TTM 199 Co-op Work in TTM. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to transportation and traffic management). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives, and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

### **TTM 199 Co-op Work in TTM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in TTM 199 Co-op Related Class in TTM.

A supervised cooperative work program for first-year students in an occupation related to transportation and traffic management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

### **TTM 201 Principles of Air Transportation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Introduction to the commercial airline industry, its managerial practices and regulatory policies. Includes historical developments, industry structure, economics, marketing, finance, aircraft selection, scheduling, labor relations, route regulations, pricing, international aviation, and regulatory policies and procedures.

### **TTM 202 Principles of Motor Transportation /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Managerial and economic aspects of motor transportation as conducted under the auspices of state and federal regulations. Includes highways and highway financing, labor, management and operations, administration of claims, insurance and rates, federal regulations and passenger operations.

### **TTM 204 Physical Distribution Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

In-depth study of physical distribution systems. Includes transportation, warehousing, inventory control, material handling, industrial packaging, order processing and location analysis. Also includes studies of managerial responsibilities and recent transportation regulation actions. (Same as MKT 150.)

### **TTM 299 Co-op Related Class in TTM /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: TTM 199 and concurrent enrollment in TTM 299 Co-op Work in TTM.

Continuation of TTM 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management, and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

### **TTM 299 Co-op Work in TTM /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: TTM 199 and concurrent enrollment in TTM 299 Co-op Related Class in TTM.

Continuation of TTM 199. A supervised cooperative work program for second-year students in an occupation related to transportation and traffic management. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

## **TRAVEL AND TOURISM**

### **TVL 101 Principles of the Travel-Tourism Industry /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Overview of the industry, including modes, motives and effects of travel-tourism and examination of specific duties performed by a variety of specialists.



**TVL 102 Travel Agent Methods and Procedures /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: TVL 101 or concurrent enrollment.

Examination of the duties of a travel agent or specialist. Includes firsthand observation and practical experience with the Official Airline Guides (OAG) and manual ticket construction. Emphasis on airline travel, tariffs, ticketing, manuals and routing.

**TVL 199 Co-op Related Class in TVL /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in TVL 199 Co-op Work in TVL.

Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a job related to travel and tourism.) Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**TVL 199 Co-op Work in TVL /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in TVL 199 Co-op Related Class in TVL.

A supervised cooperative work program for first-year students in an occupation related to travel and tourism. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**TVL 201 Travel-Tour Agency Management /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: TVL 102.

Management requirements of travel-tourism agencies in promotion, sales, financing and credit. Includes problems in schedule manipulation, resolving employee-customer conflicts and development of ethical relations with the traveling public.

**TVL 202 Current Issues and Problems in Travel-Tourism /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: TVL 201 or concurrent enrollment.

Practice in resolving current problems within the travel-tourism business in economic, political and legal areas.

**TVL 211 Tour Group Conducting and Managing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisites: TVL 101 and/or one year experience working in the hospitality-tourism industry.

Development and management of group sightseeing programs. Includes roles and qualities of successful tour guides and ways to enhance those skills.

**TVL 299 Co-op Related Class in TVL /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: TVL 199 and concurrent enrollment in TVL 299 Co-op Work in TVL.

Continuation of TVL 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**TVL 299 Co-op Work in TVL /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: TVL 199 and concurrent enrollment in TVL 299 Co-op Related Class in TVL.

Continuation of TVL 199. A supervised cooperative work program for second-year students in an occupation related to travel and tourism. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

## **WASTEWATER TECHNOLOGY**

**WWT 101 Introduction to Water and Wastewater Technology /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Introduction to basic concepts of groundwater production, water distribution and wastewater collection and treatment. Emphasis on ponds and package plants. Designed to prepare students for Grade I Certification.

**WWT 103 Small Treatment Plants /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Operation and maintenance of small treatment plants. Includes wastewater lagoons (both stabilization ponds and aerated lagoons) and extended aeration package plants. Activated sludge methods are stressed. Designed to prepare students for Grade I Certification and portions of Grade II Certification.

**WWT 105 Quality Monitoring /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles and techniques of wastewater quality monitoring. Includes flow measuring devices, sampling equipment, use of tables, calculations, and basic monitoring and operational tests. Designed to prepare students for Grades I, II and III Certification.

**WWT 107 Hydraulics of Water /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: MTH 110.

Practical aspects of the hydraulics of water. Includes flow measurements, pipe friction, pumps, flumes, detention times, velocity, valves, hydrostatics and sedimentation. Designed to prepare students for Grades I and II Certification.

**WWT 110 Sewerage System Maintenance /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Principles and practice of sewerage system maintenance. Includes plant mechanical and electrical components, safety, collection, maintenance, conventional cleaning methods and inspection. Designed to prepare students for certification on all grade levels.

**WWT 112 Chemical Control Processes 1 cr. hr. /1 period (1 lec.)**

□ Prerequisite: None.

Principles and techniques of controlling plant processes. Includes common and alternative methods of disinfection using chemical and microbiological means. Designed to prepare students for certification on all grade levels.

**WWT 114 Wastewater Plant Safety /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Safe use and storage of chemicals. Includes OSHA requirements and the development of a plant and collection system safety program. Designed to prepare students for certification on all grade levels.

**WWT 115 Intermediate Biological Wastewater Treatment /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Operation and maintenance of wastewater treatment plants utilizing the activated sludge and trickling filter processes. Includes pretreatment, aeration, settling, aerobic and anaerobic sludge treatment, sludge thickening and disposal, effluent disposal, and safety. Also includes use of laboratory results in operation and monitoring as well as the development of a maintenance program. Designed to prepare students for Grades II and III Certification.

**WWT 199 Co-op Related Class in WWT /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in WWT 199 Co-op Work in WWT. Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to wastewater technology). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**WWT 199 Co-op Work in WWT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in WWT 199 Co-op Related Class in WWT.

A supervised cooperative work program for first-year students in an occupation related to wastewater technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**WWT 201 Advanced Biological Wastewater Treatment /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: WWT 115 or equivalent Grade II Certification.

Advanced techniques using laboratory results in the activated sludge process and in tertiary treatment. Includes safety and the development of a maintenance program. Designed to prepare students for Grade III Certification.

**WWT 203 Applied Chemistry in Water and Wastewater /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Grade II Certification in water or wastewater or equivalent training or experience.

Practical application of commonly used chemical and microbiological tests found in both water and wastewater facilities. Designed for supervisory personnel as well as to prepare students for Grades III and IV Certification.

**WWT 205 Wastewater Treatment Processes /2 cr. hrs./2 periods (2 lec.)**

□ Prerequisite: Grade II Certification or equivalent training or experience. Laboratory treatment processes required within wastewater pilot-plants. Designed to prepare students for Grades III and IV Certification.

**WWT 209 Wastewater Collection Systems /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Principles and techniques of collection system maintenance. Includes inspection, cleaning, repair, record keeping, safety and development of a maintenance program. Designed to prepare students for Grades II and III Certification.

**WWT 215 Applied Chemical and Microbiological Analysis /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Grade II Certification or equivalent training or experience. Introduction to the chemical and laboratory techniques necessary to perform and analyze tests commonly used in wastewater plant operation and effluent monitoring. Types of tests covered include BOD, suspended solids, pH, fecal coliform, alkalinity, volatile solids and volatile acids. Designed to prepare student for Grades III and IV Certification.

