

College of San Mateo

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San Mateo, California 94402
(415) 574-6161

A community college
Accredited by the Western Association of Schools and Colleges

Lois A. Callahan
President, College of San Mateo

Board of Trustees San Mateo County Community College District

College of San Mateo is part of the San Mateo County Community College District, which also operates Cañada College in Redwood City and Skyline College in San Bruno. The District and its Colleges are governed by a five-member Board of Trustees elected at large for four-year terms by county voters.

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Accuracy Statement

College of San Mateo and the San Mateo County Community College District have made every reasonable effort to determine that everything stated in this catalog is accurate. Courses and programs offered, together with other information contained herein, are subject to change without notice by the administration of College of San Mateo for reasons related to student enrollment, level of financial support, or for any other reason, at the discretion of the College. At the time of publication the fees described in this catalog are accurate. However, at any time local or State mandated fees may be imposed or increased. The College and the District further reserve the right to add, amend or repeal any of their rules, regulations, policies and procedures, consistent with applicable laws.



Production Coordinator: Lynne Jewell
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Summer Intersession 1985

Test Dates See Schedule of Classes for Dates, Times and Places

Registration See Schedule of Classes

June 24 Classes Begin

July 4 Independence Day Holiday

July 8 Last Day to Petition for Summer AA/AS Degree

August 2 Summer Intersession Six-week Classes Close

August 16 Summer Intersession Eight-week Classes Close

Fall Semester 1985

April 23 Applications Available

Test Dates for Fall Semester 1985 See Schedule of Classes for Dates, Times, and Places

Counseling-Registration, New and Returning Students See Schedule of Classes for Dates, Times & Places

September 2 Labor Day Holiday

September 4 Day and Evening Classes Begin

September 17 Last Day to Add Semester-length Classes

September 17 Last Day to Drop Classes with Eligibility for Enrollment Fee Refund

September 18 Last Day to Drop Classes without Paying State required Drop Fee

September 27 Last Day to Drop Classes without Appearing on Student Record

October 11 Last Day to Declare C/NC Option for Designated Courses

October 18 Last Day to Apply for Fall AA/AS Degree or Certificate

November 11 Veterans' Day Holiday

November 28-30 Thanksgiving Recess

December 2-12 Registration for Continuing Students

December 6 Last Day to Drop a Semester-length Class in which a Student is Failing without Possible "F" Grade

December 16-January 1 Winter Recess

January 16-24 Final Examinations

January 20 Martin Luther King Day Holiday

January 25-February 1 Inter-Semester Recess

Spring Semester 1986

November 4 Applications Available

Test Dates for Spring Semester 1986 See Schedule of Classes for Dates, Times and Places

Counseling-Registration, New and Returning Students See Schedule of Classes for Dates, Times and Places

February 3 Day and Evening Classes Begin

February 14 Lincoln Day Holiday

February 15 Declared Recess

February 17 Washington Day Holiday

February 18 Last Day to Add Semester-length Classes

February 18 Last Day to Drop Classes with Eligibility for Enrollment Fee Refund

February 19 Last Day to Drop Classes without Paying State Required Drop Fee

February 28 Last Day to Drop Classes without Appearing on Student Record

March 14 Last Day to Declare C/NC Option for Designated Courses

March 17 Last Day to Apply for AA/AS Degree or Certificate

March 24-29 Spring Recess

May 16 Last Day to Drop a Semester-length Class in which a Student is Failing without Possible "F" Grade

Test Dates for Fall Semester 1986 See Schedule of Classes for Dates, Times and Places.

Registration for Continuing Students See Schedule of Classes for Dates, Times and Places

May 26 Memorial Day Holiday

June 10-17 Final Exams

June 12 Commencement

Summer Intersession 1986

Test Dates See Schedule of Classes for Dates, Times and Places.

Registration See Schedule of Classes

June 23 Classes Begin

July 4 Independence Day Holiday

July 10 Last Day to Petition for Summer AA/AS Degree

August 1 Summer Intersession Six-week Classes Close

August 15 Summer Intersession Eight-week Classes Close

4 general information

The District

Starting with just 35 students when it first opened its doors at the Baldwin campus in downtown San Mateo in 1922, the San Mateo County Community College District has grown to a complex of three modern campuses serving more than 30,000 day and evening students from throughout San Mateo County.

In the beginning, the District consisted only of the area within the San Mateo Union High School District. In 1937 the Jefferson Union and Half Moon Bay high school districts were included, and the San Mateo Junior College District Board of Trustees was established. Sequoia Union High School District joined the College District in 1961, and South San Francisco Unified School District was annexed in 1966. (The name of the District was changed to San Mateo Community College District in 1973.) In July of 1976 the District annexed the La Honda-Pescadero Unified School District, and in recognition that the District's boundaries now coincided with those of the County, the word "County" was added to the District's name.

First classes were held in a building shared with San Mateo High School in downtown San Mateo. In 1923 the College moved to a large house on the Kohl Estate, in what is now San Mateo's Central Park, and added some tents to handle the overflow attendance. Four years later the high school occupied a new campus, and the College moved back to the Baldwin campus.

In 1939 a new campus went into operation at North Delaware Street and Peninsula Avenue, San Mateo, but because of World War II development of the site was curtailed. As a result, when the tide of returning servicemen began to roll in at the war's end, the College leased the Merchant Marine Cadet School at Coyote Point, San Mateo, and added those facilities to the classrooms at the Baldwin and Delaware campuses, thus conducting classes simultaneously at three separate locations.

In 1957 the Board of Trustees developed a 25-year District master plan based on the recommendations of a Citizens Advisory Committee, and the same year submitted a \$5.9 million bond issue to voters that was approved by an overwhelming 3 to 1 margin.

The bond issue victory cleared the way for prompt acquisition of the present College of San Mateo campus, and also provided funds for purchase of a 111-acre site west of Skyline Boulevard and south of Sharp Park Road in San Bruno. A third site, of 131 acres west of the Farm Hill subdivision on the Redwood City-Woodside line, was purchased in 1962.

The College of San Mateo campus was opened in 1963, followed by Cañada College, Redwood City, in 1968, and Skyline College, San Bruno, in 1969. Construction of CanAtada and Skyline was made possible in large part from proceeds from a second bond issue of \$12.8 million approved by District voters in 1964.

The College

College of San Mateo, the oldest of the three colleges in the San Mateo County Community College District, is located on a 153-acre site that provides a panoramic view of the entire north Bay Area.

Completed at a cost of almost \$19.5 million, the campus opened its doors in 1963 and currently serves more than 15,000 day and evening students. It enrolls students from the entire District, although its chief service area is central San Mateo County.

The College's main educational structures are built along a north-south axis provided by the main pedestrian mall. A second mall, running east and west, connects the Fine Arts Center with the Library. In addition to three main lecture halls, the College has a three-building science center, an engineering building, a planetarium, a complex which houses dental assisting, cosmetology, nursing, and one which houses electronics and aeronautics. A separate area houses the horticulture programs and College Readiness Program/EOPS Multicultural Center. Total gross space is

537,000 square feet, with 160 teaching stations, plus offices, storage rooms and support facilities.

Mission and Goals San Mateo County Community College District Master Plan

Mission

San Mateo County Community College District, recognizing each individual's right to education, is committed to leadership in providing quality education in partnership with its community to:

- identify and respond to the educational needs of the community;
- provide an environment which enables students to understand their individual potential;
- encourage the pursuit of lifelong learning in a changing world; and
- maintain a climate of academic freedom in which a variety of viewpoints may be shared.

Goals

To fulfill its Mission, San Mateo County Community College District has established the following goals. In pursuit of these goals, the overriding concern of the District will be maintenance of quality even at the expense of scope of service. The San Mateo County Community College District shall:

1. provide varied general educational opportunities which acquaint students with the broad outlines of human knowledge and experience;
2. provide lower-division transfer programs which prepare students for continued education in four-year colleges and universities;
3. offer occupational education and training programs directed toward career development, in cooperation with business, industry, labor, and public service agencies;
4. offer developmental/remedial education to enable students to develop those basic skills essential to successful completion of college goals;
5. identify and meet community needs not otherwise served by college credit courses by offering self-supporting Community Service classes and activities;
6. provide a program of student services to assist students in attaining their educational and career goals; and
7. actively support a program of affirmative action for under-represented groups in recruitment and personnel employment.

In order to fulfill its educational mission and to attain the goals described herein, the San Mateo County Community College District commits itself to effective analysis and evaluation of programs, services, and performance of personnel. It shall plan, organize, and manage its resources to achieve maximum effectiveness, efficiency, and accountability. Participation by the College community in these endeavors is desirable and appropriate.

Philosophy and Purposes of the College

College of San Mateo has established its educational philosophy on three fundamental premises: that a free society requires intelligent support; that the individual has worth and dignity; and that a college has obligations both to society and the individual.

As a corollary to these premises, the College realizes that in its role of community college it must remain sensitive to changes in the needs of its area and evolve its educational offerings in response to those needs.

In general, the purpose of College of San Mateo is to provide education beyond the high school level for the people in its area who can profit thereby. This education is designed to help the student realize his or her potential by pursuing cultural, intellectual, and vocational abilities. It prepares the student to assume the responsibilities of citizenship in our free society. It attempts to develop in the student the ability to think clearly.

To achieve its purpose, College of San Mateo offers the following kinds of education:

General Education: Instruction which helps students function effectively as individuals, as members of their families, and as citizens with local, national and world responsibilities.

Lower Division College Education: Courses which enable students to complete the first two years of four-year college work. These courses satisfy the lower division requirements in the liberal arts and in scientific, engineering and other professional and technical fields.

Occupational Programs: Instruction designed to develop personal and technical competencies necessary for successful employment in specific occupations.

Extended Educational Programs: Classes in which all persons living in the area may broaden their educational, vocational and aesthetic horizons.

To assist students in profiting from their education, the College helps them explore their aptitudes, choose their lifework, and plan an educational program which will prepare them for that work. It offers this assistance through a formal program of guidance and counseling, and through informal student-teacher relationships which are among the most distinctive and valuable of its services. The College recognizes the educational value of organized student activities and encourages students and faculty participation in these activities.

Situated close to San Francisco and several fine colleges and universities, College of San Mateo is part of a colorful community which enjoys many cultural advantages. Many College of San Mateo graduates transfer to the University of California, California State Universities, as well as other major public and private colleges and universities. Because the needs of these students who transfer to upper division work are carefully provided for in the curriculum, the College enjoys a fine reputation among the universities of the State. Graduates have consistently had a pattern of success in transfer educational institutions. Many College of San Mateo students, having temporarily completed their formal education with the Associate in Arts or the Associate in Science degree, find employment in business and industry.

Accreditation

College of San Mateo is fully accredited by the Western Association of Schools and Colleges, the recognized local agency which is affiliated with the Federation of Regional Accrediting Commissions of Higher Education.

Revision of Regulations

Any regulation adopted by the administration of College of San Mateo will be considered an official ruling and will supersede regulations on the same subject which appear in this catalog and other official publications, provided that the new regulation has been officially announced and posted.

Veterans and Veterans' Dependents

College of San Mateo is listed by the Veterans Administration as qualified to certify students who are working toward an AA/AS degree program for benefits under Chapter 34 (Veterans), Chapter 35 (Veterans' Dependents) and Chapter 31 (Vocational Rehabilitation). All students, except those under Chapter 31, buy their own

books and supplies. Those interested in attending College of San Mateo under any of these chapters should contact the Office of Admissions and Records in the Administration Building to determine eligibility for benefits.

For academic credit purposes, a veteran is defined as an honorably discharged member of the United States Armed Forces who was on active duty for one year or more. Upon presentation of separation or discharge papers, veterans are exempt from the Health Science and Physical Education requirements for the AA/AS Degree. They are also entitled to six units of elective credit toward the AA/AS Degree.

In addition, veterans who qualify may receive credit for military service schools toward the Associate in Arts/Science degree upon presentation of proof to the Office of Admissions and Records. They must have completed a minimum of 12 units with a grade-point average of 2.0 at College of San Mateo. Units of credit for military service (6 units) and military service schools will be recorded on the student's record.

Enrollment Fee

An enrollment fee of \$5 per unit is payable at the time of registration by students enrolling in fewer than six units. Students registering in six units or more must pay an enrollment fee of \$50, the maximum amount to be paid by any student in one semester.

In accordance with State law, the enrollment fee will be waived for students who, at the time of enrollment, are recipients of benefits under the Aid to Families with Dependent Children program, the Supplementary Security Income/State Supplementary program, or the General Assistance program.

In addition to other costs, non-residents must pay a tuition fee.

Parking Fee

All persons driving motor vehicles onto campus and utilizing the parking facilities during regular class hours, including final examinations, are required to pay a parking fee. Student parking permits are available for \$15 per semester (\$7.50 for summer session). One-day parking permits (50¢) for all student lots are available at the Security Office.

Permits may be purchased during the registration process. *Please note that parking fees are not refundable unless an action of the college (e.g., cancellation of the class) prevents a student from attending class.*

Parking is on a first-come, first-served basis. A permit is not a guarantee of a parking space. The College and the San Mateo County Community College District accept no liability for vandalism, theft or accidents. Use of parking facilities is at the user's risk. Parking and traffic regulations are enforced by the Campus Security Office staff, and violators are cited to the Municipal Court. The College reserves the right to change parking requirements for special events.

For further information, contact the Campus Security Office which is open Monday through Friday from 7:30 a.m. to 8:00 p.m. and on Fridays from 7:30 a.m. to 3:00 p.m. when classes are in session.

Non-Resident Tuition Fee

No tuition is charged to legal residents of California.

Students who have not been residents of California (as defined in the Education Code) for one year or longer prior to the beginning of a term are required to pay a non-resident tuition fee of \$82 per unit at the time of registration. Residency status is determined by the Office of Admissions and Records.

6 general information

In general, an unmarried minor (a person under 18 years of age) derives legal residence from his/her father (or his/her mother if the father is deceased), or, if the case of permanent separation of the parents, from the parent with whom the minor maintains his/her abode. The residence of a minor cannot be changed by act of the minor or that of the minor's guardian so long as the minor's parents are living.

An adult must take steps to establish legal residency in California at least one year prior to the beginning of the term in order to be classified as a resident student for that term.

Information concerning acceptable documentation of intent to establish and maintain California residency is available in the Office of Admissions and Records.

Course Drop Fee

A State-mandated fee of \$10 per course will be charged for dropping semester-long courses after the second week of instruction. The maximum charge to a student for the semester will be \$20, which is charged for dropping two or more courses. Further information, including details on drop fees for short courses and the fee waiver policy, is available from the Office of Admissions and Records.

Other Expenses

Each student purchases his/her own textbooks and supplies. A considerable saving is possible through the purchase of used texts from the on-campus College of San Mateo Bookstore. Excluding living and transportation costs, the total of all expenses should not exceed \$500 per semester for California residents. Special equipment is needed for certain programs such as Electronics, Drafting, Nursing, Cosmetology, Engineering, Art and Architecture, involving an additional initial outlay ranging from \$100 to \$450. Please refer to course descriptions for special costs.

Fee Refunds

Enrollment Fee

A student who cancels registration prior to the beginning of classes or officially withdraws from all classes on or before the last day to add semester-long classes is entitled to a full refund less a \$10 processing fee.

A student enrolled in summer session or exclusively in less than semester-long classes and who cancels registration prior to the beginning of classes or officially withdraws from all classes on or before the last day to add into those classes is entitled to a full refund less a \$10 processing fee.

Classes which are less than a semester in length in which the last day to enroll extends beyond the first two weeks of instruction will use that date as the deadline for refund determination.

A student who officially completes a change of program within the prescribed period and, as a result, reduces the number of units in which he/she is enrolled is entitled to a refund (with no processing fee) if the change places the student in a different enrollment fee category.

A processing fee will be charged only once each semester or session. If a student pays an enrollment fee of less than \$10, and cancels registration or withdraws from all classes before the deadline, the processing fee is equal to the enrollment fee.

An eligible student may elect to have a credit in lieu of a refund of fees due, and may thereby avoid payment of a processing fee. This credit will be carried by the District for a maximum of two semesters beyond the semester in which the refund was due. After that time, the student will not be eligible for the credit or the refund.

The enrollment fee will be fully refunded if an action of the College (e.g., class cancellation) prevents the student from attending class.

Parking Fee

Not refundable unless an action of the College (e.g., class cancellation) prevents the student from attending class.

Non-Resident Tuition Fee

A student is entitled to a full refund if tuition has been collected in error.

A student who cancels his/her registration prior to the beginning of classes, or who officially withdraws from the College prior to Monday of the fourth week of the semester, is eligible for a full refund less a \$50 processing fee.