**WWT 220 Wastewater Hydraulics /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Theory and practical application of wastewater hydraulics. Includes characteristics of fluids, flow measurement, pump and valve selection, pump calibration, friction losses, use of tables and basic calculations. Laboratory work covers lift station maintenance, valve maintenance and repair and pump repair. Designed to prepare students for all grade levels of certification, particularly requirements in Grades III and IV.

**WWT 225 Physical-Chemical Sewage Treatment /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisites: WWT 201 and 203.

Chemical addition as a method of waste treatment. Includes basic chemistry of physical-chemical treatment, chemical makeup and metering process control, monitoring, laboratory control and carbon absorption. Designed to prepare students for Grades III and IV Certification as well as special certification requirements in physical-chemical treatment.

**WWT 235 Wastewater Treatment Plant and Collection System Design and Construction /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: Grade II Certification or equivalent training or experience. Plan reading and basic engineering design for wastewater treatment plants and collection systems. Includes design criteria, specifications, cost estimation, types of sewer line materials and treatment plant materials for specified uses, proper installation and construction inspection. Designed to prepare students for Grades III and IV Certification.

**WWT 299 Co-op Related Class in WWT /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: WWT 199 and concurrent enrollment in WWT 299 Co-op Work in WWT.

Continuation of WWT 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**WWT 299 Co-op Work in WWT /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: WWT 199 and concurrent enrollment in WWT 299 Co-op Related Class in WWT.

Continuation of WWT 199. A supervised cooperative work program for second-year students in an occupation related to wastewater technology. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**WELDING****WLD 110 Combination Welding /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Prerequisite: None.

Techniques and related information in arc and oxyacetylene welding. Arc welding component includes safety, power sources, welding currents, electrodes and flat position welding. Oxyacetylene welding component includes safety, proper handling of cylinders and gases, regulators, torches, filler rods, and flat and vertical position welding.

**WLD 110 Soldadura /3 cr. hrs./5 periods (2 lec., 3 lab)**

□ Requisito: Ninguno.

Técnicas e información relacionada a soldadura eléctrica y octógena. Soldadura eléctrica incluyendo medios de seguridad en el proceso. Conocimiento de máquinas de soldadura, corrientes, tipos de electrodos y poder soldar en posición plana. Soldadura octógena incluyendo medios de seguridad en el proceso. Conocimiento de cilindros, gases, reguladores, sopletes, varillas y poder soldar en posición plana y vertical.

**WLD 115 Blueprint Reading /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Interpretation of blueprints as applied to the welding trade. Includes welding symbols and their significance.

**WLD 150 Oxyacetylene Welding /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Setup and operation of oxyacetylene welding equipment. Includes flat, horizontal, vertical and overhead welding techniques on standard alloys of steel and brazing and soldering techniques on ferrous and nonferrous metals and their alloys.

**WLD 160 Arc Welding /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: None.

Principles and techniques of joining metals by electric arc with the use of the electrode. Includes current electrodes and other equipment, joint preparation and basic procedures for welding in all positions with all types of electrodes.

**WLD 170 Ornamental Iron /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: WLD 110 (or WLD 150 and 160), WLD 115, and MTH 060. Introduction to artistic ornamental iron fabrication. Includes joint design and assembly, structural shapes, accessories and installation, grinding and finishing, and basic scroll design.

**WLD 180 Metal Fabrication I /4 cr. hrs./6 periods (2 lec., 4 lab.)**

□ Prerequisites: WLD 170 and SML 130.

Application of basic metal fabrication. Includes arched, double and roll gates; stair railing; metal doors; and codes, licensing and liabilities.

**WLD 199 Co-op Related Class in WLD /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in WLD 199 Co-op Work in WLD Introduction to Cooperative Education for first-year students (instruction which provides for success in securing and retaining a training job related to welding). Social and psychological reasons for working, methods of securing employment, preparation of career and job-related objectives and evaluation of student work experience. May be taken two times for a maximum of two credit hours.

**WLD 199 Co-op Work in WLD /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisite: Concurrent enrollment in WLD 199 Co-op Related Class in WLD.

A supervised cooperative work program for first-year students in an occupation related to welding. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**WLD 240 Metal Fabrication II /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: WLD 180.

Application of advanced metal fabrication. Includes design concepts, metal twisting and bending, steel stairs, pipe handrails, forged scrolls, metal fabrication installation and cost estimating.

**WLD 250 Pipe Welding /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisites: WLD 150 and 160, and SML 130.

Principles and techniques of pipe welding. Includes flame cutting pipe, beveling pipe, welding various pipe joints, tack welding miter joints, and flange welding. Also includes preparation for plate and pipe certification.

**WLD 260 Inert Gas Welding /4 cr. hrs./6 periods (2 lec., 4 lab)**

□ Prerequisite: WLD 250.

Principles and techniques of tungsten inert gas (TIG) welding (heli-arc) and metal inert gas (MIG) welding. Includes proper control settings, proper manipulation of TIG and MIG torch, and welding in all positions on ferrous and nonferrous metals.

**WLD 299 Co-op Related Class in WLD /1 cr. hr./1 period (1 lec.)**

□ Prerequisites: WLD 199 and concurrent enrollment in WLD 299 Co-op Work in WLD.

Continuation of WLD 199. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude adjustment. May be taken two times for a maximum of two credit hours.

**WLD 299 Co-op Work in WLD /1-8 cr. hrs./5-40 periods (5-40 lab)**

□ Prerequisites: WLD 199 and concurrent enrollment in WLD 299 Co-op Related Class in WLD.

Continuation of WLD 199. A supervised cooperative work program for second-year students in an occupation related to welding. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of 16 credit hours.

**WRITING****WRT 005 Poetry Writing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Same as WRT 205 but without transfer credit.

**WRT 006 Short Story Writing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Same as WRT 206 but without transfer credit.

**WRT 062 Literary Magazine Workshop /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Literary magazine publication. Application of editing, design, layout and production techniques. One or more literary magazines will be published each year. May be taken four times for a maximum of 12 credit hours.

**WRT 066 The Dabbler's Touch: A Writing Sampler /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Reading and writing of poetry, short fiction, essay, and autobiography. Students will practice techniques of the craft while pursuing their own interests and, when ready, share their work with the class as an editorial audience.

**WRT 070 Developmental Writing /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Training in the fundamental skills, including grammar, usage, organization and development. May be taken in preparation for WRT 100, 101 or 150, or for personal improvement.

**WRT 070A Developmental Writing: Basic Skills /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: None.

Basic skills in use of sentences, paragraphs, grammar, punctuation and spelling, including writing simple and compound sentences and simple paragraphs.

**WRT 070B Developmental Writing: Intermediate Skills /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 070A or concurrent enrollment.

Intermediate skills in use of sentences, paragraphs, grammar, punctuation and spelling, including topic sentences, paragraph structure and practice in correcting common sentence errors.

**WRT 070C Developmental Writing: Advanced Skills /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 070B or concurrent enrollment.

Advanced skills in use of sentences, paragraphs, grammar, punctuation and spelling, including paragraph development, coherence and usage.

**WRT 072 Sentence Patterns /1 cr. hr./1 period (1 lec.)**

□Prerequisite: None.

A mini-course in identifying various types of sentence structure and writing various types of sentences. Includes training in distinguishing between dependent and independent clauses, identifying essential sentence elements and correcting common sentence errors.

**WRT 073 Punctuation /1 cr. hr./1 period (1 lec.)**

□Prerequisite: None.

A mini-course in the mechanics of writing, including punctuation, capitalization, numbers and abbreviations.

**WRT 077 Paragraphs /1 cr. hr./1 period (1 lec.)**

□Prerequisite: None.