A student who officially reduces his/her program prior to Monday of the fourth week of the semester is eligible to receive a full refund for the units dropped.

A student who officially withdraws or reduces his/her program on or after Monday of the fourth week is not eligible for a refund.

High School Diplomas

The College does not issue high school diplomas. Students who wish to complete requirements for the diploma should consult the high school they last attended to determine graduation requirements. College courses used to satisfy a high school diploma requirement may not be used toward a college degree. Students who are unable to make arrangements with their previous high schools can contact the office of the high school district in which they now reside. Counseling/advising services for high school diplomas may be obtained by persons living in the San Mateo Union High School District by phoning 347-9871 and asking for the Adult Education Counselor.

Policy of Nondiscrimination

College of San Mateo is committed to equal opportunity regardless of sex, marital status, physical handicap, race, color, religion or national origin, for admission to the College, enrollment in classes, student services, financial aid, and employment in accordance with provisions of Title VI of the 1964 Civil Rights Act, Title IX of the Educational Amendments of 1972 (45 CFR 86) and Section 504, Rehabilitation Act of 1973 (PL. 93-112).

It is important that students, staff, and all others associated with the College understand the importance of reporting concerns about possible violations of this policy. The College's commitment to equal opportunity demands full investigation of possible violations and an opportunity for a fair and impartial hearing on any matter relating to these laws and policies.

Any person seeking information concerning these laws and policies or claiming grievance because of alleged violations of Title VI of the 1964 Civil Rights Act and Sec. 504 of the Rehabilitation Act of 1973 should contact the Director of Special Programs and Services, Administration Building, Room 215, telephone 574-6434.

All grievances will be reviewed in terms of Title VI and Title IX law, and persons involved will be advised of the provisions of the law and their legal rights. If normal channels are not available or fail to meet legal requirements, the necessary action will be initiated. The office will maintain a record of all Title VI and Title IX grievances, and will report to the Affirmative Action Committee the general nature of such grievances and progress toward their resolution.

Privacy Rights of Students

The Family Educational Rights and Privacy Act (Sec. 438, P.L. 93-380, as amended) requires educational institutions to provide: access to official educational records directly related to the student; an opportunity for a hearing to challenge such records on the grounds that they are inaccurate, misleading, or otherwise inappropriate; that the College must obtain the written consent of the student before releasing personally identifiable information from records to other than a specified list of persons and agencies; and that these rights extend to present and former students of the College.

The Act provides that the College may release certain types of "Directory Information" *unless the student submits a request in writing* to the Records Officer that certain or all such information not be released without his/her consent. "Directory Information" at this College includes: (1) student's name and city of residence; (2) participation in recognized activities and sports; (3) dates of enrollment; (4) degrees and awards received; (5) the most recent previous educational agency or institution attended; and (6) height and weight of members of athletic teams.

A copy of the College Policy, the Family Educational Rights and Privacy Act (Sec. 438, P.L. 93-380) and other pertinent information and forms are available in the Office of the Records Officer, Administration Building, Room 210, during normal working hours.

The Library

The CSM Library is one of the largest community college libraries in the United States. Its collections, designed to meet the varied learning needs of students, reflect over 50 years of careful selection. With its panoramic view of the Bay Area, the three-story Library is an inviting place for both students and faculty to study and browse. The main floor offers reading and conference rooms, reference materials, reserve books, periodical and microfilm collections, and copiers and rental typewriters. The balcony houses the open-stack general book collections and individual study carrels. (Non-print media are located on the lower floor in the Media Center.)

The Library owns over 100,000 volumes of books, more than 450 current magazines and newspapers, and 6500 reels of microfilm. The card catalogs provide access to both print and non-print materials. And assistance is always available from the library staff. The Library is open Monday through Friday when classes are in session. Specific hours for the daily schedule and for holidays are posted throughout the Library and are also published in the Schedule of Classes.

The Media Center

The Media Center is located on the lower floor of the Library, offering many listening/viewing stations for CSM students. There are two language labs available for student use, as well as faculty recording studios, preview rooms, video viewing classrooms, a media production center, and a media equipment storage, repair and distribution area.

The Media Center staff oversees this area and provides faculty with expertise in media and instructional design. The non-print collection contains 8,000 disc records, 8,000 tape and cassette recordings, 600 films, and thousands of slides and filmstrips.

KCSM TV and FM

KCSM TV and FM are public broadcasting stations licensed to the college district and operated by College of San Mateo. KCSM TV is a full color broadcast station affiliated with PBS. It broadcasts programs to San Mateo County and throughout the Bay Area via its 1.5 million watt transmitter located on Mt. San Bruno. KCSM FM is a 24 hour public radio station affiliated with NPR. Its broadcast signal also covers the county and most of the Bay Area. Its transmitter and tower are located on the CSM campus. KCSM TV broadcasts on UHF channel 60 and KCSM radio broadcasts on 91.1 on the FM band. Both stations carry a wide variety of programming to meet the educational, cultural and informational needs of the students and of the community.

Studios for both KCSM TV and FM are located on the lower floor of the library building adjacent to the Media Center. The facilities of the station are made available through the telecommunications department for the training of students in radio and television broadcast skills. Both radio and television are also used to broadcast credit courses for the convenience of those students who are unable to come to campus. These telecourses allow students to essentially attend their lecture classes by watching them at home on television or listening to them on radio. Usually three campus sessions are included as part of a telecourse. Telecourses carry full credit.



8 evening program, summer intersession and instructional television

Evening Program

The College of San Mateo evening program serves not only full-time students but those who may have commitments at work or home which prevent them from attending during daytime hours.

Evening classes provide opportunities for students to resume interrupted education and to investigate new fields of interest; to take college courses leading to an Associate in Arts or Science degree or for transfer credit; to complete requirements for a certificate program; and to enroll in general continuing education classes for self-enrichment or improvement of job skills.

Classes in the evening program are open to persons who are over 18 years of age or are high school graduates. Students attending high school must have permission of the Office of Admissions and Records to attend evening classes. In credit classes, all students must enroll for the prescribed number of units, complete the required work, and be assigned a grade; no auditors are allowed. Units earned in credit classes are applicable toward the Associate in Arts or Science degree. Registration procedures are included in the Schedule of Classes, which is distributed at the College and through local libraries about four to six weeks prior to the beginning of each semester (see Calendar).

Certificate programs, planned mutually by the College and advisory committees, are available in the evening and include: Ornamental Horticulture, Vocational Gardening, Fire Science Training, Administration of Justice, Aeronautics, Office Administration, Business Management, and Business Merchandising. Certificates in these fields are issued upon completion of required and elective courses, and the units earned in them may be applied toward the Associate in Arts or Science degree for those persons who wish to continue their education.

Separate brochures are available at the Office of Instructional Services in the Administration Building for outlines of programs, course descriptions, explanations of programs and certificate requirements. At the beginning of the final course required for a certificate, it is the responsibility of each candidate to file an application in the Office of Admissions and Records (see Calendar).

Evening Final Grade Reports

Final grade reports will be mailed to all evening students enrolled in credit classes. Mid-term grade reports are not mailed to evening students.

Evening Class Costs

See "General Information" on pages 5 & 6 for information on the Enrollment Fee, Parking Fee, Non-Resident Tuition Fee, Course Drop Fee and Other Expenses.

Foreign Students

Students who are legal residents of another country and are in the United States on other than immigrant visas may not register in evening classes without approval of the Office of Admissions and Records. Immigrants who are residents of the District are eligible to register.

Evening Testing

English, Reading, and Mathematics Placement Tests are administered each semester for students planning counseling appointments. Students enrolling in an English composition course are required to take the English/Reading Placement Test. Students enrolling in any mathematics course, including business mathematics, must take the Mathematics Placement Test; this requirement will be waived for students who have passed the prerequisite course at CSM, Cañada College, or Skyline College with a grade of "C" or better.

Evening Registration

Registration for classes and dates of registration are described in detail in the class schedules. Registration in classes is closed at the end of the second class meeting if the class meets once a week and the third class meeting if the class meets twice a week. It is recommended that beginning students with full-time occupations not enroll for more than two evenings per week. No auditors are permitted.

Evening Academic and Career Counseling

Every effort is made to assist students in the wise choice of individual courses, major fields and career goals. Drop-in counseling services are available on the second floor of the Administration Building on Monday, Tuesday, and Thursday evenings from 6 p.m. until 7 p.m. Counseling/advising appointments may be made between 7 p.m. and 9 p.m. Contact the Office of Admissions and Records (574-6165) for an appointment. Persons desiring personal academic/career counseling should bring transcripts of previous work to the interview.

Career counseling/advising and career exploration services are available through the Career Development Center and regularly offered Career and Personal Development classes (CRER 133, 137, 410, 430, 808). For your convenience, the Career Development Center is open Wednesday evenings from 5:30 to 8:30 p.m.

Withdrawal Procedure from Evening or Summer Intersessions

Students wishing to withdraw from an evening or summer intersession class must obtain a petition to withdraw from the Office of Instructional Services or the Office of Admissions and Records, Building 1, second floor. A fee is assessed for students who drop after the second week of instruction.

Withdrawal from evening and summer classes is the responsibility of the student. A student who does not withdraw in accordance with established procedures may receive a grade of "F." (See Index: "Withdrawal from Classes.")

Summer Intersession

A balanced offering of day and evening summer intersession classes enables students to accelerate their programs or satisfy course or curriculum requirements. The summer intersession also affords opportunity to exceptionally able high school students, after completing the sophomore year, to take selected college courses. Further information may be obtained by calling the College of San Mateo, Office of Instructional Services (574-6544), or by contacting the high school counselor.

Instructional Television

An instructional television program is offered by College of San Mateo as an alternative to regular classes. Telecourses present college level instructional material for students who wish to gain academic credit for a degree, a certificate or for personal enrichment. The credits earned may be applied to San Mateo programs or transferred to most colleges and universities. See the Schedule of Classes for information on course offerings.

Admission

Admission requirements must be completed before a student will be permitted to register.

Admission Requirements— Day Classes

Students applying to College of San Mateo who wish to enroll for nine or more units per semester are required to:

1. File a written application for admission on forms supplied by the College.
2. Obtain high school and college transcripts from all institutions they have attended. Students will bring these transcripts with them when they come to the campus for counseling and registration. High school transcripts are not required if the applicant has not attended high school within the past five years.
3. Take Placement/Counseling tests and other specific examinations necessary. (See schedule of tests on Application for Admission).

A student planning to enroll in fewer than nine units must file an application by the deadline date but is not required to take the general placement/counseling tests or submit transcripts. A student planning to enroll in an advanced foreign language course and/or English course, and/or mathematics course is required to take the appropriate placement test.

Transfer Credits

Credit will be allowed for lower-division work done in other accredited institutions. All work presented will be evaluated by the Office of Admissions and Records.

High School Graduates

Normally, graduation from high school or successful completion of the California High School Proficiency Examination or the General Education Development Examination (GED), with an overall average of 55 and no score below 50, is a prerequisite for admission. Persons over 18 years of age may also be admitted even if they are not high school graduates.

Any person who is not a legal resident of California should see Index: "Residence Requirements."

Transfers from Other Colleges

Students who have previously attended another community college or university are eligible to enroll at College of San Mateo, subject to residence requirements.

Former Students of College of San Mateo

Former students of College of San Mateo are eligible to return; however, if they have less than a 2.0 grade point average, they will be readmitted according to provisions of the current academic policies of the College (see Index: "Academic Policy").

Prior to being readmitted, former students must clear holds on records.

Foreign Students

College of San Mateo is authorized under Federal law to enroll non-immigrant alien students. Only those foreign students who have completed the equivalent of an American high school education with satisfactory grades will be admitted.

In addition, foreign students will be required to demonstrate sufficient command of English to profit from instruction at the College. They must also present evidence that they have the necessary funds to cover living expenses while attending College of San Mateo.

Application for admission for Fall Semester, 1985, must be complete by May 3, 1985. Application for Spring Semester, 1986, must be completed by November 8, 1985.

Foreign students are required to enroll in a minimum of 12 units each semester. The tuition fee is computed on the basis of the total number of units in which the student is enrolled at the rate of \$82 per unit. Tuition covering the first semester must be paid in full prior to the issuance of an I-20 certification for visa purposes.

Under unusual circumstances of financial hardship, foreign students may petition for a waiver of tuition.

Choice of College

Residents of the District may elect to attend College of San Mateo, Cañada College or Skyline College. In the event the capacity of one college is reached, students may be diverted to one of the other colleges. Academic major and date of application will be taken into consideration if such diversion becomes necessary.

Admission requirements must be completed before a student will be permitted to register (see Index: "Admission Requirements").



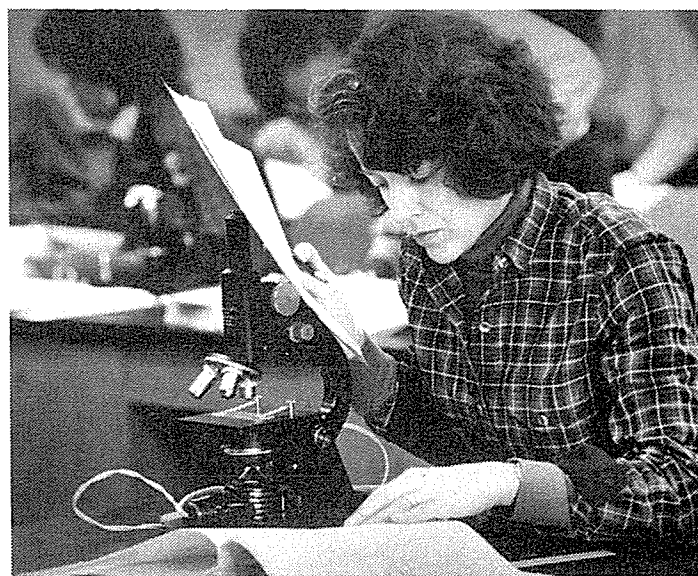
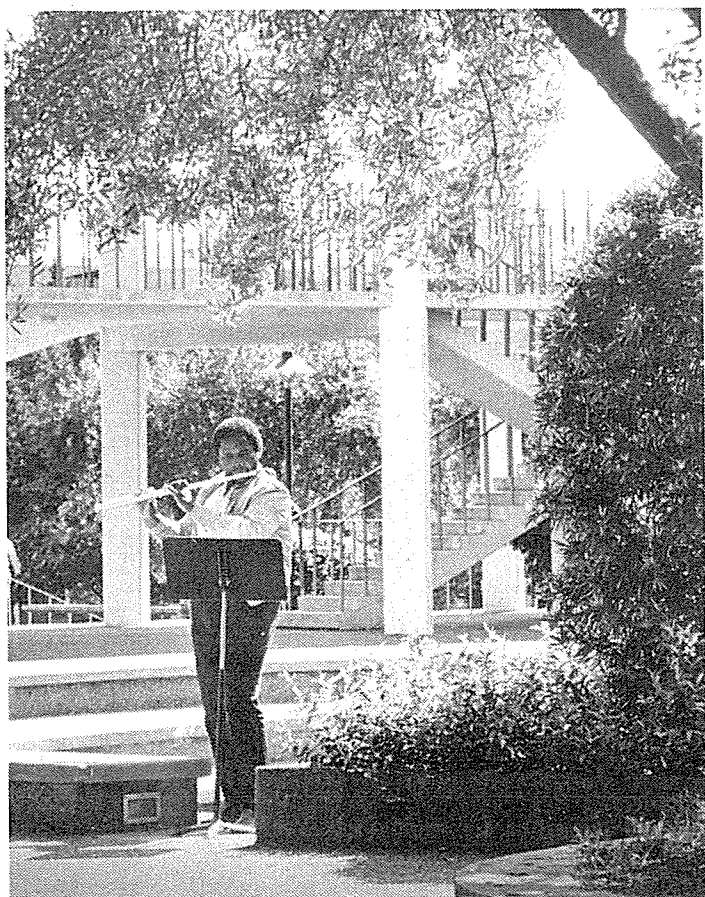
10 *admission requirements—day classes*

Counseling/Advising Appointments

Upon completion of admission requirements, new and returning students will be given an opportunity for counseling/advising prior to registration and the opening of each semester. (See Calendar on page 3 of the catalog.) Students enrolling in nine or more units must obtain program approval from a counselor/advisor before they register.

Unit Load Limitations

A normal class load is 15 units. No student will be permitted to take more than 19 units without special approval of the counselor/advisor and the Coordinator of Counseling Services.



Students working full time should limit their program to six or fewer units. Combinations of work and college study should be carefully discussed with the counselor/advisor.

A program of 12 units or more is considered a full-time load for Financial Aid, Veterans Benefits, Social Security Benefits and most other benefits which are dependent upon student enrollment status.