A mini-course providing practice in planning and writing effective paragraphs as basic units for essays. Emphasis on topic sentences, patterns of development and clear transitions.

**WRT 088 Writing Journal /1 cr. hr./1 period (1 lec.)**

□Prerequisite: None.

Daily practice of writing skills to promote fluency, spontaneity and creativity.

**WRT 100 Writing Fundamentals /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 070 or satisfactory score on writing assessment test.

Review of sentence structure, mechanics and usage, paragraph development and short essay organization. Designed to prepare students for WRT 101.

**WRT 100A Sentence Development /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 070 or satisfactory score on writing assessment test.

Review of sentence structure and mechanics and usage with practice in writing and punctuating various sentence patterns.

**WRT 100B Paragraph Development /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 100A.

Improvement of skills in writing various types of paragraphs. Includes practice in developing appropriate topic sentences, supporting ideas, clear transitions and coherence.

**WRT 100C Essay Development /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 100B.

Practice in writing short, well-organized essays on a variety of subjects.

**WRT 101 Writing /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 100 or satisfactory score on writing assessment test.

Introduction to the principles of good writing with emphasis on the technique and practice of description, explanation and argumentation. Carries transfer credit.

**WRT 101A Planning the Essay /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 100 or satisfactory score on writing assessment test.

Practice in structuring a college-level essay.

**WRT 101B Writing to Persuade /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 101A.

Practice in writing argumentative essays.

**WRT 101C Developing a Style /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 101B.

Practice in editing and revising to achieve greater clarity of expression and more effective word choice.

**WRT 102 Writing II /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 101.

Continuation of WRT 101. Practice in writing longer and more analytical compositions, including a research paper or annotated papers. Readings as a basis for writing may include fiction, poetry, drama or nonfiction. Carries transfer credit.

**WRT 102A Critical Essay /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 101.

Writing short critical essays on selected works of literature.

**WRT 102B Research /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 101.

This module may be taken as a mini-course. Provides practice in gathering information and designing and writing a research paper.

**WRT 102C Writing Reports /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 101.

This module may be taken as a mini-course. Practice in writing short formal or informal reports.

**WRT 150 Practical Communications /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: None.

Practice in effective everyday communication. Emphasis on writing and speaking skills necessary in specific career fields. May transfer as an elective.



**WRT 154 Technical Communications I /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 100 or 101.

Practice in writing and speaking skills needed in technical fields. Includes writing formal and informal reports, form completion, letters, abstracts and reviews. Also includes presentation of oral reports and other communication skills as prescribed by vocational areas.

**WRT 154A Technical Communications I: Technical Writing Principles /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 100 or 101.

Basic technical writing skills, including the writing process, basic writing strategies and technical writing style.

**WRT 154B Technical Communications I: Technical Correspondence /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 154A.

Writing of memos, letters and resumes. Also includes form completion and technical illustrations.

**WRT 154C Technical Communications I: Basic Technical Reports /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 154B.

Writing of informal reports and other applications, including activity reports and technical descriptions, instructions and processes.

**WRT 205 Poetry Writing /3 cr. hrs./3 periods (3 lec.)**

□Prerequisites: WRT 101 and 102.

Introduction to the techniques used in contemporary poetry. Includes study of selected poems as examples and practice in applying techniques by writing and discussing original poetry. For transfer credit, students must have completed WRT 102. May be taken as WRT 005 for non-transfer credit.

**WRT 206 Short Story Writing /3 cr. hrs./3 periods (3 lec.)**

□Prerequisites: WRT 101 and 102.

Introduction to the techniques used in contemporary short fiction. Includes study of selected short fiction as examples and practice in separate elements of technique through short exercises as well as writing and discussion of original manuscripts. For transfer credit, students must have completed WRT 102. May be taken as WRT 006 for non-transfer credit.

**WRT 215 Advanced Poetry Writing /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 005 or 205.

Continuation of poetry writing with increased emphasis on craft. Candid peer and instructor criticism of both published models and student poems. Transfers as an elective.

**WRT 254 Technical Communications /3 cr. hrs./3 periods (3 lec.)**

□Prerequisite: WRT 154 or 102.

Techniques of writing long and short reports, proposals and other forms required in scientific and technical occupations. Designed to allow students to work on writing required in courses and in future occupations. WRT 154 is recommended as preparation.

**WRT 254A Technical Communications II: Brief Technical Reports /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 154 or 102.

Advanced technical writing skills, including writing various types of brief formal reports.

**WRT 254B Technical Communications II: Formal Technical Reports /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 254A.

Writing of longer advanced technical reports, including evaluation reports, feasibility studies and technical proposals.

**WRT 254C Technical Communications II: Technical Research /1 cr. hr./1 period (1 lec.)**

□Prerequisite: WRT 254B.

Technical research techniques and the writing of a formal research report.

**WRT 280 Workshop in Tutoring Composition /3 cr. hrs./9 periods (9 lab)**

□Prerequisites: WRT 101 and 102.

Instruction and practice in tutoring writing.

**WRT 280A Beginning Workshop in Tutoring Composition /1 cr. hr./3 periods (3 lab)**

□Prerequisites: WRT 101 and 102.

Introductory workshop in tutoring composition. Instruction and practice in tutoring techniques.

**WRT 280B Intermediate Workshop in Tutoring Composition /1 cr. hr./3 periods (3 lab)**

□Prerequisite: WRT 280A.

Continued improvement of tutoring skills acquired in WRT 280A. Additional instruction and practice in tutoring techniques.

**WRT 280C Advanced Workshop in Tutoring Composition /1 cr. hr./3 periods (3 lab)**

□Prerequisite: WRT 280B.

Continued improvement of tutoring skills acquired in WRT 280B. Additional instruction and practice in tutoring techniques.



## **YOUTH CARE**

### **YCA 163 Introduction to Youth Care /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: None.

Survey of the rights, roles and responsibilities of a youth care specialist in the supervision and treatment of children in 24-hour care outside the home (e.g., in detention, residential facilities for youth and foster care). Includes the concept of youth care work, understanding the child's behavior, communication skills, problem solving, effective discipline, interviewing and counseling skills, and structuring recreation and creative programs. (Same as AJS 163.)

### **YCA 263 Youth Care Methods /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: YCA 163.

Specific methods of youth care. Includes building positive relationships, problem solving and observing and recording behavior. Also available in modularized format.

### **YCA 263A Building Youth Care Relationships: Methods /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

Building positive relationships with youth in alternative care settings.

### **YCA 263B Problem-Solving Methods /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

Problem-solving methods applicable to youth care situations.

### **YCA 263C Observing and Recording Methods /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

Methods of observing and recording the behavior of youth in a youth care setting.

### **YCA 264 Issues in Youth Care /3 cr. hrs./3 periods (3 lec.)**

□ Prerequisite: YCA 163.

Issues commonly experienced in the youth care field. Includes health and safety, stress, and the special needs child. Also available in a modularized format.

### **YCA 264A Health and Safety Issues /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

Health and safety issues in youth care work. Includes health awareness, daily development and behavior, signs of illness, medication, record keeping, and environmental and legal safety issues.

### **YCA 264B Stress Issues in Youth Care Work /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

Stress in youth care and its impact on the worker, the youth and the setting.

### **YCA 264C The Special Needs Child /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: YCA 163.

The special needs child in a youth care setting. Includes the following special needs categories: learning disabled, physically handicapped, emotionally handicapped, mentally retarded, dangerous delinquent, autistic and others. One topic will be chosen for emphasis in a given session.