Auditing

Students will be allowed to register as auditors in a limited number of classes where the course repetition policy applies if they have previously enrolled for credit for the maximum number of times allowed for the particular course.

Students should register for these classes in the normal manner; they will be notified if they have reached the course repetition limit and given the opportunity to register as auditors.

An auditing fee of \$15 per unit will be payable at the time of enrollment as an auditor. Auditors will not be charged the regular enrollment fee which is paid for credit enrollment. The nonresident tuition fee will not apply to auditors. Students enrolled in six or more units for credit will not be charged a fee for auditing up to three units.

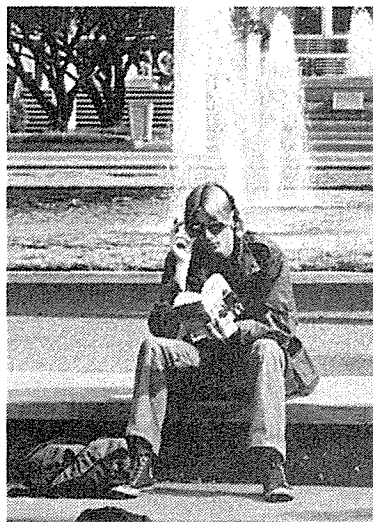
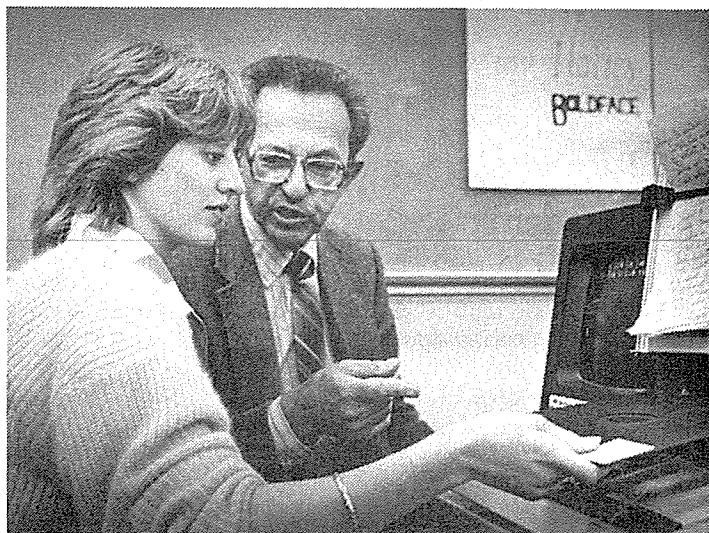
No student auditing a course will be permitted to change enrollment status in that course to receive credit.

Program Changes

Once a student has completed registration in one or more classes, program changes are not permitted during the registration period. Thereafter, students wishing to add and/or drop classes must follow the prescribed procedure as outlined in the schedule of classes. A student who stops attending a class is not automatically dropped from the roll, and may receive a penalty grade and be assessed a drop fee. It is the student's responsibility to withdraw officially from one or more classes, or from all classes, following prescribed timelines and procedures.

Withdrawal From Classes

1. A student may withdraw from a semester-length class during the first four weeks of instruction and no notation will be made on the student's academic record. In courses of less than a regular semester's duration, a student may withdraw prior to the completion of 30 percent of the period of instruction and no notation will be made on the student's academic record.
2. After the fourth week of instruction, a student may withdraw from a semester-length class, whether passing or failing, at any time through the last day of the fourteenth week of instruction and a "W" grade shall be recorded on the student's academic record. In courses of less than a regular semester's duration, a student may withdraw prior to the completion of 75 percent of the period of instruction and a "W" grade shall be recorded on the student's academic record.
3. A student who must withdraw for verifiable extenuating circumstances after the deadline may petition to the Academic Standards Committee for an exception to this policy.
4. The academic record of a student who remains in class beyond the time periods set forth above must reflect an authorized symbol other than "W" (see Index: "Grades, Grade Points").
5. A student failing to follow established withdrawal procedures may be assigned an "F" grade by the instructor.



12 *grades and scholarship*

Units Work and Credit

A "unit" of college credit normally represents one hour weekly of lecture or three hours of laboratory, or similar scheduled activity, during one semester.

Grades, Grade Point Average and Academic Record Symbols

Grades from a grading scale shall be averaged on the basis of the point equivalencies to determine a student's grade point average. The highest grade shall receive four points, and the lowest grade shall receive 0 points, using only the following evaluative symbols.

Symbol	Definition	Grade Point
A	Excellent	4
B	Good	3
C	Satisfactory	2
D	Passing, less than satisfactory	1
F	Failing	0
*CR	Credit (at least satisfactory — units awarded not counted in GPA)	
*NC	No Credit (less than satisfactory or failing — units not counted in GPA)	
I	Incomplete	0
IP	In Progress	0
RD	Report Delayed	0
W	Withdrawal	0

**Used in courses in which grades of "credit" or "no credit" are given. The units for credit count as units completed. No-credit means the student is not charged with units attempted and is not credited with units completed.*

I — Incomplete

This symbol is to be used in case of incomplete academic work for unforeseeable, emergency and justifiable reasons. Conditions for removal shall be set forth by the instructor in a written record which also indicates the grade to be assigned in the event that the student fails to meet the stated conditions. The student will receive a copy of this record, and a copy will be filed by the Director of Admissions and Records. A final grade will be assigned by the instructor when the stipulated work has been completed and evaluated. In the event that the work is not completed within the prescribed time period, the grade previously determined by the instructor will be entered in the permanent record by the Director of Admissions and Records.

An "Incomplete" must be made up no later than one year following the end of the term in which it was assigned. Established college procedures may be utilized to request a time extension in cases involving unusual circumstances. The "I" shall not be used in the computation of grade point average.

IP — In Progress

This symbol is to be used in the student's permanent record to confirm enrollment and to indicate that the class extends beyond the normal end of the term. It indicates that work is "in progress" and that unit credit and a grade will be assigned when the course is completed.

The "IP" shall not be used in the computation of grade point average.

RD — Report Delayed

This symbol is to be used only by the Director of Admissions and Records for the purpose of indicating that there has been a delay in reporting the grade due to circumstances beyond the student's control. It is to be replaced by a permanent symbol as soon as possible.

The "RD" shall not be used in the computation of grade point average.

W — Withdrawal

(See Index: "Withdrawal from Classes").

Credit/No Credit Options

Each division of the College may designate courses in which a student may elect to receive a letter grade or be graded on a "Credit/No Credit" basis.

Grade option courses allow students to explore various fields of study and to broaden their knowledge, particularly outside their major field, without jeopardizing their grade point average. Courses in which such option exists will be so designated by the Division Director in consultation with appropriate members of the division faculty.

Students electing a "Credit/No Credit" option must submit the appropriate form to the Office of Admissions and Records within the first 30% of the term. Changes will not be permitted after this time.

The utilization of courses graded on a "Credit/No Credit" basis to satisfy major or certificate requirements must be approved by the Division Director in consultation with appropriate members of the division faculty. A maximum of 12 units toward an Associate degree or 6 units toward a certificate may be applied from courses in which the student has elected a "Credit/No Credit" option.

Additionally, each division of the College may determine certain courses in which all students are evaluated on a "Credit/No Credit" basis only. These courses will be so identified in the class schedule and are exempt from the above 12/6 unit limitation.

Four-year colleges and universities vary widely in the number of units on "Credit/No Credit" courses they accept. Students should consult the catalog of the college to which they may transfer for its regulations in this regard.

Final Examinations

Final examinations are required and will be given in accordance with the final examination schedule. The final examination schedule is printed in the class schedule so that students may plan their programs to avoid conflicts or an excessive load.

Grade Reports

A student is held responsible for his/her own academic progress. Grade reports are available to each day student at mid-semester. Following final examinations at the end of the semester, the student is sent the report of his/her final grades which serves as the basis for computing the student's standing.

Transcripts

Official transcripts will be sent to employers, colleges and other institutions upon written request by the student. Only courses taken at College of San Mateo will appear on the transcript. Transcripts from high school and other colleges will not be forwarded. A fee is charged if the student has previously requested two or more transcripts.

Scholarship Honors

College of San Mateo is affiliated with the California Community College Honor Scholarship Society, Alpha Gamma Sigma. The local chapter is the Eta Chapter. Students carrying 12 units or more of graded classes in a semester and who achieve a GPA of 3.30 or higher in their semester course work will be recognized at end of the semester by inclusion on the Dean's List. Permanent membership in Alpha Gamma Sigma is awarded upon graduation if the student has maintained a cumulative GPA of 3.5 or higher for all recognized college work.

Honors at Graduation

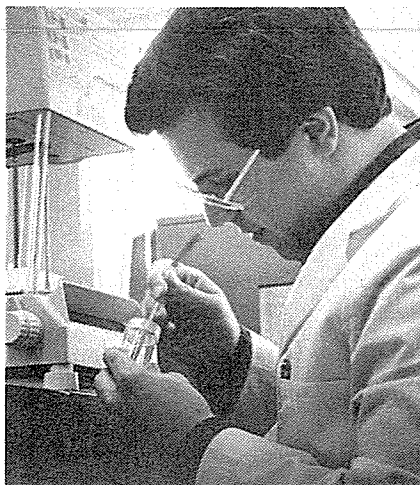
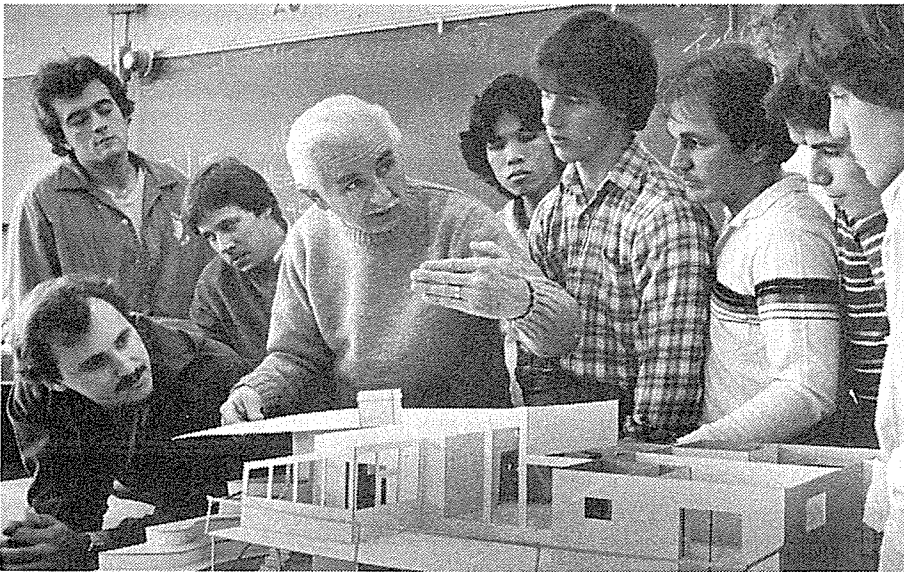
Honors are awarded to students at graduation based upon cumulative GPA as follows:

3.30 — 3.49

Graduation with Honors

3.50 — 4.00

Graduation with High Honors



Academic Standards Policy

The Academic Standards Policy of the College of San Mateo is based on a cumulative grade point average of "C" (2.0), the minimum standard required for graduation or transfer. A grade point average of less than 2.0 is considered deficient.

Grade point average (GPA) is determined by dividing the total number of grade points earned by the total number of units attempted.

Probation

A student will be placed on academic probation under the following criteria:

1. **Academic Probation based on grade point average:** A student who has attempted at least 12 semester units, as shown by the official cumulative records, shall be placed on academic probation if the student has earned a grade point average below 2.0.

2. **Academic probation based on failure to maintain satisfactory progress:** A student who has enrolled in a total of at least 12 semester units, as shown by the official cumulative record, shall be placed on academic probation when the percentage of all units in which a student has enrolled for which entries of "W," "I" and "NC" are recorded reaches or exceeds 50 percent. (See Calendar for deadline dates for withdrawal.)

The two probationary criteria described above will be applied in such a manner that a student may be placed on probation under either or both systems and subsequently may be dismissed under either or both systems.

A semester in which a student completes an official "Leave of Absence" will not be included in the tabulation of #2 above.

A probationary student may petition the Academic Standards Committee, in accordance with college procedures, for removal of his/her probationary status if it has resulted from unusual circumstances beyond the student's control.

Removal From Probation

1. A student on academic probation on the basis of grade point average shall be removed from probation when his/her cumulative grade point average is 2.0 or higher.

2. A student on academic probation on the basis of failure to maintain satisfactory progress shall be removed from probation when the percentage of units in this category no longer equals or exceeds 50 percent.

Dismissal

A student on probationary status shall be subject to dismissal if in any two subsequent semesters either or both of the following criteria are applicable:

1. The student's cumulative grade point average is less than 1.75 in all units attempted.

2. The cumulative total of units in which the student has been enrolled for which entries of "W," "I" and "NC" have been recorded reaches or exceeds 50 percent. (See "Withdrawal from Classes.")

Normally, a dismissed student must remain out of day and evening classes for one semester before petitioning the Academic Standards Committee for reinstatement.

A dismissed student may present a written appeal to the Academic Standards Committee requesting immediate reinstatement if dismissal has resulted from unusual circumstances. A registered student making such an appeal should remain in classes until the decision of the Academic Standards Committee is made.

Academic Renewal Policy

The Academic Renewal Policy will be applied only when alleviation of prior work is necessary to qualify a student for admission to a program, for transfer to another institution, for completion of a certificate program, or for graduation from the college.

A maximum of two semesters (or three quarters) and one summer intersession of work which is substandard, that is less than 2.0 grade point average, and not reflective of the student's present scholastic level of performance may be alleviated and disregarded in the computation of grade point averages under the following conditions:

1. A period of at least three years must have elapsed since the work to be alleviated was completed.

2. Students seeking alleviation must have completed nine (9) units of work with a 3.5 cumulative grade point average, or fifteen (15) units with a 3.0 cumulative grade point average, or twenty-one (21) units with a 2.5 cumulative grade point average, or twenty-four (24) units with a cumulative 2.0 grade point average since the work to be alleviated was completed.

3. A semester or quarter is defined as all work attempted during a single academic term. The terms need not be consecutive.

4. The substandard work to be alleviated may have been completed at any college or university. However, the work upon which the application for alleviation is based must be completed at one of the District colleges.

Determination of the applicability of this policy will be made only following formal application to the Office of Admissions and Records. When academic work is alleviated, the permanent record shall be appropriately annotated in a manner to insure that all entries are legible and that a true and complete record is maintained.

Attendance Regulations

Regular attendance in a class and laboratory sessions is an obligation assumed by every student at the time of registration. By being absent from class, the student misses both the content of the particular session and the continuity of the course as developed in a single period of work. When a student's failure to attend class places his/her success in jeopardy, the instructor may drop the student from class.

In all cases it is the instructor's prerogative to determine when absences are excessive. An instructor has the right to drop a student from class when such absences jeopardize the student's opportunity to successfully complete the class work or to benefit from the instruction. A guideline used by many instructors is that excessive absence is represented by twice the number of hours the class meets in one week for semester-long classes and one-ninth of scheduled meetings in classes which meet for less than a full semester.

Absence means non-attendance and includes non-attendance for illness or personal emergency. Absences due to a student's participation in a school-sponsored activity should be considered as "excused" absences, but it is the student's responsibility to notify the instructor in advance of the absence, and the student is responsible for all work missed. It is noted again that it is the instructor's prerogative to determine when such absences are excessive.

Any student dropped from a class because of this regulation may appeal in writing to the Attendance Committee within five school calendar days of such drop if there are extenuating circumstances. A student making such an appeal may, with the permission of the instructor, remain in class until the decision of the Attendance Committee is reached. The Attendance Committee will make a recommendation to the instructor after considering such an appeal.

Open Enrollment

Every course offered at College of San Mateo (unless specifically exempted by legal statute) is open for enrollment and participation by any person who has been admitted to the College and who meets the prerequisites of the course provided space is available.

Credit by Examination

A regularly enrolled student may be permitted to obtain credit for designated courses, if he/she is especially qualified through previous training or instruction and can demonstrate such qualifications, by successfully completing an examination approved by the appropriate division. Credit will not be allowed for a course for which credit has been previously granted or for which credit has been earned in a more advanced course in the same sequence. A student may earn up to 12 units through credit by examination, which will be applied toward the A.A./A.S. degree. Units earned by examination will NOT be counted for financial aid purposes. Credit by examination may also be earned through certain Advanced Placement Examinations and completion of certain specialized certificate/license programs.

A student may challenge a course for credit by examination only one time. A challenge examination may not be used in order to improve a grade already received for a course.

Academic Review Committee

The Academic Review Committee considers requests for waivers and/or exceptions with respect to academic policies. Inquiries should be directed to the Office of Admissions and Records.

Course Repetition

A. Repeat for Credit

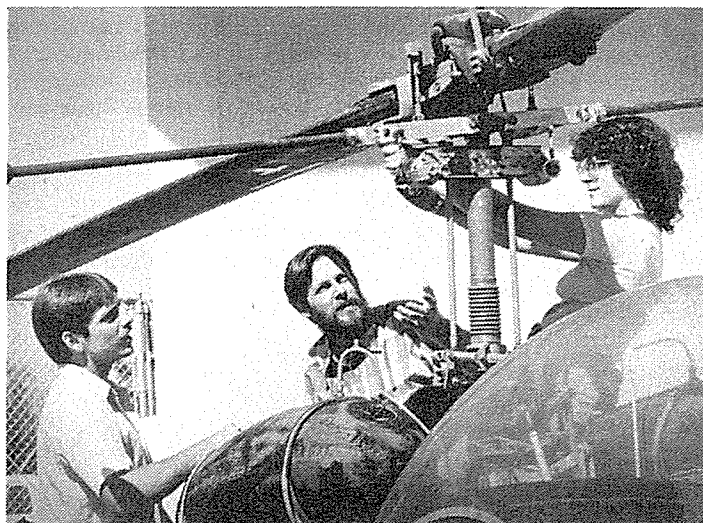
The Board of Trustees of the San Mateo County Community College District has adopted a policy (District Rules and Regulations, Section 6.12) which permits a student to repeat certain courses for credit a maximum of 3 times (total of four class enrollments). These courses require increasing levels of student performance or provide significantly different course content each subsequent semester. Such courses are designated as "may be repeated for credit" in the College catalog. Courses which are not so designated may not be repeated under this policy. Further information on this policy is available from your College counselor/advisor.

B. Grade Alleviation

A student who has received a grade of D, F, or NC in a course taken at a college of the San Mateo County Community College District may, with authorization, repeat the course one time at College of San Mateo for the purpose of grade alleviation. Under unusual circumstances, a student may petition the Dean of Student Services for permission to repeat a course more than once. On petition to the Office of Admissions and Records, the student may have the grade of the repeated course used in computation of the grade-point average. The original grade will remain on the transcript, but will no longer affect the grade point average. Course repetition completed at colleges of the San Mateo County Community College District will be honored; course repetition involving work completed at a non-district institution may be honored. Students may apply for such consideration to the Office of Admissions and Records. In no case will the unit value of a course be counted more than once. Courses in which the student has received grades other than those of D, F or NC are not subject to the provisions of this policy.

C. Special Circumstances

Under special educationally justifiable circumstances, repetition of credit courses other than those for which substandard work has been recorded may be permitted. The student must obtain prior written permission before such course repetition will be authorized. Normally, a student may repeat such a course only once. Under unusual circumstances, a student may petition the Dean of Student Services for permission to repeat a course more than once. Grades awarded for courses repeated under this provision shall not be considered in calculating the student's grade point average, and in no case will the unit value of the repeated course be counted more than once.



16 *student responsibilities*

Conduct

The principle of personal honor is the basis for student conduct. The honor system rests on the sincere belief that the college student is mature and self-respecting and can be relied upon to act as a responsible and ethical member of society. Each individual has the obligation to observe the college code of rules and regulations.

Social or other functions using the name of the College are thereby identified as college functions and become subject to the same standards of conduct and of supervision, whether conducted on or off the campus.

Social or other functions for which no college staff member is listed as a sponsor will not be considered school functions. Further, no off-campus organizations may use the name or imply college sponsorship in any publicity or other information.

Any student may be removed and/or recommended for expulsion if his/her actions on campus are disruptive of orderly and peaceful conduct of the College or are in violation of rules and regulations. In case of disciplinary action, the student will have access to established appeals procedures.

Student Grievances and Appeals

Students are encouraged to pursue their academic studies and become involved in other sponsored activities that promote their intellectual growth and personal development. The College is committed to the concept that, in the pursuit of these ends, the student should be free of unfair and improper actions on the part of any member of the academic community. If, at any time, a student feels that he/she has been subject to unjust actions, or denied his/her rights, redress can be sought through the filing of an appeal or grievance. Detailed information is provided in the **Student Guide**, which is available at the Student Activities Office. For further information concerning any aspect of student grievances or rights of appeal, students should contact the Office of the Dean of Student Services.

Fines

Fines are assessed for failure to comply promptly with library regulations, and students are also required to pay for careless or unnecessary damage to college property. Students who are delinquent in their financial obligations to the College may not receive grade reports or other records of their work until such delinquencies have been adjusted to the satisfaction of the College authorities. Future admission/registration may be denied until these delinquencies are removed.

Secret Organizations

Sororities and fraternities and other secret organizations are banned on community college campuses under the Education Code of the State of California.

Extended Absence

Students who will be absent from any class or classes for one week or longer for any health reason should request notification to instructors by the Student Health Center.

Students who will be absent from any class or classes for one week or longer for other personal emergencies should request notification to instructors by the Coordinator of Counseling Services (see Index: "Attendance Regulations").

If a medical or personal emergency requires absence of more than one week, the student should consult with his/her instructors and counselor/advisor regarding the advisability of continuing in classes.

Withdrawal from College

Students who must withdraw from **all** of their day classes after registration must obtain a Notification of Withdrawal from all Day Classes from their assigned counselor/advisor. Students not assigned to a counselor/advisor may obtain this petition from the Drop-In Advisor, Bldg. 1-201. The completed form must be returned within five college days to the Office of Counseling Services, Building 1-207. Failure to comply with this procedure may result in grades of "F" (see Index: "Program Changes").

Evening class withdrawal forms are available in the Office of Admissions and Records. Failure to comply with this procedure may result in penalty grades of "F".

If a student stops attending, the instructor will be required to issue a letter grade — NOT a "W." Under extenuating circumstances a student may petition for a "W" after the deadline date.

Withdrawal from Individual Classes

There are established procedures for withdrawing from a portion of your college program (see Index: "Program Changes").



**STUDENT SERVICES AND
ADMINISTRATIVE AFFAIRS**

Dean of Student Services

Allan R. Brown

Director of Admissions and Records

John F. Mullen

**Director of College Readiness Program/
EOPS Multicultural Center**

Jackman LeBlanc

Coordinator of Counseling Services

Steven N. Morehouse

**Director of Special Programs and
Services**

Josué Hoyos

Assistant Registrar

Norma Wyllie

Career Development Center

Carol Heitz

Re-entry Program

Carol Heitz

Coordinator of Security

Harold S. Bogan

Coordinator of Student Activities

Stephen Robison

**Enabler for Physically
Handicapped Students**

Jacqueline Rose

Financial Aid Officer

Leatha E. Webster

Foreign Student Advisor

Gerald J. Frasseti

Health Services

Leah Tarleton

Jennie Halualani

Permanent Resident Student Advisor

(Immigrant students)

Henry Cordes

Psychological Services

Anita Fisher

Noel W. Keys

Lawrence T. Stringari

Speech and Language Specialist

Mary Herman

Student Center

Bookstore Manager — Andra Morgan

Cafeteria Manager — Brett Roth

**ACADEMIC ADVISORS/
COUNSELORS**

Administration of Justice

Kern Richmond

Aeronautics

Dale W. Blust

Architecture

Ernest L. Multhaup

Robert Smith

Art

Amy Ireson

Business

John Cron

Marcia A. Mahood

Robert Michael

Rosemary Piserchio

Elizabeth Wittwer

**College Readiness Program/
EOPS Multicultural Center**

Adrian Orozco

Debbie Upshaw

Yoneo Yoshimura

Home Economics

Amy E. Ireson

Cosmetology

Agnes Williams

Computer Information

Science

Douglas B. Crawford

John Cron

Dental Assisting

Elizabeth Witzel

Drafting/Welding

Technology

Dean Chowenhill

Electronics Technology

George Bramlett

Ed Notley

Engineering

Douglas B. Crawford

Ernest L. Multhaup

Fire Science

Kern Richmond

Foreign Students

Gerald J. Frasseti

General Education

(*Liberal Arts, General Education,
Social Science, No Major Program,
Special Program, Undecided Major
Program, Career Specialists*)

Anita Fisher

Eric Gattmann

Carol A. Heitz

Robert S. Howe

Walter Kaufmann

Musonda Mantabe

Carolyn Ramsey

Kern Richmond

Caroline Silva

Horticulture

Jo Ann C. Rock

Permanent Resident

(Immigrant) Students

Henry Cordes

Language Arts

(*Dramatics, Radio,
Telecommunications,
Speech, English, Foreign
Languages, Journalism*)

Dan Odum

Pat Paoli

Mathematics

Douglas B. Crawford

Ernest L. Multhaup

Medical Assisting

Marcia Mahood

Rosemary Piserchio

Music

Dan Odum

Natural Science

William Glen

Michael L. De Gregorio

Nursing

Marlene Arnold

Caroline Silva

Physical Education

Caroline Silva

Re-Entry Program

Carol Heitz

**Technical Illustration, Machine Tool
Technology, Welding Technology**

Dean Chowenhill

Academic Advising/Counseling

Certain faculty members are officially designated as counselors/advisors. Each regular student who is enrolled in nine or more units will be assigned a counselor/advisor who is a specialist in a field. Counselors/advisors are available by appointment during the registration period and throughout the academic year to consult with students. Counselors/advisors assist students in planning programs of study; they must approve the final program for each semester and must be consulted about changes. However, each student is responsible for fulfilling his/her own graduation and/or transfer requirements.

The Office of Counseling Services will make appointments for interviews with counselors/advisors for the purpose of assisting students in the selection of a course of study with relation to a career or profession and to complete registration.

Personal counseling is available to all registered students through their counselors/advisors and/or through psychologists/counselors with specialized personal counseling skills. The staff will attempt to help students develop their full potential and obtain maximum benefit from their college experience. When appropriate, students may be referred to other offices for specialized assistance. Appointments for special services may be made in person, by telephone, through a counselor/advisor, or through the Student Health Center.

Career Development Center

The Career Development Center offers a variety of services and programs to students and members of the community designed to assist individuals in setting career goals. Several short and semester-long courses are offered which assist students in making career choices. Descriptions of individualized and group guidance class offerings are found in the Description of Courses section of this catalog under the heading Career/Personal Development.

Students and members of the community are encouraged to visit the Career Development Center, located in the Student Center. The Center is open daily from 8 a.m. to 3 p.m., and one evening per week. For information call 574-6571.

Child Care Center

The Mary Meta Lazarus Child Care Center, located at the east end of the campus overlooking the Bay, provides a comprehensive child development program. Eligible children are those from 24 months to 60 months of age whose parent(s) is(are) a student(s) at a District College. Applications are available at the Child Care Center in Building 33. For more information call 574-6279.

College Readiness Program/ EOPS Multicultural Center

The CRP/EOPS Multicultural Center is a program designed primarily to assist minority students in their pursuit of higher education. This program provides supportive counseling services (academic, financial, personal, vocational and tutorial services) as well as cultural enrichment.

The essential requirement for participation is that each student have his/her academic folder on file at the CRP office and receive counseling from the counselors assigned to the program.

Counselors are multicultural people and can easily identify with and understand the needs of Asian, Black, Hispanic, and other ethnic minority students. Counselors attempt to build relationships which are warm and real.

The offices are located in Building 20, Rooms 107-113. All personnel can be contacted at 574-6154.

Drop-In Counseling/Advising

The Drop-In Counseling/Advising Office is located in Building 1, Room 201, and is available to part-time day and evening students and members of the community who wish assistance with program planning and counseling.

Employment Services

A student employment service provided by the Employment Development Department is located in the Career Development Center to assist students currently enrolled in good standing to secure employment.

Financial Aid

The financial aid program at College of San Mateo is dedicated to the concept that no individual should be denied an education solely for financial reasons. Any student applying for admission to the College who has a financial need for assistance is urged to apply for aid.

The Financial Aid Office administers a program of grants, loans, and work-study programs which may be awarded to qualified students. The Financial Aid Office assists and encourages students to apply for grants (Cal Grant Programs A, B, and C) through the California Student Aid Commission. Students must be enrolled in a minimum of 6 units to be eligible for consideration.

All awards are based on need; the determination of need is based upon a careful analysis of family income and assets, liabilities, number of children, medical expenses, etc. While the determination of the student's financial need is geared mainly to the student's educational and vocational career plans, it is recognized that frequently the student may have personal considerations that play an important part in this determination. Each application is evaluated on an individual basis with all special and extenuating circumstances taken into consideration.

Students are advised that determination of eligibility is approximately an eight-week process from the time the application is determined complete. Students are strongly encouraged to observe application deadlines. Applications received after the established deadline will be considered subject to the availability of funds.

For detailed information regarding specific assistance programs, students should see the Financial Aid Officer, in the Administration Building, second floor, Room 221. Applications for small emergency loans are available through the Office of the Director of Counseling Services, in the Administration Building.

Handicapped Students

Students entering college with physical handicaps who need assistance through tutoring, reader services, mobility help, braille, special parking permits, access to classrooms, orientation to the campus and special arrangements, may contact the Enabler for Physically Handicapped Students. Pre-enrollment interviews are provided in order to determine the need for assistance prior to class enrollment.

Adaptive Physical Education

The Adaptive Physical Education classes are designed for students with physical limitations. Students must have a medically verified disability to enroll in any of these classes.

Speech and Language Learning Assistance

Professional staff can provide testing, individual and small-group sessions to students who need special assistance with speech and/or related problems. The program is offered in close cooperation with other services on campus relating to students with special needs.

Health Service

The Health Center Services include first aid, nursing evaluation, health counseling, rest, referral to psychologists, physicians, clinics or community agencies, arrangement for emergency transportation, hearing tests, vision screening tests, reading of TB skin tests, blood pressure reading, etc. Medical insurance application, referral and claim forms, where applicable, are available.

Absences in excess of 5 days for medical reasons should be reported to the Health Center by the student so instructors can be notified.

All entering students are required to complete a health card as part of the application. It is important that the information be completed in case of an on-campus emergency.

An ill or injured person who is unable to communicate will be sent to the emergency room at Chope Community Hospital if the student's health card does not specify a physician or other hospital and if the family cannot be reached.

Insurance

The college provides limited accident and health insurance coverage to its students in two parts. Every student enrolled is required to pay nominal fees each semester. In addition to the health services described above, the fees provide coverage for emergency sickness and/or accident **when the student is on campus or at a school sponsored event.**

In addition, the College has endorsed a voluntary health insurance program which may be purchased by students who are not covered by their own or their parents' policies. The voluntary policy provides for 24 hours around-the-clock protection at an advantageous group rate. Detailed information is available in the Student Health Center.

Learning Center

The Learning Center is designed to help students succeed academically, operating on the principle that those who come to College of San Mateo wanting to learn should be assisted in that endeavor. Students may be referred by teachers and counselors or just drop in. Tutoring is available as needed and as tutors can be provided. Also offered are discussion groups and programmed learning. Additional information is available by contacting the Learning Center.

Re-Entry Program

The Re-Entry Program is designed for individuals whose education has been postponed or interrupted. The Re-Entry class offers time to evaluate one's interests and abilities through vocational tests and heightened self-awareness. Instruction is provided in basic skills such as text reading, test taking, and math review, along with an introduction to campus facilities. Tutorial assistance and child care are available. Support through small group discussions, individual counseling and reading materials is offered in the Career Development Center. Phone 574-6571 for further information.

Scholarships

The Foundation for San Mateo County Community College District administers funds from private sources which are available to students as scholarships, loans and grants.

Scholarship applications are available through the Office of the Director of Special Programs and Services in the Administration Building.

Testing

Students enrolling in 9 or more daytime units and/or enrolling in English, math, or reading classes must complete the CSM testing requirements before enrollment. (See course descriptions.) Refer to the Schedule of Classes for test dates and further information.

The Career Development Center maintains a service in personal and vocational testing which is available to all registered students. Through this service, students may receive assistance in assessing their aptitudes and interests and in establishing their educational and vocational goals.

Special personalized testing is also available through a series of classes. Most of these Career/Personal Development classes are designed as 6 and 8-week courses which allow for flexible entry and exit. (See course descriptions.) Included in these classes are thorough explanations and interpretations of tests taken at entrance and additional tests to help the student appraise aptitudes, interests, personal adjustment, and special abilities. These tests are useful to the student to verify or make effective educational and vocational plans.

Veterans' Affairs

Eligible veterans have 10 years from the date of separation from active duty to use their educational benefits.