### **YCA 290 Field Experience /3 cr. hrs./16 periods (1 lec., 15 lab)**

□ Prerequisite: Consent of instructor.

Participation in community administration of justice and youth care agencies to provide experience in the practical application of classroom instruction. Biweekly seminars are conducted to discuss theory and practice pertinent to the agency experience. May be taken two times for a maximum of six credit hours.

### **YCA 299 Co-op Related Class in YCA /1 cr. hr./1 period (1 lec.)**

□ Prerequisite: Concurrent enrollment in YCA 299 Co-op Work in YCA. Principles of job success for second-year students. Preparation of job-related objectives, individual progress and advancement on the job, labor relations, role of management and evaluation of student work experience. Emphasis on attitude and performance. May be taken two times for a maximum of two credit hours.

### **YCA 299 Co-op Work in YCA /1-3 cr. hrs./5-15 periods (5-15 lab)**

□ Prerequisites: Concurrent enrollment in YCA 299 Co-op Related Class in YCA and consent of instructor.

A supervised cooperative work program for second-year students in an occupation related to youth care. Teacher-coordinators work directly with students and their supervisors at the job location. Variable credit is available by special arrangement. May be taken two times for a maximum of six credit hours.

# Apprentice Related Programs

## ASSOCIATED GENERAL CONTRACTORS

AGC 050	Surveying I /5 cr. hrs./5 periods (5 lec.)
AGC 051	Surveying II /5 cr. hrs./5 periods (5 lec.)

## AUTOMOTIVE APPRENTICESHIP PROGRAM

AAT 101	Automotive Electrical Systems/3 cr. hrs./3 periods (3 lec.)
AAT 102	Automotive Power Plant/3 cr. hrs./3 periods (3 lec.)
AAT 103	Automotive Engine Analysis and Service 3 cr. hrs./3 periods (3 lec.)
AAT 104	Automotive Brake Systems/3 cr. hrs./3 periods (3 lec.)
AAT 105	Automotive Suspension and Steering 3 cr. hrs./3 periods (3 lec.)
AAT 106	Automotive Drive Train/3 cr. hrs./3 periods (3 lec.)
AAT 107	Automotive Engine Rebuilding Procedures 3 cr. hrs./3 periods (3 lec.)
AAT 108	Automotive Heating and Refrigeration 3 cr. hrs./3 periods (3 lec.)
AAT 109	Automotive Parts Management/3 cr. hrs./3 periods (3 lec.)
AAT 110	Automotive Service Department Management 3 cr. hrs./3 periods (3 lec.)
AAT 111	Advanced Automotive Engine Analysis and Service 3 cr. hrs./3 periods (3 lec.)
AAT 112	Advanced Automotive Electrical Systems 3 cr. hrs./3 periods (3 lec.)

## BRICKLAYING

BKL 050	Bricklaying I /5 cr. hrs./6 periods (4 lec., 2 lab)
BKL 051	Bricklaying II /5 cr. hrs./6 periods (4 lec., 2 lab)
BKL 052	Bricklaying III /5 cr. hrs./6 periods (4 lec., 2 lab)
BKL 053	Bricklaying IV /5 cr. hrs./6 periods (4 lec., 2 lab)
BKL 054	Bricklaying V /5 cr. hrs./6 periods (4 lec., 2 lab)
BKL 055	Bricklaying VI /5 cr. hrs./6 periods (4 lec., 2 lab)

## BUILDING CONSTRUCTION TECHNOLOGY

BCT 050	Building Trade Mathematics/5 cr. hrs./5 periods (5 lec.)
BCT 051	Building Trades Blueprint Reading/5 cr. hrs./5 periods (5 lec.)
BCT 060	Welding I /4 cr. hrs./6 periods (2 lec., 4 lab)
BCT 061	Welding II /4 cr. hrs./6 periods (2 lec., 4 lab)

## CARPENTRY

CRP 050	Carpentry History, Tools and Materials 5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 051	Carpentry Foundations and Forms 5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 052	Carpentry Exterior Finish/5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 053	Reinforced Concrete and Heavy Construction 5 cr. hrs./6 periods (4 lec., 2 lab)

CRP 054	Carpentry Interior Finish/5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 055	Carpentry Roof Framing/5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 056	Carpentry Stair Building/5 cr. hrs./6 periods (4 lec., 2 lab)
CRP 057	Blueprint Reading and Estimating 5 cr. hrs./6 periods (4 lec., 2 lab)

## ELECTRICAL APPRENTICESHIP TRAINING

ELT 101	Apprentice Inside Wireman I /6 cr. hrs./6 periods (6 lec.)
ELT 102	Apprentice Inside Wireman II /6 cr. hrs./6 periods (6 lec.)
ELT 103	Residential Wireman Trainee I /4 cr. hrs./4 periods (4 lec.)
ELT 104	Residential Wireman Trainee II /4 cr. hrs./4 periods (4 lec.)
ELT 201	Apprentice Inside Wireman III /6 cr. hrs./6 periods (6 lec.)
ELT 202	Apprentice Inside Wireman IV /6 cr. hrs./6 periods (6 lec.)
ELT 203	Residential Wireman Trainee III /4 cr. hrs./4 periods (4 lec.)
ELT 204	Residential Wireman Trainee IV /4 cr. hrs./4 periods (4 lec.)
ELT 205	Journeyman-Wireman Advancement Course I 6 cr. hrs./6 periods (6 lec.)
ELT 206	Journeyman-Wireman Advancement Course II 6 cr. hrs./6 periods (6 lec.)
ELT 231	Apprentice Inside Wireman V /6 cr. hrs./6 periods (6 lec.)
ELT 232	Apprentice Inside Wireman VI /6 cr. hrs./6 periods (6 lec.)
ELT 241	Apprentice Inside Wireman VII /6 cr. hrs./6 periods (6 lec.)
ELT 242	Apprentice Inside Wireman VIII /6 cr. hrs./6 periods (6 lec.)

## FLOOR COVERING

FLR 050	Introduction to Floor Covering/5 cr. hrs./5 periods (5 lec.)
FLR 051	Tile and Linoleum/5 cr. hrs./5 periods (5 lec.)
FLR 052	Carpet/5 cr. hrs./5 periods (5 lec.)

## GLAZING

GLZ 050	Orientation to the Glazing Trade/5 cr. hrs./5 periods (5 lec.)
GLZ 051	Glazing, Tools, Equipment and Materials 5 cr. hrs./5 periods (5 lec.)
GLZ 053	Blueprint Reading and Sketching/5 cr. hrs./5 periods (5 lec.)
GLZ 054	Storefront Construction and Glazing 5 cr. hrs./5 periods (5 lec.)
GLZ 055	Locks, Latches and Door Closers/5 cr. hrs./5 periods (5 lec.)

## IRONWORKING

IRW 050	Introduction to Trade Science 3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 051	Reinforcing Blueprint Reading 3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 052	Basic Welding/3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 053	Advanced Welding/3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 054	Rigging and Safety/3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 055	Structural Blueprint Reading I 3 cr. hrs./4 periods (3 lec., 1 lab)

IRW 056	Structural Blueprint Reading II 3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 057	Ornamental Iron I /3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 058	Steel Detailing and Fabrication 3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 059	Ornamental Iron II /3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 060	Post Tensioning/3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 061	Light Industrial Construction Methods and Materials 3 cr. hrs./4 periods (3 lec., 1 lab)
IRW 064	Intermediate Combination Welding 3 cr. hrs./5 periods (2 lec., 3 lab)
IRW 066	Advanced Combination Welding 3 cr. hrs./5 periods (2 lec., 3 lab)

## LATHING

LTH 050	Lathing/5 cr. hrs./5 periods (5 lec.)
LTH 051	Ceiling and Wall Construction 5 cr. hrs./5 periods (5 lec.)
LTH 052	Blueprint Reading and Sketching I 5 cr. hrs./5 periods (5 lec.)
LTH 053	Blueprint Reading and Sketching II 5 cr. hrs./5 periods (5 lec.)