To initiate VA benefits, report to the VA Clerk in the Office of Admissions (Bldg. 1) and bring: (1) two copies of your DD214 (separation papers); (2) one copy of your marriage/divorce certificate; and (3) copies of birth certificates of children. Copies of all documents must be certified. Notarized photocopies are not acceptable.

Veterans who have previously attended college must have official copies of college transcripts on file with the VA Clerk in the Office of Admissions and Records. For further information, contact the Office of Admissions and Records, 574-6167.

Associated Students

The Associated Students of the College of San Mateo (ASCSM) is the official representative student government organization at the College of San Mateo. The Associated Students is charged with the responsibility of assessing and meeting student needs and of providing student input into the decision making process of the college. The activities of the organization are carried out by the **Senate** and four major committees including the Finance and Administration Committee, Public Relations Committee, Programs Committee and Services Committee.

The Associated Students is comprised of the major elected and appointed officers and representatives of the association as follows:

President

Vice President (Senate Chairperson)

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Secretary
Finance Director
Representatives to the College Committee on Instruction.
Representatives to the College Committee on Student Services
Senators (one per one thousand students)
CSM Student Trustee Representative

Senate

The **Senate** is responsible for the administrative affairs of the association including the monitoring of programs approved by the **Senate** and the representation of the association's viewpoint in college-wide matters.

The **Senate** is comprised of students elected at-large in an annual campus-wide election and is responsible for the legislative and budgetary affairs of the association and for representing student viewpoint from students in the various college divisions listed below:

Business Division
Electronics Division
Fine and Performing Arts Division
Language Arts Division
Math/Science Division
Social Science Division
Physical Education/Athletics Division
Technology & Applied Sciences Division
Liberal Arts & Unclassified Division

Finance and Administration Committee

The **Finance and Administration Committee** of the Senate is responsible for matters of budget, personnel, equipment purchase and maintenance, facilities use, election guidelines, constitutional amendments and by-law amendments sponsored by the Senate, and legislative issues.

Public Relations Committee

The **Public Relations Committee** of the Senate is responsible for the publication of the MMB senate newsletter, press releases to the public media, advertising for student participation in student government, and coordination of the student discount/I.D. program.

Programs Committee

The **Programs Committee** is responsible for providing social, cultural, recreational and educational programs and services for students. The Board is organized into student committees which have responsibility for program development in a specific area or for a specific event. Committees form depending on the priorities and interests of students. Current Programs Board Committees are as follows:

Contemporary Entertainment/Concerts
Club Programs
Speakers and Lectures

Visual Arts
Outdoor Recreation
Art and Exhibits
Multi-Cultural Programming
Recreation/Games

Programs developed or supported by the Programs Board have included such events as: Speeches by U.S. Presidential, Vice-Presidential and Congressional Candidates; Jazz Performances, Art Shows, Acoustic Concerts, Craft Shows, Spring Festivals, Film Festivals, Video Shows, Black History Programs, Cinco de Mayo Festivals, Singers, Dancers, Comedy Shows, and a wide variety of Lectures on such contemporary topics as Nuclear Energy, First Amendment Freedoms, Space Technology and U.S. Foreign Policy and Nuclear Disarmament.

Further information about the Associated Students can be obtained by contacting current student officers through the Student Activities Office or one of the following Associated Students advisors: Josué Hoyos, Director of Special Programs and Services, Bldg. 1-215; or Steve Robison, Coordinator of Student Activities, Bldg. 5-125. Meeting times for Associated Student groups are available through the Student Activities Office in the Student Center Building, 5-125.

Services Committee

The **Services Committee** of the Senate is responsible for the coordination of copy machine services, games room services, the book exchange service, the free swim and summer swim programs, instructor evaluation surveys, carpooling programs and the concessions at various campus events.

Student Activity/I.D./Discount Cards

The Associated Students offers students a photo Identification/Discount Card which allows the holder to have free or reduced price access to all Associated Students sponsored campus events and special merchant discount where community businesses also offer cash discounts to card holders. The photo identification features of the card are also accepted for Library check out purposes and check cashing identification in the Bookstore. All students are encouraged to obtain an activity card during registration each semester for \$5. Card revenues support a wide variety of student activities, services and programs which help make the College of San Mateo an exciting and enjoyable place to attend. Among the activities and services that have been supported by these fees are the Child Care Center, multicultural events, intramural sports, student scholarships and loans, the CSM par course, the guest speakers program, Student Lounge remodeling, copy machine services, game and recreational services, the merchant discount program, graphic arts services for student groups, Library lounge furniture and magazine subscriptions, and student representation in college and statewide matters affecting students. Contact the Student Activities Office in the Student Center Building for further details and a complete list of card benefits.

Student Clubs

In order to benefit the most from college life, a student is encouraged to participate in one or more of the many student clubs organized on campus. The clubs listed below offer many opportunities to students for both social and educational contacts. Each club elects its officers and plans its own program for the semester. The activities of each club depend largely upon the enthusiasm of its membership. Students are advised to contact a club advisor listed below for further details about the club or clubs in which they are interested. Additional information may be obtained by contacting the Student Activities Office located in the Student Center building.

ADAPTIVE PHYSICAL EDUCATION STUDENTS—John Hogan

ALPHA ETA RHO (Aviation)—D. Jeanne McElhatton

ALPHA GAMMA SIGMA (Honor Society)—Al Acena

ALPHA PHI OMEGA (Service)—

AMERICAN INSTITUTE of ARCHITECTS CSM CHAPTER—Paul Zimmerman

AMERICAN INSTITUTE DESIGN and DRAFTING—Dennis Stack

AMERICAN INSTITUTE of FLORAL DESIGN ALEXANDER GRAHAM CHAPTER—Don Bowman
James Roberts

ASIAN STUDENT UNION—Gladys Chaw
Yoneo Yoshimura

BAPTIST STUDENT UNION—Andra Morgan

BROADCAST RADIO and TELEVISION STUDENTS—Daniel Odum

BULLDOG BASEBALL CLUB—John Noce

BULLDOG TRACK CLUB
—Robert Rush

CHEERLEADERS—Cliff Giffin

CERAMICS CLUB—Vince Rascon

CHRISTIAN FELLOWSHIP—Robert Anderson

CIRCLE K (Service)—Wilson Pinney

COSMETOLOGY—Ann Ginieri

CYCLING CLUB—Steve Morehouse

ELECTRONICS CLUB—Roy Brixen

ETA EPSILON (Consumer Arts and Fashion Merchandising)—Grace Sonner

GAY STUDENTS UNION—Peter Chroman

HORTICULTURE—Alexander Graham

INTERIOR DESIGN—Don Bowman

INTERNATIONAL STUDENTS UNION—Zelte Crawford

JAZZ BAND—Fred Berry

LATIN AMERICAN STUDENT ORGANIZATION—
Adrian Orozco

MASSAGE CLUB—Jean Berensmeier

PEACE ACTION—Greg Davis

SAMAHAN (Filipino Club)—Yoneo Yoshimura

SKI CLUB—Stuart Williamson

UNION OF STUDENT ENGINEERS—Pat Durant

WORLDWIDE STUDENTS ASSOCIATION—
Gerald Frasseti

Student Activities Office

The Student Activities Office is a drop-in office located at the north end of the Student Center where students can come with questions regarding any aspect of the College. Services provided for students by the Student Activities Office are:

Housing Assistance

Dormitories and other types of college-sponsored housing are not available at College of San Mateo. However, the Student Activities Office maintains an up-to-date listing of housing available in the community. The majority of listings are rooms in private homes, but apartments and houses are also available.

Student Government and Clubs Information

Information concerning any aspect of student government, student activities or clubs may be obtained in the Student Activities Office. This office provides all of these groups with duplicating and publicity services. The Student Activities Office is also responsible for the supervision of the Recreation/Games Room, the Student Center Lounge, and other Student Center facility use.

Referral Services

The Student Activities Office maintains current referral listings of services available through the College and other community agencies. It can assist students through referrals to the campus Health Center, Psychological Services, Tutorial Center, Child Care Center, and through other community agencies for such services as legal assistance, family planning, women's services, etc.

Transportation Information

Bus discount tickets, bus schedules, train schedules, computerized car-pool matching services, maps, and general transportation assistance are also available through the Student Activities Office.

Campus Tours and New Student Orientation

Campus Tours and New Student Orientation programs are coordinated by the Student Activities Office each semester. Special tours of the campus by community groups can also be arranged through the Activities Office for groups of 20 persons or more.

Campus Posting Approval

All signs, flyers, or similar materials must be approved through the Activities Office as to time, place and manner of distribution prior to being posted on campus.

Copy Machine Cards

For your convenience magnetic cards for campus copy machine use may be obtained in the Student Activities Office in denominations of 100 copies for \$8, 500 copies for \$33, and 1000 copies for \$53.

For more information please drop by the Student Activities Office in the Student Center (Bldg. 5, room 125) or telephone 574-6141.

Campus Publications

The following publications are issued by College of San Mateo.

The San Matean—A student newspaper published weekly, serving a two-fold purpose of providing full coverage of activities on campus and of giving experience to journalism students.

Student Handbook—A manual for students containing information about College of San Mateo, policies and procedures, staff, student organizations and services published by the Student Activities Office.

Unicorn—A student art and literary magazine published in the spring semester, sponsored by the Language Arts Division. Each year the *Unicorn* provides a showcase for the talents of the creative writing and art classes, as well as informative and timely articles by other interested students.

Campus Activities Announcements/Calendar—A publication prepared and distributed by the Student Activities Office on a periodic basis announcing activities, new events and items of interest to the faculty and students of the College. Submit items for publication to the Student Activities Office.

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College Orientation and Self-Help Guide—An orientation guide to College of San Mateo distributed by the Office of Counseling Services. It is designed to assist new students with program planning, campus vocabulary and campus resources, and it includes recommendations to help students in registering for classes.

Athletics

College of San Mateo sponsors intercollegiate sports within the Golden Gate Conference for the benefit of those students interested in team competition. Sports offered are: Baseball, Women's Basketball, Men's Cross-Country, Women's Cross-Country, Women's Tennis, Football, Women's Softball, Men's Track and Women's Track.

College of San Mateo adheres to California State Athletic Code and Golden Gate Conference eligibility rules and regulations. Final eligibility decisions rest with the Golden Gate Conference Commissioner or the California Association of Community Colleges (CACC) Commission on Athletics.

The following basic principles pertain to all matters of eligibility:

1. In order to be eligible, a student-athlete must be continuously and actively enrolled in a minimum of any 12 credit units at his/her community college during the season of sport.
2. To be eligible for the **second season** of a sport, the student athlete must complete and pass 24 semester/36 quarter units between seasons of competition and have a college accumulative grade point average of 2.0 or above. These units must be completed and the GPA achieved prior to the **BEGINNING OF THE SEMESTER OR QUARTER** of the second season of sport. Units completed and passed during the first season of sport shall be included in the calculation of the 24 semester/36 quarter unit requirement. All units shall be completed and passed at a regionally accredited post-secondary institution.
3. A student transferring for academic or athletic participation purposes and who previously has participated in intercollegiate athletics and whose most recent participation was at another California community college, must complete **12 units in residence prior to the beginning of the semester/quarter of competition** for that college. (If a student has 5 or more years without competing at a post-secondary institution, the 12-unit residency rule shall be waived.)
4. A student-athlete who has participated in a sport dropped by his/her college and has remaining eligibility in that sport, is entitled to a waiver from the Transfer Rule (#3 above).
5. In meeting the unit requirements, courses which have been failed may be repeated, but those that have been completed with a grade of "C" or better may not be repeated. (However, to increase competency, all Physical Education activity classes may be repeated for a maximum of three times.)



A.A./A.S. Degree Requirements

Graduation from College of San Mateo with the Associate in Arts or Science degree is based upon the completion of 60 units of lower-division college-level work, including the requirements A through E listed below. An application for the degree must be filed in the Office of the Director of Admissions and Records during the last semester of attendance (refer to calendar for the college year for deadline).

Graduation requirements for an individual student shall be as listed in the College of San Mateo Catalog at the time studies begin. Those requirements may be followed throughout the student's course of study. However, if a break in attendance occurs before graduation, the graduation requirements shall become those listed in the College Catalog which is current at the time studies are resumed.

A. Residence

Either 48 units of the 60 units required or the last 12 units must be completed at the College of San Mateo.

B. Scholarship

A minimum grade point average of 2.0 in the last 60 units, and a minimum grade point average of 2.0 in courses taken at the College of San Mateo and submitted as part of the 60 units.

C. Competency Requirements

1. MATH/QUANTITATIVE REASONING

This competency requirement may be satisfied with any of the following:

a. Appropriate scores on ACT math, SAT math, or CSM Math Placement Test as follows:

ACT — standard score of 15 or above on math test;

SAT — quantitative score of 400 or above

CSM Math Test 2 — 21 or above;

CSM Math Test 3 — 21 or above;

CSM Math Test 4 — 16 or above;

b. Completion with grade C or better of an elementary algebra or higher math course at College of San Mateo or other college or university;

c. Completion with grade C or better of an intermediate algebra or higher math course in high school within four years prior to receiving the AA/AS degree;

d. Completion of any one of the following courses with grade C or better:

Any course with Mathematics 110 or higher math prerequisite
Business 115, 123

Computer & Information Science 210, 212, 220, 290

Chemistry 192

Drafting Technology 102

Electronics Technology 230

Psychology 121

Real Estate 131

Welding Technology 100

2. ENGLISH

This competency requirement may be satisfied by completion with a grade of C or better of English 800, or equivalent higher level composition course.

D. Major

A minimum of 18 units, the last 12 of which must be taken at College of San Mateo, from a list of courses specified for the major by the division involved. A grade point average of 2.0 in the major is required. These 18 units are exclusive of any units offered in satisfaction of any other A.A. or A.S. degree requirement.

A division may require more than 18 units for a given major. The additional units may, if appropriate, be used to satisfy other A.A. or A.S. degree requirements.

E. General Education

General Education introduces the student to areas of study that develop breadth of outlook and contribute to a balanced educational development. The courses are complementary to, but different in emphasis from, the specialized training one receives for a job, a profession or a particular field of study.

1. AMERICAN HISTORY AND INSTITUTIONS, CALIFORNIA STATE AND LOCAL GOVERNMENT

This requirement may be satisfied in two different ways:

a. by completing either Political Science 200: National, State and Local Government (5 units), or, for foreign students only, Political Science 205: American Society (5 units); or

(Courses used to satisfy the American History and Institutions, California State and Local Government requirement may not be used to satisfy requirements listed under 5b, Social Sciences.)

b. by completing one of the options in each of the groups listed below.

Group 1 — American History and Institutions

a. History 201, 202 — United States History (6 units), or

b. Political Science 250, 260, 210, 220, 255 or 215 (3 units), or

c. History 100, 102 — Western Civilization (6 units), or

d. History 101, 102 — Western Civilization (6 units), or

e. History 201 or 202 — plus any one of the following 3-unit history courses:

230 Economic History (3)

350 The American West (3)

260 Women in American History (3)

290 The American Labor Movement (3)

360 The South in American History (3)

242 The Afro-American in U.S. History (3)

270 Civil War and Reconstruction (3)

f. History 810 — American History and Current World Affairs (3)

Group 2 — California State and Local Government

a. Political Science 310 — California State and Local Government (2 units), or

b. Political Science 300 — State and Urban Politics (3 units), or

c. History 315 — History of San Mateo County (3 units), or

d. History 310 — California History (3 units), or

e. Sociology 200 — Urban Development (3 units), or

f. Ethnic Studies 101 or Ethnic Studies 102 (3 units)

2. LANGUAGE AND RATIONALITY

a. English, Literature, Speech

Two semester courses (6 units) are required. One of these shall be a composition course (English 800 or 100) and the other shall be selected from the following list. Courses below with the † symbol also satisfy the Communication and Analytical Thinking Requirement (2b). Credit for English 100 may be earned by those students who can demonstrate equivalent knowledge through examinations acceptable to the Language Arts Division and the Office of Instruction.

English: †100, †110, †120, †130, †140, 161, 162, †165, 195, †200, †210, †*311, †*312, †*313, †*314, 680, 690, *802, 860, 880.

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Literature: †101, †105, †111, †113, †115, †143, †151, 200, †201, †202, †231, †232, †251, †301, †302, †430, 680, 690.

Speech: †100, 111, 112, †120, 130, 680, 690, *811, *812, 825.

**Courses for non-native speakers.*

b. Communication and Analytical Thinking

This requirement may be satisfied by completing one of the following courses:

English, Literature and Speech: indicated by † in the above listing.

Accounting: 195.