## OPERATING ENGINEERS

OEG 050	Diesel Engine I /5 cr. hrs./5 periods (5 lec.)
OEG 051	Diesel Engine II /5 cr. hrs./5 periods (5 lec.)
OEG 052	Equipment Structure and Function 5 cr. hrs./5 periods (5 lec.)
OEG 053	Transmission of Power I /5 cr. hrs./5 periods (5 lec.)
OEG 054	Transmission of Power II /5 cr. hrs./5 periods (5 lec.)
OEG 055	Construction Material Application/5 cr. hrs./5 periods (5 lec.)
OEG 056	Grades, Plans and Earthwork I 5 cr. hrs./5 periods (5 lec.)
OEG 057	Grades, Plans and Earthwork II 5 cr. hrs./5 periods (5 lec.)
OEG 058	Grades, Plans and Earthwork III 5 cr. hrs./5 periods (5 lec.)
OEG 059	Basic Electricity and Wiring/5 cr. hrs./5 periods (5 lec.)
OEG 062	Plant Equipment Structure and Function 5 cr. hrs./5 periods (5 lec.)
OEG 063	Construction Material Processes/5 cr. hrs./5 periods (5 lec.)
OEG 064	Mathematics for Operating Engineers 3 cr. hrs./3 periods (3 lec.)
OEG 065	Mechanical Drawing for Operating Engineers 3 cr. hrs./3 periods (3 lec.)
OEG 066	Refrigeration I /5 cr. hrs./5 periods (5 lec.)
OEG 067	Refrigeration II /5 cr. hrs./5 periods (5 lec.)
OEG 068	Refrigeration III /5 cr. hrs./5 periods (5 lec.)

## PAINTING AND DECORATING

PNT 050	Introduction to the Painting Trade 5 cr. hrs./5 periods (5 lec.)
PNT 051	Color Harmony and Design/5 cr. hrs./5 periods (5 lec.)
PNT 052	Blueprint Reading and Estimating 5 cr. hrs./5 periods (5 lec.)
PNT 053	Wall Covering/5 cr. hrs./5 periods (5 lec.)
PNT 054	Drywall Taping/5 cr. hrs./5 periods (5 lec.)
PNT 055	Industrial Painting/5 cr. hrs./5 periods (5 lec.)

## PLASTERING AND CEMENT MASONRY

PCM 050	Related Mathematics and Science 5 cr. hrs./5 periods (5 lec.)
PCM 051	Trade Theory/5 cr. hrs./5 periods (5 lec.)
PCM 052	Blueprint Reading and Plaster and Cement Masons 5 cr. hrs./5 periods (5 lec.)
PCM 053	Drafting and Sketching/5 cr. hrs./5 periods (5 lec.)
PCM 054	Estimating and Building Codes/5 cr. hrs./5 periods (5 lec.)
PCM 055	Trade Practices/5 cr. hrs./5 periods (5 lec.)

## PLUMBING AND PIPEFITTING

PFT 050	Plumbing and Pipefitting I /5 cr. hrs./5 periods (5 lec.)
PFT 051	Plumbing and Pipefitting II /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 052	Plumbing and Pipefitting III /5 cr. hrs./5 periods (5 lec.)
PFT 053	Plumbing and Pipefitting IV /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 054	Plumbing V /5 cr. hrs./5 periods (5 lec.)
PFT 055	Plumbing VI /5 cr. hrs./5 periods (5 lec.)
PFT 056	Plumbing VII /5 cr. hrs./5 periods (5 lec.)
PFT 057	Plumbing VIII /5 cr. hrs./5 periods (5 lec.)
PFT 058	Plumbing IX /5 cr. hrs./5 periods (5 lec.)
PFT 059	Plumbing X /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 060	Pipefitting V /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 061	Pipefitting VI /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 062	Pipefitting VII /5 cr. hrs./5 periods (5 lec.)
PFT 063	Pipefitting VIII /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 064	Pipefitting IX /4 cr. hrs./5 periods (3 lec., 2 lab)
PFT 065	Pipefitting X /4 cr. hrs./5 periods (3 lec., 2 lab)

## SHEET METAL

SML 050	Introduction to the Sheet Metal Trade 5 cr. hrs./5 periods (5 lec.)
SML 051	Apprentice Sheet Metal I /5 cr. hrs./5 periods (5 lec.)
SML 052	Apprentice Sheet Metal II /5 cr. hrs./5 periods (5 lec.)
SML 053	Apprentice Sheet Metal III /5 cr. hrs./5 periods (5 lec.)
SML 054	Apprentice Sheet Metal IV /5 cr. hrs./5 periods (5 lec.)
SML 055	Apprentice Sheet Metal V /5 cr. hrs./5 periods (5 lec.)
SML 056	Apprentice Air Conditioning/5 cr. hrs./5 periods (5 lec.)

## **THEORY AND PRACTICE OF ELECTRICITY**

TGE 050	Electrical Theory I /6 cr. hrs./6 periods (6 lec.)
TGE 051	Electrical Theory II /6 cr. hrs./6 periods (6 lec.)
TGE 052	Electrical Theory III /6 cr. hrs./6 periods (6 lec.)
TGE 053	Advanced Apprenticeship Training I 1 cr. hr./1 period (1 lec.)
TGE 054	Advanced Apprenticeship Training II 1 cr. hr./1 period (1 lec.)
TGE 055	Advanced Apprenticeship Training III 1 cr. hr./1 period (1 lec.)
TGE 056	Advanced Apprenticeship Training IV 2 cr. hrs./2 periods (2 lec.)
TGE 057	Advanced Apprenticeship Training V 1 cr. hr./1 period (1 lec.)
TGE 058	Advanced Apprenticeship Training VI 6 cr. hrs./6 periods (6 lec.)
TGE 059	Advanced Apprenticeship Training VII 6 cr. hrs./6 periods (6 lec.)
TGE 060	Advanced Apprenticeship Training VIII 6 cr. hrs./6 periods (6 lec.)
TGE 061	Advanced Apprenticeship Training IX 2 cr. hrs./2 periods (2 lec.)
TGE 062	Advanced Apprenticeship Training X 3 cr. hrs./3 periods (3 lec.)
TGE 063	Advanced Apprenticeship Training XI 1 cr. hr./1 period (1 lec.)
TGE 064	Advanced Apprenticeship Training XII 1 cr. hr./1 period (1 lec.)
TGE 065	Advanced Apprenticeship Training XIII 2 cr. hrs./2 periods (2 lec.)
TGE 066	Advanced Apprenticeship Training XIV 6 cr. hrs./6 periods (6 lec.)
TGE 067	Advanced Apprenticeship Training XV 6 cr. hrs./6 periods (6 lec.)
TGE 068	Advanced Apprenticeship Training XVI 6 cr. hrs./6 periods (6 lec.)

## **BUILDING TECHNOLOGY**

### **BLT 050 Plumbing /3 cr.hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: None.

Basic principles and techniques of plumbing. Plumbing materials and their practical use in construction and maintenance of buildings; proper use and care of hand power tools; safety measures on the job; practical systems planning and sketching; care, repair and replacement of common valves, faucets, lavatories, toilets, vents and drains.

### **BLT 055 Carpentry I /3 cr.hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Introduction to carpentry. Care and use of hand and power tools and equipment; carpentry materials and their uses; basic construction techniques. Emphasis on safety.

### **BLT 057 Carpentry II /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: BLT 055.

Continuation of BLT 055. Advanced knowledge and skills involving materials and their application to structures. Emphasis on safety and experience with basic construction techniques to develop a higher level of craftsmanship.

### **BLT 060 Masonry /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Safe use of the basic tools and materials of masonry. Basic knowledge and skills for preparation, protection and curing of concrete. Includes construction of brick, concrete block and stone walls.

### **BLT 062 Glazing /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Basic principles and techniques of glazing. Care of windows, preparation of surfaces, cutting and installing glass, and repairing glass and glazing materials. Use of special tools, materials, textures and surfaces.

### **BLT 070 Painting I /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: None.

Introduction to the principles and techniques of painting. Includes components of paint, application of paint to various surfaces, and use of ladders and scaffolds. Emphasis on safety in all aspects of the painting trade.

### **BLT 072 Painting II /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisites: BLT 070 and MTH 060.

Continuation of BLT 070 with greater emphasis on selecting, maintaining and using painting equipment and tools. Includes paint and color selection; color mixing and matching; and wood furniture stripping and refinishing techniques.

**BLT 074 Conventional and Airless Spray Painting/3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: None.

Specialized classroom instruction and practical experience in the principles and techniques of both conventional and airless spraying. Includes operating principles, uses and relative advantages of both types of spray units; techniques of high quality work; and causes and remedies for common spray and painting defects.

**BLT 076 Advanced Blueprint Reading /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: GTC 099.

Continuation of GTC 099 (Basic Blueprint Reading). Includes commercial building specifications, steel and heavy timber construction, multistory drawings and material estimating for drywall and painting.

**BLT 080 Color and Color Harmony /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: None.

Introduction to the psychology of color and understanding of color harmony. Includes systems of colors, methods of selecting colors for industries and institutions, and practical problems in color selection and application.

**BLT 082 Wall Coverings /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Basic principles and techniques of using wall coverings. Includes estimating, preparation and application of wall coverings, and care and use of tools. Emphasis on safe application of skills.

**BLT 090 Drywall I /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Basic principles and techniques of drywall construction. Includes safety, trade vocabulary, materials, proper care and use of equipment and tools, and performance of practical tasks.

**BLT 092 Drywall Taping /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: MTH 060.

Basic principles and techniques of drywall taping. Includes safety, terminology, equipment, tools, material applications, texturing and final finishing. Emphasis on performance of practical tasks.

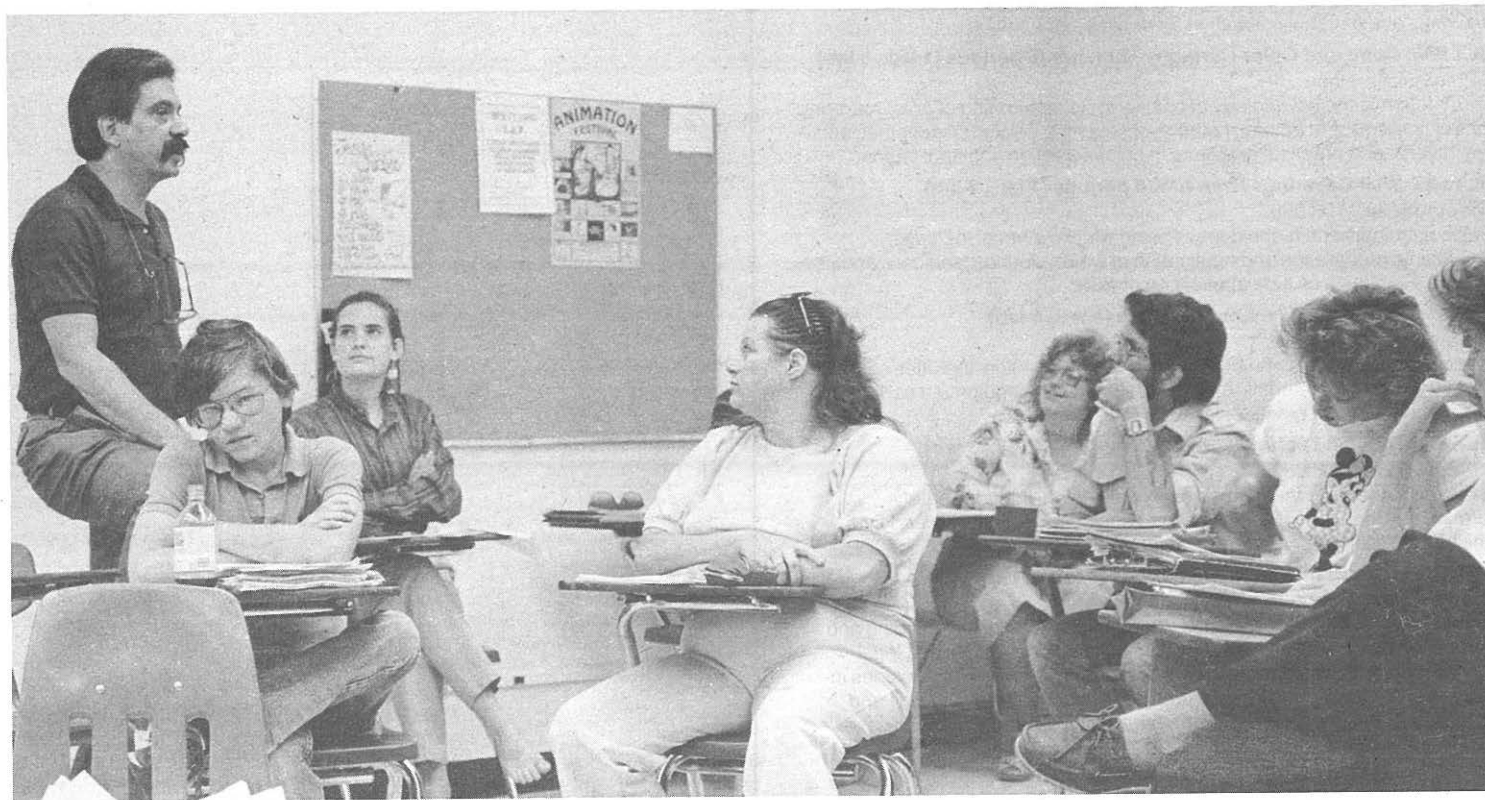
**BLT 094 Drywall II /3 cr. hrs./6 periods (1 lec., 5 lab)**

□ Prerequisite: BLT 090.

Continuation of BLT 090. Includes in-depth coverage of job planning and blueprint estimating, familiarization with building documents and legal requirements, framing terminology and types of framing. Also includes in-depth coverage of drywall construction in residential, multiple-unit and commercial buildings. Safe performance is stressed.