Business: 123.

Math: 125, 130, 200, 219, 220, 241, 260.

Computer & Information Science: 110, 115, 120, 210, 220, 230, 240, 250, 290, 310, 320.

Social Science: 111.

3. HEALTH SCIENCE

Two units of Health Science are required (Health Science 100 (2 units) or two classes selected from Health Science 101-114, 155, 160. One unit of Consumer Arts & Science 310 may be used in lieu of Health Science 113. The requirement may be waived for veterans with one or more years active service.

4. PHYSICAL EDUCATION REQUIREMENT

Students must complete two semester-long activity courses in Physical Education (not taken concurrently), unless excused, to complete the requirements for the Associate in Arts or Associate in Science degree. The two courses used for this requirement may not be taken concurrently.

Note also that, in accordance with policy adopted by the Board of Trustees, the requirement may be waived for students in one of the following categories:

a. Graduates of community colleges or other colleges and universities.

b. Persons enrolled in Continuing Education classes (i.e., those who complete in such classes at least 60% of the courses taken at this college in fulfillment of A.A./A.S. degree).

c. Veterans with one or more years of active service.

d. Persons excused for medical reasons.

Students wishing to request a waiver for any reason not specifically provided for above, may petition for consideration through regularly established college procedures. Inquiries should be directed to the Office of Admissions and Records.

5. ADDITIONAL REQUIREMENTS

Of the following four areas, a., b., c., d., one will be satisfied by the major. (Students majoring in Liberal Studies may elect to have area a., b., or c. satisfied provided they complete at least six units in the area in fulfilling their major.) From the remaining three areas a minimum of 12 units is required with at least 3 units from each area.

a. NATURAL SCIENCE (at least 3 units)

PHYSICAL SCIENCE

Astronomy 100, 101, 110

Chemistry 100, 101, 105, 192, 210, 220, 224, 225, 231, 232, 250, 260, 410, 420

Consumer Arts & Science 113

Electronics Technology 110

Geography 100

Geology 100, 101, 130, 210, 220

Humanities 127-128*

Manufacturing Technology 100

Meteorology 100, 110

Oceanography 100

Physical Science 100, 129

Physics 100, 210, 220, 250, 260, 270

*When both Hum. 127 and 128 are taken, three units will be allowed to fulfill the Natural Science requirement and three units will be allowed toward the Humanities requirement.

LIFE SCIENCE

Biology 100, 101, 102, 110, 111, 125, 130, 131, 140, 145, 150, 160, 180, 184, 200, 210, 220, 230, 240, 243, 245, 250, 260, 265, 266

Consumer Arts & Science 310

Horticulture 311, 312, 320, 340

Paleontology 110

Majors fulfilling area a.: Biology, Chemistry, Consumer Arts & Science, Dental Assisting, Geology, Horticulture, Life Science, Nursing, Nutrition & Foods, Physical Education, Physical Science, Physics.

b. SOCIAL SCIENCE (at least 3 units)

Anthropology 110, 180

Business 101, 102

Consumer Arts & Science 412

Economics 100, 102, 108, 230

Ethnic Studies 101, 102, 150, 151, 152, 160, 261, 262, 290, 425

Geography 110

History 100, 101, 102, 110, 201, 202, 230, 242, 260, 270, 290, 310, 315, 350, 360, 425, 810

Management 140

Political Science 100, 110, 130, 150, 200, 205, 210, 215, 220, 250, 255, 260, 300, 310, 520

Psychology 100, 105, 108, 110, 201, 300, 340, 410, 480

Social Science 820

Sociology 100, 105, 110, 141, 200, 300, 340, 391

Majors fulfilling area b.: Ethnic Studies, Fashion Merchandising, Social Science.

c. HUMANITIES (at least 3 units)

Architecture 100

Art 101, 102, 103, 106, 108, 111, 141, 142, 151, 152, 350

English 110, 120, 130, 140, 802

Ethnic Studies 266, 267, 288, 350, 351, 510, 585

Film 451, 452

French 110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 161, 162, 620

German 110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 161, 162, 620

Humanities 101, 102, 111, 112, 113, 114, 125, 127, 128, 130, 131, 132, 133, 136, 140

Literature 101, 105, 111, 113, 115, 143, 151, 200, 201, 202, 231, 232, 251, 301, 302, 430

Music 100, 202, 270, 275

Philosophy 100, 190, 244, 300

Spanish 110, 111, 112, 120, 121, 122, 130, 131, 132, 133, 140, 161, 162, 251, 620

Speech 111, 112

Majors fulfilling area c.: Art, English, Foreign Language, French, German, Humanities, Music, Spanish, Speech.

d. CAREER EXPLORATION AND SELF DEVELOPMENT (at least 3 units)

Administration of Justice 100

Aeronautics 130

Architecture 666

Broadcasting Arts 110

Business 100

Career & Personal Development 112, 410, 430, 808

Consumer Arts & Science 666

Computer & Information Science 110

Cooperative Education 641-649

Drafting Technology 120

Electronics Technology 666

Engineering 666

Film 461

Fire Science 715

Journalism 110

Management 100

Manufacturing Technology 200

Medical Assisting 100

Military Science 1a

Office Administration 100

Psychology 108

Real Estate 100

Speech 100, 120

Welding Technology 300

Majors fulfilling area d.: Accounting, Administrative Assistant, Administration of Justice, Aeronautics, Architecture, Banking & Finance, Broadcasting Arts, Business, Computer & Information Science, Cosmetology, Drafting, Electronics, Engineering, Filmmaking, Fire Science, Journalism, Machine Tool Technology, Management, Mathematics, Medical Assisting, Merchandising, Office Administration, Real Estate, Technical Art/Graphics, Welding Technology.

E. Electives

All courses not included in the major requirements or specified above in the General Education requirements are considered electives.



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Students enrolling at College of San Mateo should plan a program of studies which will meet their education goals. Their objective may be to transfer to a four-year college or university. Depending on the program they follow, they may also receive an Associate in Arts or Associate in Science degree from College of San Mateo. On the other hand, their objective may be to enter an occupational field after becoming qualified through one of numerous Associate in Arts/Science degree programs or through one of several certificate programs.

If in the course of their enrollment at College of San Mateo students find it advisable to change their program of studies, they may do so, in conference with their counselors. However, students should be aware that any changes may result in extending the time necessary to fulfill all requirements.

Students have the responsibility for planning their programs.

Transfer Programs

The student who intends to transfer to a four-year college or university or to another educational institution should consult the catalog of that institution to ascertain requirements for graduation.

College catalogs and occupational information on file in the Career Development Center are accessible to the student. Students may write directly to the registrar or dean of admissions of the college of their choice to obtain catalogs, circulars of information and other data concerning required subjects.

Transfer of Credit

Students expecting to transfer to a four-year college or university can usually complete the first two years of work at College of San Mateo. Students must complete 60 transferable units to be classified as juniors upon entering a four-year college or university. In any event, it is important that they consult with their counselors/advisors in order to arrange a program which will meet the requirements for transfer to the institution of their choice.

The earlier students make a decision regarding a transfer institution, the better their chances are for meeting all requirements without delay. If they are unable to make this decision when they enter College of San Mateo, they may elect to follow a general education transfer pattern.

High school subject deficiencies may be made up at College of San Mateo in order to meet course prerequisites at college level. In some instances students may qualify for transfer to the college of their choice by maintaining an acceptable grade-point average at College of San Mateo in a minimum of 56 units of appropriate transfer courses.

Transfer Majors

Students who intend to transfer and major in one of the following fields should plan their course at College of San Mateo to meet the general requirements for junior standing, as well as the lower division departmental requirements of the college or university to which they plan to transfer. This list indicates some majors available and is not intended to be all inclusive. Students should work closely with counselors in order to fulfill both major and lower division requirements for the college of their choice, including specific courses to be taken at College of San Mateo.

Accounting
Administration
of Justice
Aeronautics
Agriculture
(Vocational)
Anatomy
Anthropology
Archaeology
Architecture
Art
Astronomy
Bacteriology
Biochemistry
Biology
Biophysics
Botany
Broadcasting Arts
Business
Administration
Business Education
Chemistry
Computer & Inf.
Science
Consumer Arts &
Science
Criminology
Dental Hygiene
Dentistry (Pre-Dental)
Dietetics
Drafting Technology
Ecology
Economics
Electronics Tech.
Engineering

Engineering Technology
English
Entomology
Ethnic Studies
Fashion
Merchandising
Finance
Foreign
Language
Forestry
French
Genetics
Geological
Sciences
Geophysics
German
Health Science
History
Horticulture
Humanities
Industrial Arts
Interior Design
International Relations
Journalism
Law (Pre-Legal)
Liberal Arts
Life Science
Machine Tool
Technology
Management
Manufacturing
Technology
Marine Biology
Marketing
Mathematics

Medical Services
Meteorology
Microbiology
Music
Nursing
Nutrition
Office Administration
Optometry
(Pre-Optometry)
Paleontology
Personnel Relations
Pharmacy
Philosophy
Photography
Physical Education
Physical Therapy
Physics
Physiology
Political Science
Psychology
Public Health
Real Estate
Recreation
Social Science
Sociology
Spanish
Speech
Technical Art/Graphics
Transportation
Veterinary Medicine
(Pre-Veterinary)
Welding Technology
Wildlife Conservation
(Management)
Zoology

california state universities general education requirements 27

Graduation from the California State Universities requires the completion of a general education program (48 units) with at least 39 units chosen under specific limitation from the areas of (A) Communications in the English Language and Critical Thinking (B) Physical Universe and its Life Form, (C) Arts, Literature, Philosophy, and Foreign Language (D) Social, Political, and Economic Institutions. (At least nine of the 48 units shall be earned at the campus granting the baccalaureate degree.) In addition to the 39 units, the elective units may include any transferable courses outside the area of the major. College of San Mateo will certify completion of the general education requirement (39 units) or the completion of specific area requirements if the student satisfies the following requirements.

AREA A: Communications in the English Language and Critical Thinking. Nine units required in two of the three areas—must include English 100.

A1—Oral Communications
English 311, 312, 313, 314
Speech 100, 112, 120, 130

A2—Written Communications
English 100

A3—Critical Thinking
English 165
Social Science 111

AREA B: Physical Universe and its Life Forms. Nine units required. One course each from Physical Science (B1), Life Science (B2), and Math Concepts (B4). Must include one lab course (B3, marked with *).

B1—Physical Science
Astronomy 100, *101
Chemistry 100, *210 *224, *410
Geography 100
Geology 100, 101, *210, *220
Humanities 127-128
(See course description)
Meteorology 100
Oceanography 100, *101
Physics 100, *210, *250
Physical Science 100, 129

B2—Life Science
Biology 100, 101, 102, *110, *111
125, 130, *131, 140, 145, *150, 180,
184, *200, *210, *220, *320, *245, *250
Paleontology 100

B4—Math Concepts, Quantitative Reasoning and Application
Business 123
Computer/Information Science
230/231, 240/241, 250/251
Mathematics 120, 125, 130, 200, 219
220, 241, 242, 260, 261, 262
Psychology 121

AREA C: Arts, Literature, Philosophy, and Foreign Language. Nine units required. Select one course from three different subject areas.

Architecture 100
Art 101, 102, 106, 108, 111, 350
English 110, 120, 130, 140
Ethnic Studies 267, 288, 350, 351
510, 585
Film 451, 452, 461, 462
French 110, 111, 112, 120, 121,
122, 130, 131, 132, 140, 161, 162,
201, 202

German 110, 111, 112, 120,
121, 122, 130, 131, 132, 140,
161, 162, 201, 202
Humanities 101, 102, 111, 112, 113
114, 125, 127, 128, 130, 131, 132
133, 136, 140
Japanese 110, 111, 112, 120, 121, 122
Literature 101, 105, 111, 113, 115,
143, 151, 200, 201, 202, 231, 232,
251, 301, 302, 430

Music 100, 202, 270, 275
Philosophy 100, 190, 244, 300
Spanish 100, 111, 112, 120, 121,
122, 130, 131, 132, 133, 140
161, 162, 201, 202, 251
Speech 111

AREA D: Social, Political and Economic Institutions. Nine units required. Select one course from three different subject areas.

Anthropology 110, 130, 180
Business 100
Economics 100, 102, 108, 230
Ethnic Studies 101, 102, 150, 151, 152,
160, 261, 262, 290, 425
Geography 110

History 100, 101, 102 110, 210, 202,
230, 242, 260, 270, 290, 310,
315, 350, 360, 402, 425
Journalism 110

Political Science 100, 110, 130, 150,
200, 205, 210, 215, 220, 250, 255,
260, 300, 310, 520, 550
Psychology 100, 110, 201, 300, 340, 410
Sociology 100, 105, 110, 141,
200, 300, 340, 391

AREA E: Lifelong Understanding and Self Development. Three units required.

Business 101
Career/Personal Development
137, 140, 430

Consumer Arts/Science 310
Health Science 100, 101, 102, 103,
105, 106, 109, 111, 112, 113, 114, 160

Psychology 108

In addition to the G.E. requirements listed above, The California State Universities require all graduates to satisfy a requirement in U.S. History, American Government, and California State and Local government. Individual campuses may also have additional requirements in the upper division. It is important that you consult the catalog of the transfer institution and discuss the requirements with your counselor/advisor.

28 college of san mateo courses transferable toward baccalaureate degree credit 1985-86

Courses which College of San Mateo designates as appropriate for baccalaureate credit are accepted by any of the California State Universities for credit toward a baccalaureate degree. Below are listed the courses given at College of San Mateo which are transferable toward a baccalaureate degree.

Accounting 100, 111, 112, 195, 641, 680, 690

Admin. of Justice 100, 102, 104, 106, 108, 120, 125, 140, 141, 142, 150, 153, 165, 170, 649, 680, 690

Aeronautics 100, 101, 102, 115, 126, 130, 300, 301, 310, 311, 320, 321, 330, 331, 340, 341, 350, 351, 360, 361, 370, 371, 649, 680, 690

Anthropology 110, 180, 680, 690

Architecture 100, 112, 114, 115, 117, 118, 120, 125, 130, 140, 145, 170, 210, 220, 230, 240, 644, 666, 680, 690

Art 101, 102, 103, 106, 108, 111, 141, 142, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 201, 202, 206, 207, 214, 220, 223, 224, 231, 232, 237, 238, 241, 242, 301, 305, 310, 328, 336, 350, 351, 352, 353, 354, 355, 405, 411, 412, 416, 642, 680, 690

Astronomy 100, 101, 110, 680, 690

Biology 100, 101, 102, 110, 111, 125, 130, 131, 140, 145, 150, 160, 180, 184, 200, 210, 220, 230, 240, 243, 250, 260, 265, 266, 644, 680, 690

Broadcasting Arts 110, 115, 131, 132, 135, 192, 195, 231, 232, 241, 242, 243, 301, 642, 680, 690

Business 100, 101, 102, 115, 123, 129, 140, 150, 160, 170, 175, 180, 185, 190, 201, 202, 204, 270, 271, 272, 273, 274, 275, 276, 279, 401, 641, 680, 690

Career/Personal Development 112, 140, 410, 430, 680

Chemistry 100, 101, 105, 192, 210, 220, 224, 225, 231, 232, 250, 260, 410, 420, 680, 690

Computer and Information Science 100, 110, 115/116, 120, 150, 210/211, 212/213, 220/221, 230/231, 232/233, 240/241, 250/251, 290/291, 300/301, 306/307, 310/311, 320, 330/331, 350/351, 360/361, 644, 680, 690, 695

Consumer Arts & Science 110, 113, 116, 117, 118, 151, 152, 154, 301, 302, 310, 412, 450, 642, 666, 680, 690

Cooperative Education 641, 642, 643, 644, 645, 646, 647, 648, 649 with a maximum of 12 units.