# Governing Board and Faculty

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## STATE BOARD OF DIRECTORS FOR COMMUNITY COLLEGES OF ARIZONA

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## PIMA COUNTY COMMUNITY COLLEGE DISTRICT GOVERNING BOARD

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Maria Christine Molina	1988
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## DISTRICT ADMINISTRATION

### OFFICE OF THE PRESIDENT

#### **S. James Manilla, President**

B.S.—University of Michigan  
M.A.—Syracuse University  
Ed.S.—Wayne State University  
Ed.D.—Wayne State University

#### **Arthur H. Evans, Jr., Assistant to the President/ Director of Governmental Relations**

A.B.—Princeton University  
M.B.A.—Stanford University  
Ph.D.—University of California, Berkeley

### OFFICE OF PLANNING AND DEVELOPMENT

#### **Judith W. Leslie, Vice President for Planning and Development**

B.S.—University of Utah  
M.Ed.—University of Utah  
Ph.D.—Pennsylvania State University

#### **Phillip J. Silvers, Director, Resource Development**

B.A.—St. Paul Seminary  
M.A.—St. Paul Seminary  
Ph.D.—University of Arizona

### OFFICE OF PERSONNEL/HUMAN RESOURCES

#### **Wilfred E. Von Mayr, Executive Director of Personnel/Human Resources**

B.S.—Loyola College  
M.A.—University of Maryland

### OFFICE OF PUBLIC AFFAIRS

#### **James V. Biundo, Executive Director of Public Affairs**

B.A.—Adams State College  
M.A.—Adams State College

### ACADEMIC AFFAIRS

#### **Robert F. Agrella, Provost/Vice-President, Academic Affairs**

B.S.—Purdue University  
M.A.—Purdue University

#### **Dillard S. Broderick, Associate Dean, Supportive Services**

B.S.—Brigham Young University  
M.S.—Brigham Young University  
Ph.D.—Arizona State University

#### **Constance Howard, Dean, Community Services**

B.A.—Mt. St. Mary's College  
M.S.—University of Arizona

#### **Anthony L. Thele, Executive Director of Occupational Education**

B.A.—Western New Mexico University  
M.A.—Western New Mexico University  
Ed.D.—Nova University

#### **Henry Oyama, Associate Dean, Bilingual and International Studies**

B.A.—University of Arizona  
M.Ed.—University of Arizona

### STUDENT SERVICES

#### **Diego A. Navarrette, Jr., Vice President for Student Services**

B.A.—University of Arizona  
M.Ed.—University of Arizona

**David F. Shuford, Associate Dean, Student Services**

B.S.—Western Carolina University  
M.A.—Western Carolina University  
Ed.D.—University of Tennessee

**Lawrence R. Toledo, Director of Athletics/  
Community Recreation Programs**

B.A.—California Western University  
M.Ed.—University of Arizona

**Doris Williams, Director of Minority Affairs**

A.A.—Pima Community College  
B.S.—University of Arizona  
M.S.—University of Arizona

**ADMINISTRATIVE SERVICES**

**John A. Roberts, Acting Vice President for Administrative Services**

B.S.—University of Arizona

**WEST CAMPUS**

**Wesley E. Soderquist, Executive Dean**

B.S.—Illinois Institute of Technology  
M.B.A.—University of Chicago  
Ed.D.—Loyola University

**Joseph W. Cosentino, Associate Dean, Admissions and Records**

B.A.—Mt. Union College  
M.Ed.—Kent State University

**William J. Flynn, Associate Dean, Arts Division**

B.A.—Manhattan College  
M.A.—Villanova University

**Elizabeth Gonzalez, Associate Dean, Student Services**

B.A.—University of Arizona  
M.Ed.—University of Arizona

**Kenneth E. McColester, Associate Dean, Engineering Sciences Division**

B.S.—Rollins College  
M.S.—North Carolina State University  
Ph.D.—University of Arizona

**Donald E. Proulx, Associate Dean, Health Sciences Division**

B.A.—University of Arizona  
B.S.—University of Arizona  
M.Ed.—University of Arizona

**Carl C. Wachsman, Associate Dean, Educational Support Services**

B.S.—Dickinson State College  
M.A.—Arizona State University

**Kenneth B. White, Associate Dean, Human Sciences Division**

B.A.—California State University  
M.A.—Florida State University

**DOWNTOWN CAMPUS**

**Miguel A. Palacios, Executive Dean**

B.A.—University of Arizona  
M.A.—University of Arizona  
Ph.D.—University of Arizona

**Ignacio Garcia, Associate Dean, Instruction**

B.A.—Fresno State College  
J.D.—Loyola University

**Sallie A. Guy, Associate Dean, Educational Support Services**

B.A.—University of Northern Iowa  
M.A.—Syracuse University  
Ph.D.—University of Illinois

**Ralph W. Wahrer, Associate Dean, Extended Day Programs**

B.A.—Iowa Wesleyan College  
M.A.—University of Iowa  
Ph.D.—University of Iowa

**COMMUNITY CAMPUS**

**James E. Gibson, Executive Dean**

B.S.—Southwest Missouri State College  
M.A.—Northern Colorado University  
Ed.D.—University of Arizona

**Edward Acuna, Associate Dean, Instructional Services**

B.S.—University of Arizona  
M.Ed.—University of Arizona

**Carl R. Webb, Associate Dean, Administrative Services/Registrar**

B.S.—U.S. Naval Academy  
M.A.—University of California at Los Angeles

**EAST CAMPUS**

**Carol A. Pearse, Acting Executive Dean**

B.A.—University of Arizona  
M.A.—University of Arizona

**Alfred B. Montes, Associate Dean, Student Services**

B.A.—University of Arizona  
M.Ed.—University of Arizona

# Pima Community College Faculty

## **Arthur Alberding, Mathematics (1969)**

B.S.—Nebraska State Teachers College  
M.A.—University of South Dakota  
Ph.D.—University of Arizona

## **Javier Alcaraz, Spanish-French (1978)**

B.A.—Montezuma Pontifical College  
M.A.—Universidad Jaime Balmes  
M.Ed.—St. Mary's College

## **Richard P. Alday, Physical Education (1973)**

B.S.—Kansas State Teachers College  
M.A.—Kansas State Teachers College

## **Mary H. Allison, Nursing (1971)**

B.S.N.—University of Arizona

## **Grace H. Altamirano, Office Education (1971)**

B.S.—University of Arizona  
M.Ed.—University of Arizona

## **Delfina Alvarez, Counselor (1971)**

B.A.—University of Arizona  
M.Ed.—University of Arizona

## **Barbara M. Anderson, Office Education (1970)**

A.A.—Cochise College  
B.S.—University of Arizona  
M.Ed.—University of Arizona

## **Jo Anne Anderson, Office Education (1977)**

B.A.—Arizona State University  
M.Ed.—University of Arizona

## **Lino Aragon, Graphics Technology (1980)**

A.A.—Pima Community College

## **Cynthia A. Arem, Counselor (1975)**

B.A.—City University of New York  
M.S.—City University of New York  
Ph.D.—University of Arizona

## **Irene J. August, Early Childhood Education (1977)**

B.A.—University of Arizona  
M.Ed.—University of Arizona

## **Roland D. August, Engineering and Mathematics (1972)**

B.S.—Oregon State University  
M.S.—George Washington University

## **Frances F. Bahrs, ESL and Reading (1970)**

B.A.—Sacramento State Teachers College  
M.A.—Sacramento State Teachers College

## **G. Elisabet Bailey, Speech (1973)**

B.A.—University of Arizona  
M.A.—University of Arizona

## **Kay S. Baker, Nursing (1978)**

B.S.N.—Arizona State University  
M.Ed.—University of Arizona

## **Pamela Barnes, Writing (1974)**

B.A.—Cedar Crest College  
M.A.—Seton Hall University  
M.Ed.—University of Arizona

## **Tori Basford, Computer Science (1978)**

BSEE—University of Texas  
MSEE—New York University  
Ph.D.—Columbia University

## **Robert P. Beltz, Counselor (1979)**

A.S.—Mercer County Community College  
B.A.—University of Arizona  
M.Ed.—University of Arizona