Dance 121, 130, 132, 141, 143, 148, 360, 380, 411, 412, 642, 680, 690

Drafting Technology 120, 201, 202, 301, 302, 400, 649, 680, 690

Economics 100, 102, 108, 230, 680, 690

Electronics 110, 200, 230, 250, 252, 260, 270, 280, 300, 302, 310, 330, 350, 360, 362, 380, 649, 680, 690

Engineering 111, 120, 150, 160, 200, 220, 230, 260, 270, 644, 666, 680, 690, 700

English 100, 110, 120, 130, 140, 161, 162, 165, 195, 200, 210, 311, 312, 313, 314, 643, 680, 690

Ethnic Studies 101, 102, 150, 151, 152, 160, 261, 262, 267, 288, 290, 350, 351, 425, 510, 585, 680, 690

Film 451, 452, 461, 462

Fire Science 649, 680, 690, 700, 705, 710, 712, 715, 720, 725, 730, 732, 740, 745, 750, 755, 756, 760, 771, 772, 781, 782

French 110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 161, 162, 201, 202, 620, 680, 690

Geography 100, 110, 680, 690

Geology 100, 101, 130, 210, 220, 680, 690

German 110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 161, 162, 201, 202, 620, 680, 690

Health Science 100, 101, 102, 103, 105, 106, 109, 111, 112, 113, 114, 155, 160, 646, 680, 690

History 100, 101, 102, 110, 201, 202, 230, 242, 260, 270, 290, 310, 315, 350, 360, 425, 680, 690

Horticulture 311, 312, 315, 320, 327, 330, 340, 341, 342, 411, 412, 413, 415, 416, 420, 649, 680, 690, 701, 702, 705, 706, 709, 711, 712, 721, 722, 731, 741, 742, 771, 772, 773, 774, 775, 776

Humanities 101, 102, 105, 111, 112, 113, 114, 125, 127, 128, 130, 131, 132, 133, 136, 140, 680, 690

Japanese 110, 111, 112, 120, 121, 122

Journalism 110, 120, 300, 310, 643, 680, 690

Library Studies 100

Literature 101, 105, 111, 113, 115, 143, 151, 153, 200, 201, 202, 231, 232, 251, 301, 302, 430, 643, 680, 690

Machine Tool Technology 102, 111, 121, 230, 649, 680, 690

Management 100, 105, 110, 120, 125, 130, 135, 140, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 300, 301, 303, 305, 320, 324, 328, 332, 336, 340, 680, 690

Manufacturing & Industrial Technology 100, 101, 120, 200, 649, 680, 690

Mathematics 110, 111, 112, 115, 120, 125, 130, 200, 219, 220, 241, 242, 260, 261, 262, 263, 270, 275, 413, 414, 415, 416, 417, 680, 690

Medical Assisting 110, 140

Meteorology 100, 110, 680, 690

Military Science 1a-b, 12a-b.

Music 100, 101, 102, 103, 104, 131, 132, 133, 134, 150, 170, 202, 270, 275, 301, 302, 303, 304, 320, 340, 360, 371, 372, 402, 403, 430, 440, 445, 451, 452, 453, 460, 470, 480, 490, 495, 642, 680, 690

Nursing 211, 212, 221, 222, 231, 232, 241, 242, 649, 680, 690

Oceanography 100, 101

Office Administration 100, 110, 111, 120, 200, 210, 211, 230, 300, 304, 305, 315, 440

Paleontology 110

Philosophy 100, 244, 300, 680, 690

Physical Education All classes in the following series: 100-199, 200-299, 300-399, 400-499, 600-699

Physical Science 100, 129

Physics 100, 210, 220, 250, 260, 270, 680, 690

Political Science 100, 110, 130, 150, 170, 200, 205, 210, 215, 220, 250, 255, 260, 300, 310, 520, 680, 690

Psychology 100, 105, 108, 110, 121, 201, 300, 340, 410, 480, 680, 690

Real Estate 100, 105, 110, 121, 131, 141, 143, 145, 200, 210, 215, 220

Social Science 111, 648, 680, 690

Sociology 100, 105, 110, 141, 200, 300, 340, 391, 680, 690

Spanish 110, 111, 112, 120, 121, 122, 130, 131, 132, 133, 140, 161, 162, 201, 202, 251, 620, 680, 690

Speech 100, 111, 112, 120, 130, 184, 680, 690

Technical Art/Graphics 201, 202, 210, 220, 300, 310, 351, 352, 400, 642, 680, 690

Welding Technology 110, 111, 120, 121, 210, 211, 220, 221, 300, 680, 690



Other Colleges and Universities

Requirements for junior standing at universities and colleges other than those of the California State public systems can be obtained from the catalog of the institution to which a student may intend to transfer. Catalogs for accredited universities and colleges to which College of San Mateo students most often transfer are available in the CSM Library and in the Office of Student Services.

University of California

A student planning to transfer to one of the campuses of the University of California can usually complete the first two years of his or her work at College of San Mateo. In some cases, students may wish to make up high school course deficiencies or grade point average deficiencies. Using the general catalog of the University campus to which you plan to transfer, it is important to work with your counselor/advisor in planning your program. The current issue of the University publication "Prerequisites and Recommended Subjects" is a helpful planning guide. It lists the requirements for admission, breadth requirements and requirements for the major, all of which should be carefully considered in planning your program at CSM.

30 *courses from college of san mateo acceptable at university of california (all campuses)*

This information represents that most current at the time of publication of this catalog. The College of San Mateo recommends strongly that you discuss the transferability of courses to the University of California with your counselor/advisor, who may have more recent information and who can assist with the interpretation of the course applicability to various major programs.

NOTE: Courses enclosed in parentheses are transferable with limitation. See your counselor/advisor for details.

Accounting 111, 112

Administration of Justice 100, 102, 104, 108

Anthropology 110, 180, 680, 690

Architecture (100, 112, 120, 130, 140, 145, 210, 220, 230, 240)

Art 101, 102, 103, 106, 108, 111, (201, 202, 206, 207, 214, 220, 223, 224, 231, 232, 237, 238, 301, 305, 310, 350, 351, 352, 353, 354, 355, 405, 411, 412, 416)

Astronomy 100, 101, 110

Biology 100, (101), 102, 110, 125, 140, (145), 150, 160, 180, 184, (200), 210, 220, 230, 240, 250, 260

Business (123, 201, 202)

Chemistry (100), 101, 105, 210, 220, (224, 225), 231, 232, 250, 260, 410, 420

Computer/Information Science 110, 150, (210/211, 212/213, 230/231, 240/241, 250/251, 290/291), 310/311

Consumer Arts & Science (110, 113, 118), 310

Cooperative Education (641-649) (1-4; maximum 6 units in otherwise transferable areas only.)

Dance 121, 130, 132, 141, 143, 148, 360, 380, 411, 412

Economics 100, 102, 230

Engineering (111, 200, 220, 230, 260, 270, 666)

English 100, 110, 120, 130, 140, 161, 162, 165, 200, 210, (311, 312, 313, 314), 411

Ethnic Studies 101, 102, 150, 151, 152, 160, 261, 262, 267, 288, 290, 350, 351, 425, 510, 585

Film 451, 452, 461, 462

French (110, 111, 112, 120, 121, 122, 130, 131, 132, 140), 161, 162, 201, 202, 620

Geography 100, 110

Geology (100, 101, 130, 210), 220

German (110, 111, 112, 120, 121, 122, 130, 131, 132, 140), 161, 162, 201, 202, 620

Health Science (100, 101, 102, 103, 105, 106, 109, 111, 112, 160)

History 100, 101, (102), 110, (201, 202), 230, 242, 260, 270, 290, 310, 315, 350, 360, 425

Humanities 101, 102, 111, 112, 113, 114, 125, 127, 128, 130, 131, 132, 133, 136

Japanese (110, 111, 112, 120, 121, 122)

Journalism 110, (120)

Literature 101, 105, 111, 113, 115, 143, 151, 153, 200, 201, 202, 231, 232, 251, 301, 302, 430

Mathematics 125, (200, 219, 220, 241, 242, 260, 261, 262, 263), 270, 275

Meteorology 100

Military Science 1a, 1b, 12a, 12b

Music 100, 101, 102, 103, 104, 131, 132, 133, 134, (150, 170), 202, 270, 275, (301, 302, 303, 304, 320, 340, 360, 371, 372, 402, 403, 430, 440, 445, 451, 452, 453, 460, 470, 480, 490, 495, 496)

Oceanography 100, 101

Paleontology 110

Philosophy 100, 300

Physical Education All classes in the following series: (100-199, 200-299, 300-399, 400-499, 600-699)

Physical Science 100, 129

Physics (100, 210, 220, 250, 260, 270)

Political Science 100, 110, 130, 150, 200, 205, 210, 215, 220, 250, 255, 260, (300, 310, 520)

Psychology 100, 105, (108), 110, 121, 201, 300, 340, 410, 480

Social Science 111

Sociology 100, 105, 110, 141, 200, 300

Spanish (110, 111, 112, 120, 121, 122, 130, 131, 132), 133, 140, 161, 162, 201, 202, 251, 620

Speech 100, (111, 112, 120, 184)

SPECIAL NOTE:

The following courses are also transferable:

(640, 641, 642, 643, 644, 645, 646, 647, 648, 649),
Cooperative Education in Division,
(680) Special Seminar in Department
(690) Individual Study in Department

Occupational Programs

Specialized occupational programs are offered in more than fifty occupational fields (see tabular listing which follows) for students planning to prepare for gainful employment. All occupational programs are carefully developed by advisory committees composed of college staff and selected representatives from the business and industrial community.

These programs are designed to develop personal and technical competencies necessary for successful employment and job advancement.

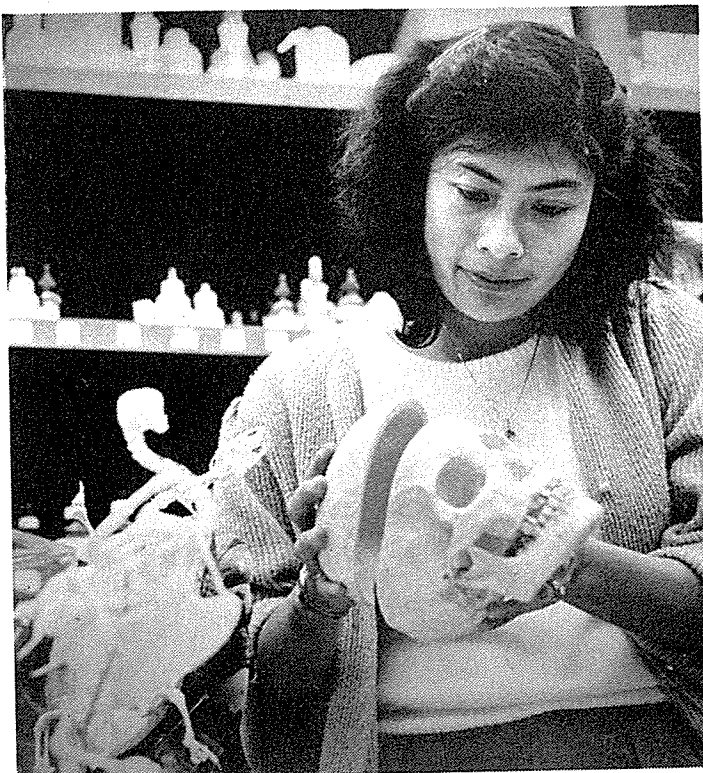
Two-Year Occupational Programs — AA or AS Degree

All two-year programs lead to an Associate in Arts or Associate in Science degree. Many of the units earned in occupational programs are accepted by four-year colleges as meeting certain requirements.

Certificate Programs

Certificates are awarded upon successful completion of selected occupational programs. Some certificates require less than two years of full-time study. To be eligible for a certificate, a student must pass all required certificate courses with a grade of "C" or better, unless specified otherwise (see specific program).

Certificates may be earned through day or evening part-time enrollment or during regular full-time enrollment.



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A.A./A.S. degree and certificate career programs

Occupational Area Curriculum	A.A./A.S. Degree	Certificate
Administration of Justice	•	•
Aeronautics		
Aircraft Maint. Tech.	•	
Airframe/Powerplant Maintenance Tech.	•	•
Commercial Pilot Tech.	•	•
Pilot Technology	•	
Banking & Finance		
Banking Operations		•
Credit & Lending		•
Broadcasting Arts		
Broadcast Engineering (Radio & Television)	•	•
Radio Broadcasting—General	•	•
Radio Broadcasting—Operations	•	•
TV Broadcasting—General	•	•
TV Broadcasting—Operations	•	•
Building Inspection		•
Business Operations		
Accounting	•	•
Administrative Assistant	•	•
Business Administration	•	
Escrow	•	•
Business Mgmt.	•	•
Small Business Mgmt.	•	•
Industrial Mgmt.	•	•
Manufacturing Mgmt.	•	•
Marketing Mgmt.	•	•
Office Administration	•	
Admin. Secretary Option		•
Legal Off. Admin. Option		•
Staff Assistant Option		•
Word Processing Option		•
Medical Assisting	•	•
Medical Transcription		•

Occupational Area Curriculum	A.A./A.S. Degree	Certificate
Computer/Information Science	•	
Business Applications		
Programmer/Analyst		•
Scientific Applications		
Programmer/Analyst		•
Computer Operator		•
Cosmetologist	•	•
Drafting Technology	•	•
Electronics Technology	•	•
Fire Science Technology	•	•
Health Care		
Dental Assisting		•
Registered Nursing	•	
Horticulture		
Environmental Hort.	•	•
Floristry		•
Ornamental Hort.	•	•
Pest Control		•
Interior Design	•	•
Interior Design—ASID		•
Machine Tool Technology	•	•
Manufacturing/Industrial Technology	•	•
Merchandising		
Fashion Merchandising	•	•
General Merchandising	•	•
Merchandising Management	•	•
Nutrition & Foods	•	•
Real Estate	•	•
Technical Art/Graphics	•	•
Transportation	•	•
Welding Technology	•	•

For information on other occupational programs in the District, call Cañada College, 364-1212, or Skyline College, 355-7000.

Administration of Justice

Associate in Science Degree with a Major in Administration of Justice

This program is designed for both transfer and nontransfer students. Twenty-four units with an overall GPA of 2.0 or better in Administration of Justice courses are necessary for the major. It is recommended that the transfer student take the five core courses plus ADMJ 120 and Engl 430, and concentrate in the area of general education for transfer in junior standing to a four-year institution.

Requirements

Semester Units

ADMJ 100, 102, 104, 106, 108, 120; Engl. 430; and three elective units 24

Suggested Electives: ADMJ 165 is highly recommended for transfer students; ADMJ 125, 150, 153 are also desirable.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Programs

These programs, offered to police officer classification and qualified pre-service students, consist of the following pre-service courses: Introduction (3 units), Principles and Procedures of Justice System (3 units), Criminal Law (3 units), Criminal Evidence (3 units), Police Community Relations (3 units), Criminal Investigation (3 units), and Traffic Supervision and Control (3 units). Students who complete these courses receive a Certificate of Completion and college credit, which may be applied to the Associate in Science degree.

Verification of completion will be issued for the following special courses upon completion with a grade of C or better. Elective credit may be applied to the A.S. degree.

ADMJ 755 Advanced Officer Training	1-2 units
ADMJ 760 Peace Officer Orientation	1 unit
ADMJ 762 Security Baton	1 unit
ADMJ 766 Police Firearms, Chemical Agent	1/2-1 units
ADMJ 770 Advanced Dispatcher/Clerk	1-2 units
ADMJ 771 Reserve Officer Basic Training Module A	2 units
ADMJ 772 Reserve Officer Basic Training Module B	2 units
ADMJ 773 Reserve Officer Basic Training Module C	6 units
ADMJ 774 Reserve Officer Basic Training III	6 units

Aeronautics

Transfer programs are available for four-year degree curricula at San Jose and San Francisco State Universities and other institutions which provide Aeronautics or Design and Industry majors.

Aeronautics— Airframe and Powerplant Technology

Associate in Science Degree with a Major in Airframe and Powerplant Technology

Recommended High School Preparation: Elementary Algebra, Intermediate Algebra, Plane Geometry, Drafting, General Shop, Physics, or Physical Sciences. Students should check course descriptions and prerequisites and discuss recommended sequence with counselors/advisors.

Because of Federal Aviation Administration regulations regarding attendance and performance, the following special rules apply to all Maintenance courses Aero 300 through Aero 370: 1) Any time missed during one of these courses must be made up before the end of the semester. If more than three days or 18 hours are missed in any one course, the student will receive a "W," and the course must be repeated before he/she is eligible to enroll in an advanced course. 2) Anything less than 70% (letter grade of C) will be considered a failing grade. A final examination will be given at the end of each eight-week course. Failure to achieve a 70% on this final examination will require that the course be repeated before the student can enroll in an advanced course.

Career Opportunities: The student who completes courses and obtains a Federal Aviation Certificate and Associate in Science degree in Airframe and Powerplant Technology has excellent opportunities for steady employment by airlines as well as other aircraft operations.

Requirements

Semester Units

Airframe: Aero 350, 351, 370, 371	13
Powerplant: Aero 340, 341, 360, 361	13
Total	26

If a student has an airframe or powerplant license, upon application to the Aeronautics Department, 7 units of credit may be granted. If a student wishes to have an A.S. degree in Airframe and Powerplant, a minimum of 6 units from the following list of technical electives is required, plus the airframe or powerplant curriculum lacking: Mfg. 100, E.T. 110, 280, Drafting 120, Welding 300, Phys. 100.