## **Philip Bellomo, Ceramics (1975)**

B.F.A.—University of Arizona  
M.F.A.—University of Arizona

## **Louis C. Bernal, Art (1972)**

B.A.—Arizona State University  
M.F.A.—Arizona State University

## **Theria M. Beverly, Reading (1975)**

B.A.—Clark College  
M.Ed.—University of Arizona

## **Kathy Blicharz, Computer Science (1982)**

A.A.—San Francisco State College

## **Michael Blicharz, Computer Science (1979)**

B.S.—University of San Francisco

## **Lynn G. Bonner, Speech (1971)**

B.A.—Western Michigan University  
M.A.—Western Michigan University  
M.A.—Northern Arizona University

## **Virginia Bowler, Nursing (1982)**

B.S.—Marquette University  
M.S.—Marquette University

**Lucy A. Brajevich, Dental Assisting (1971)**

A.A.—Los Angeles City College  
B.S.—Northern Arizona University  
M.Ed.—University of Arizona

**Aristeo Brito, Jr., Spanish (1970)**

B.A.—Sul Ross State College  
M.A.—University of Arizona  
Ph.D.—University of Arizona

**Fé Carol Brittain, Languages (1977)**

B.A.—Florida State University  
M.A.—Middlebury College

**Clifford M. Brock, Media Communications (1979)**

B.A.—California State University, Fullerton  
M.S.—University of Oregon  
Ed.D.—Brigham Young University

**Richard Brodesky, Writing (1978)**

B.A.—Brandeis University  
M.A.—Harvard University  
Ph.D.—Harvard University

**Louise F. Bronson, Psychology and Sociology (1969)**

B.A.—University of Rochester  
M.A.—University of Florida  
Ph.D.—University of Arizona

**Otis F. Bronson, Writing, Humanities and Art (1969)**

B.S.—University of Florida  
M.A.—University of Florida

**Cynthia Brown, Nursing (1980)**

B.S.N.—Catholic University  
M.S.—University of Arizona

**David K. Bruce, Administration of Justice (1975)**

B.S.—Central Missouri State University  
M.S.—California State University of San Jose

**Nancy Buchanan, Librarian (1974)**

B.A.—University of Arizona  
M.L.S.—University of Arizona  
M.A.—University of Arizona

**Thomas Burgess, Mathematics (1976)**

B.S.—Idaho State University  
M.S.—Colorado State University

**Nicholas C. Busch, Life Sciences (1969)**

B.A.—Sonoma State College

**Charles R. Camp, Electronics (1971)**

B.A.—Colorado College  
M.A.—Colorado College

**Colin E. Campbell, Life Sciences (1972)**

B.S.—University of Arizona  
Ph.D.—University of Arizona

**Teresa C. Campbell, Writing (1972)**

B.A.—New York University  
M.A.—Columbia University  
J.D.—Fordham University

**Jefferson Carter, Writing (1977)**

B.A.—Pomona College  
M.A.—University of Arizona  
Ph.D.—University of Arizona

**P. Michael Carter, Respiratory Therapy (1977)**

B.A.—University of Arizona  
Registered Respiratory Therapist (RRT)

**Margaret W. Catlin, Nursing (1971)**

B.S.N.—University of Arizona

**Neil D. Catone, Electronics (1983)**

BSEE—University of Hawaii

**Irma J. Celaya, Office Education (1982)**

B.A.—University of Arizona  
M.Ed.—University of Arizona

**Anthony M. Chana, Counselor (1971)**

A.A.—Phoenix College  
B.A.—Arizona State University

**Shirley J. Chann, Computer Science (1970)**

B.A.—Wellesley College  
M.Ed.—University of Arizona

**Gustavo Chavez, Counselor (1982)**

A.A.—Mesa Community College  
B.A.—Arizona State University  
M.A.—Arizona State University

**Kenneth R. Chiaro, Political Science and History (1975)**

B.A.—University of Arizona  
M.A.—University of Arizona  
Ph.D.—University of Arizona

**Carolyn C. Christian, Office Education (1976)**

B.S.—Bowling Green State University  
M.A.—Ball State University

**Christine P. Clifford, Life Science (1975)**

B.A.—Bowling Green State University  
M.S.—University of Colorado

**John Clifford, Automotive (1974)**

B.Ed.—Colorado State University

**Alan Coons, Mathematics (1983)**

B.S.—Northern Arizona University  
M.S.—Northern Arizona University  
M.B.A.—University of Arizona

**Joseph D. Cortez, Mathematics (1975)**

B.S.—University of Arizona  
Ed.D.—University of Denver

**Ronald D. Crabtree, Humanities (1970)**

B.A.—Washington University  
M.A.—Washington University

**Barbara Crowley, Dental Assisting (1975)**

B.A.—University of Arizona  
M.Ed.—University of Arizona

**Michael B. Curry, Mathematics (1970)**

B.S.—Wheeling College  
M.M.—Utah State University

**Sergio V. Davalos, Computer Science (1980)**

B.A.—University of Arizona  
M.S.—University of Arizona

**Arnold Davidson, Writing (1978)**

B.A.—Emporia State University  
M.A.—Emporia State University  
Ed.S.—University of South Dakota  
Ph.D.—Florida State University

**Daniel Davidson, Physics/Microcomputer Center (1971)**

B.S.—University of Rochester  
Ph.D.—University of Arizona

**June F. Davidson, Counselor (1981)**

B.S.—University of Rochester  
M.Ed.—University of Arizona  
Ph.D.—University of Arizona

**Patricia J. Davis, Writing and Literature (1971)**

B.A.—University of Texas  
M.A.—University of Wisconsin  
Ph.D.—University of Wisconsin

**Frank Deits, Electronics (1982)**

**Robert C. Douglas, Dental Laboratory (1975)**  
Certified Dental Technician

**Allan E. Doyle, Accounting and Business (1977)**

B.A.—John Hopkins University  
M.B.A.—New York University  
M.A.—University of Arizona

**Edward M. Duperret, Counselor (1970)**

B.A.—Seton Hall University  
M.A.—New York University  
M.Ed.—University of Arizona

**David G. Ebert, Hospitality Education, Cooperative Education (1975)**

B.A.—University of Arizona  
M.P.A.—University of Oklahoma

**Mary E. Elasowich, Nursing (1975)**

R.N.—St. Vincent's Hospital School of Nursing  
B.A.—University of Massachusetts  
M.A.—Assumption College

**Michael S. Engs, Counselor (1977)**

B.A.—College of William and Mary  
M.Ed.—University of Arizona

**Michael Enis, Welding (1970)**

Welder's Certificate, Engineers Testing Laboratory  
A.A.—Pima Community College

**Emilio Escarcega, Spanish (1973)**

B.A.—University of Arizona  
M.A.—University of Arizona

**Ruben C. Estrada, Management and Marketing (1979)**

B.S.—University of Arizona  
M.B.A.—University of Arizona

**Francisco Z. Fernandez, Counselor (1981)**

B.A.—University of Arizona  
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Federal Aviation Administration Air Conditioning and Heating Certificate  
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B.S.—New York University

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M.Ed.—University of Arizona

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M.Ed.—Boston University

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M.S.—Indiana University

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B.S.E.—Western Illinois University

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B.S.—University of Wisconsin

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M.Ed.—University of Arizona

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B.A.—Amherst College

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B.S.—University of Arizona

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B.A.—University of Arizona  
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Ph.D.—Brigham Young University

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