Requirements

Semester Units

FAA Airframe or Powerplant license (equivalent)	7
Powerplant: Aero 340, 341, 360, 361	13
Airframe: Aero 350, 351, 370, 371	
Technical Electives (6 units required)	
Mfg. 100; E.T. 110, 280;	
Drafting 120; Welding 300; Phys. 100	6
Total	26

If a student wishes to obtain an A.A. or A.S. degree in some other major, the 7 units may be used for elective credit. General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program

Students may apply for a Certificate in Airframe and Powerplant Technology upon completion of the following courses:

Requirements

Semester Units

Aero. 340, 341, 350, 351, 360, 361, 370, 371	26
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Aeronautics— Aircraft Maintenance Technology

Associate in Science Degree with a Major in Aircraft Maintenance Technology

This major is designed especially for the student who already possesses both the airframe and powerplant licenses granted by the F.A.A. Upon application to the Aeronautics Department, a student may receive 13 units of credit toward an Associate in Science degree in Aircraft Maintenance Technology. Applicants must have completed 12 units at College of San Mateo with a 2.5 G.P.A. and be enrolled at the College at the time of application. In addition, a minimum of 12 units is required from the list of selected electives as indicated below:

34 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Requirements

E.A.A. Airframe and Powerplant licenses
(equivalent) 13

Select 12 units from the following courses:

Drafting 120; E.T. 110, 280; Phys. 100; Mfg. 100;
Welding 300; 12
Total 25

If a student wishes to obtain an A.A. or an A.S. degree in some other major, the 13 units may apply toward elective credit.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Aeronautics— Commercial Pilot

Associate in Science Degree with a Major in Commercial Pilot

Recommended High School Preparation: Intermediate Algebra, Plane Geometry, Drafting, Trigonometry, General Shop, and Physics or Physical Sciences or Business Administration. Students should check course descriptions and prerequisites, and discuss recommended sequence with counselors/advisors.

Designed for the student who plans to become a commercial pilot, flight instructor, airline pilot or fixed-base operator. This program may also be used as basic training for aviation business and entrance into air traffic control employment.

Requirements

Aero. 100, 101, 102, 115, 126, 137 18
Meteo. 100 or 110 3
Total 21

General Education and other requirements for A.S. degree: (see Index: "General Education").

Certificate Program

Students may apply for a Certificate in Commercial Pilot upon completion of the A.S. degree major requirements listed above, with grades of C or better.

Aeronautics— Pilot Technology

Associate in Science with a Major in Pilot Technology

This major is designed especially for the student who already possesses a commercial pilot, instrument, and multi-engine license or an airline transport pilot license. Upon application to the Aeronautics Department, a student may receive eleven units of credit toward an Associate in Science degree in Pilot Technology. Applicants must have completed 12 units at College of San Mateo with a 2.5 G.P.A. and be enrolled at the College at the time of application. In addition, the student must take an additional twelve units from the selected electives listed below.

Requirements

Commercial, instrument, and multi-engine license
or air transport license (equivalent) 11

Select 12 units from the following courses

Aero. 115, Bus. 101; CIS 110; E.T. 110; Bus. 100;
Mfg. 100; Phys. 100; Astr. 100 12
Total 23

If a student wishes to obtain an A.A. or A.S. degree in some other major, the eleven units may apply toward elective credit.

Semester Units

Agriculture

Transfer Program

Recommended High School Preparation: Chemistry, Physics, Elementary Algebra, Intermediate Algebra, Geometry, Trigonometry, Mechanical Drawing, two years in one foreign language.

The student who intends to transfer a major in Agriculture should plan a course at College of San Mateo to meet the general requirements for junior standing, as well as the lower division requirements of the specific college or university.

Apprenticeship Training

Classes of Related training are offered for apprentices in certain trades as indicated in the section on curriculum for Apprenticeship Training. These classes follow the course outlined by the State Bureau of Apprenticeship Standards.

Archaeology

(See Anthropology courses.)

Architecture— Architectural Engineering, Landscape, City and Regional Planning

Students who plan to transfer to a university or college offering a professional program in Architecture should consult the catalog of the advanced institution of their choice, and then arrange a schedule of suitable transfer courses.

Architecture

Associate in Science Degree with a Major in Architecture

Recommended High School Preparation: Academic program including Mathematics (4 years), Science (4 years), English (4 years), Art (1 year), Mechanical Drawing (1 semester). Students should check course descriptions and prerequisites, and discuss recommended sequence with an architectural counselor/advisor. Courses listed below are transfer requirements; those marked with an asterisk are A.S. degree requirements.

Requirements

Architecture 100, 120*, 130*, 140*, 145, 170,
210*, 220*, 230*, 240*; Engr 150, 160 36

Suggested Electives: Architecture 112, 114, 115, 117, 118, 125; Math 241, 242 and Phys. 210, 220 or Math 260, 261, 262, 263 and Phys. 250, 260, 270 as required by transfer institution.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Art

Associate in Arts Degree with a Major in Art

Requirements

Art 201, 301, plus 12 units from courses
in the Art Department 18

Semester Units

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Art — Commercial

Associate in Arts Degree with a Major in Commercial Art

Recommended High School Preparation: Design, Drawing, Painting and Poster Service.

Career Opportunities: Commercial artists may be employed in advertising, manufacturing, public relations or communications. Experienced artists frequently specialize in a particular product or field such as fashion, industrial art, advertising, story illustration or interior design.

Requirements	Semester Units
Art 201, 202, 206, 207, 301, 310, 328	21

Students should check course descriptions and prerequisites, and discuss recommended sequences with counselors/advisors.

Technical Art/Graphics 351	2
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Suggested Electives: Art 214, 223, 231, 241, 305; Bus. 175; CRER 410; Spch 100.

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Art — Interior Design

Associate in Arts Degree with a Major in Interior Design

Requirements	Semester Units
Art 145, 147, 148, 149, 151, 152, 153, 157, 453	24

Suggested Electives: Additional courses in art or floristry.

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Certificate Program

Requirements	Semester Units
Art 145, 147, 148, 149, 151, 152, 153, 155, 156, 157	28

Suggested Elective: Art 152

Certificate Program II — ASID

An expanded program which stresses drawing skills, knowledge of materials and the esthetics of interior design principles. Meets ASID student chapter requirements.

Requirements	Semester Units
Art 101, 102, 145, 147, 148, 149, 151, 152, 153, 155, 156, 157, 201, 301, 642 (3 units), 690 (1 unit); CA&S. 113	48

Select 9 units from the following courses:

Art 103, 231, 310, 411	11
Total	60

Art — Painting

Associate in Arts Degree with a Major in Painting

Requirements	Semester Units
Art 201, 202, 207, 214, 223, 231, 237, 405	24

Students should check course descriptions and prerequisites and discuss recommended sequences with counselors/advisors.

Suggested Electives: Art 101, 102, 103, 406

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Art — Photography

Associate in Arts Degree with a Major in Photography

Requirements	Semester Units
Art 201 or 301 or 350, 351, 352, 353, 354, 355	18

Suggested Electives: Art 101, 214, 237; Film 461; Technical Art/Graphics 351, 352

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Broadcasting Arts — Broadcast Engineering

Associate in Arts Degree with a Major in Broadcast Engineering and Certificate Program

Requirements	Semester Units
E.T. 200; Bcst 115, 131, 231, 301, 302, CIS 110	24

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Broadcasting Arts — Radio Broadcasting — General

Associate in Arts Degree with a major in Radio Broadcasting — General, and Certificate Program.

Requirements	Semester Units
Bcst 110, 115, 131, 132, 194, 231; CIS 110; plus six units from Bcst 192, 194, 642, OFAD 100	31

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Broadcasting Arts — Radio Broadcasting — Operations

Associate in Arts Degree with a Major in Radio Broadcasting and Certificate Program

Requirements	Semester Units
Bcst 110, 115, 131, 132, 231; CIS 110; Spch. 111 or 130, and 3 units from 135, 192, 194, 195	28

General Education and other requirements for the A.S. degree:
(see Index: "General Education.")

Broadcasting Arts — Television Broadcasting — General

Associate in Arts Degree with a major in Television Broadcasting — General, and Certificate Program.

Requirements	Semester Units
Bcst 110, 131, 194, 231, 232; CIS 110; plus nine units from Bcst 192, 194, 642, 680, OFAD 100	31

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Broadcasting Arts — Television Broadcasting — Operations

Associate in Arts Degree with a Major in Television Broadcasting and Certificate Program

Requirements	Semester Units
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36 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Bcst 110, 115, 131, 231, 232, 241, 242; CIS 110 29
General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Career Opportunities: The CSM Broadcasting Arts programs—in Broadcasting Engineering, Radio Broadcasting, and Television Broadcasting—prepare graduates for many excellent positions throughout the industry. All branches of the communications industry need qualified, capable broadcasters and sound and video-control technicians. Although competition is very keen, the outlook for a future in the field is promising for the student who successfully completes any of five Broadcasting Arts programs and meets the Federal Communications Commission licensing requirements.

Students who enroll in Broadcasting Arts programs receive instruction in the theoretical aspects of the field, and have an additional, important opportunity of working in and with live facilities. Through actual on-the-air broadcasts from the campus stations, KCSM-FM and KCSM-TV, students receive practical experience that provides excellent preparation for immediate employment—or, if they prefer, for transfer to a four-year program.

Building Inspection

Certificate Program

Students may apply for a Certificate in Building Inspection upon completion of 22 units from the following courses:

Requirements	Semester Units
700, 710, 720, 730, 740, 750, 760,	21
Select 6 units from the following courses: Bus. 101, 160, Mgmt. 110, 235	6
	Total 30

Business Administration

Transfer Program

Recommended High School Preparation: Elementary Algebra, Intermediate Algebra, Plane Geometry, Trigonometry, Chemistry or Physics, Foreign Language. If student has not completed Intermediate Algebra in high school, he/she should take Math 120.

For information concerning the transfer requirements of other colleges and universities, students should consult the catalog of the colleges and universities concerned, or their College of San Mateo counselor/advisor.

Associate in Arts Degree with a Major in Business Administration

The curriculum is for the student who wishes to major in general business. Students should check course descriptions and prerequisites, and discuss recommended sequence with counselors/advisors.

Requirements	Semester Units
Option 1 —Actg. 111, 112, 195; Bus. 201; Bus. 123 or Math 200	19
Option 2 —Bus. 100, 101, 115; Actg. 100 or Actg. 111; Bus. 129; Bus. 201; Actg. 195 or CIS 110	20-21

Suggested Electives:

Option 1 —Econ. 100, 102	
Option 2 —Bus. 140, 150, 170, 180, 270	11
<i>Courses listed in Option 1 are transfer requirements. Those listed in either Option 1 or Option 2 meet A.A. degree requirements.</i>	

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Business

Career Programs

The following major programs are designed to qualify a student, upon completion of a curriculum, for employment in an area of specialization. The development of business skills which can be utilized for immediate employment is emphasized, with general courses offered to provide a background for future promotion in the chosen occupational area.

Students graduating with a major in the field of Business must meet the following subject requirements:

Mathematics—A percentile rating of at least 35 of the quantitative part of the Mathematics Test 1 entrance examination, or completion of Bus. 810 with a grade of C or better. It is recommended that Bus. 810 be completed by the end of the second semester. (See Real Estate Program for Exception.)

Business 100—Introduction to Business.

Business—Accounting

Associate in Arts Degree

Certificate Program

Recommended Preparation: Typing, general office procedures, good command of English usage.

Career Opportunities: Graduates may be employed in a position of paraprofessional accounting in accounting firms, government and private companies.

Requirements:	Semester Units
Actg. 111, 112, 113, 195; Bus 201, Bus 129	20

Suggested Electives: Bus 100, 101, 115, 123; Econ 100, 102.

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Business—Administrative Assistant

Associate in Arts Degree with major in Administrative Assistant

Requirements	Semester Units
Bus. 100 or Mgmt 100, Bus. 101, 115, 311, 401, or Mgmt. 110; OFAD 110 (3 units), 304, 410, 412; Acct. 100 or 111; CIS 110	27

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Certificate Program

Students may apply for an Administrative Assistant Certificate upon completion of the A.A. degree major requirements listed above, with grades of C or better.

Business—Banking and Finance

The Associate in Arts Degree and Certificate Programs are approved and endorsed by the American Institute of Banking.

Due to the variations in requirements at transfer institutions, students planning to transfer are strongly advised to see a counselor/advisor early in their course of study.

Associate in Arts Degree with major in Banking and Finance.

Requirements	Semester Units
Mgmt. 300, 301, 303, 305	12
Econ 100, 102; Acct 111, 112	14
	Total 26

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Bank Operations Certificate

Requirements	Semester Units
Bus. 115 or 810; Mgmt. 300; Bus. 201; CIS 110	12
Psych. 100 or Bus. 101, or Mgmt. 235	3
Speech 100 or 120	3
Select 6 units from the following: OFAD 100, 400, 401; Bus. 129; Mgmt 105, 215, 235	6
Total	24

Credit and Lending Certificate

Requirements	Semester Units
Actg. 111, 112; Econ. 100, 102; Mgmt. 301, 303	20
Select 3 units from following courses: Bus. 130, 129, OFAD 401; Bus. 201; Mgmt. 105, 135	3
Total	23

Business — Clerical

(See Business — Office Administration)

Business — Escrow

Associate in Arts Degree with a Major in Escrow

The California Escrow Association recommends 24 units of required core courses and 12 units of suggested electives for the A.A. degree. See the Real Estate Department counselor/advisor for guidance regarding these courses and for information regarding the Escrow Certificate. See Escrow brochure for program details.

Requirements	Semester Units
R.E. 301*, 303, 305, 100*, 121, 131; Bus. 810, 115 (or a Mathematics class—Math: 120 or higher); Bus. 401, Bus. 100	30
Select 12 units from following courses: Bus. 101; Actg. 100 or 111; OFAD 100; R.E. 110, 141, 143, 210, 235; Bus. 201; Econ. 100 or 102; Psych. 100; Spch. 100 or 120	12
Total	42

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

If a person has already earned an A.A. degree in Real Estate and wishes to earn a second A.A. degree in Escrow, it may be done by completing the three Escrow courses, Bus. 401, and 6 additional units taken from Real Estate. Please refer to College catalog or contact a Real Estate counselor/advisor for additional information.

Professional Certificate Program

The Escrow Certificate requires completion of eight courses or 24 units of required courses and suggested electives. Units earned in the Certificate program will fulfill the major requirements for the A.A. degree with a major in Escrow. See Escrow brochure for program specifics.

Requirements	Semester Units
R.E. 301*, 303, 305, 100*; R.E. 121 and 131	18
Select 6 units from following courses (as recommended by California Escrow Association): Bus. 101, 810 or 115, Bus. 401; Actg. 100 or 111; R.E. 110, 200, 141 or 143, 210, 230; OFAD 100 or Coop 641**	6
Total	24

If the Escrow Certificate is earned following the Real Estate Certificate, the 6 units of selected electives must be taken from the category listed above, excluding any that have been utilized to earn the Real Estate Certificate.

**At recommendation of the Real Estate counselor/advisor and approval of Instructor of Real Estate 301, 303, may be bypassed; or at the recommendation of the counselor/advisor alone, Real Estate 100 may be by-passed, provided equivalent units of the suggested electives are completed.*

***Verify with Real Estate Dept. counselor/advisor requirements for Work Experience Program.*

NOTE: CSM's Escrow Certificate Program has been approved for official certification by CEA (California Escrow Association). Check with the Real Estate Department Counselor for further details.

Business — Management

Associate in Arts Degree and Certificate Programs

The Certificate in Management can be earned in any one of five areas: Business Management, Small Business Management, Industrial Management, Marketing Management, and Manufacturing Management. The Certificate will be awarded by College of San Mateo upon completion of the required courses, plus additional electives totaling a minimum of 24 units. Most of these courses carry three units of lower division college credit. The 24 units earned in the certificate program will fulfill the major requirements for an Associate in Arts degree.

The courses are all general in nature and practical in application; the program is designed for persons working at the supervisory level or for those interested in supervisory positions. An advisory committee composed of representatives from various types of business and industrial organizations has assisted the College staff in the development of the program.

Under some circumstances, parallel courses completed at other institutions may be applied toward the Certificate upon submission of transcripts or official verification of records.

With the exception of the Manufacturing Management Certificate, there are three courses which are required of all management certificates and which may be considered core courses in the sense that they are fundamental and should be taken before other courses in the program. These are: Mgmt. 100—Introduction to Business Management, Mgmt. 235—Techniques of Supervision, and Mgmt. 245—Organization for Management. The Management Advisory Committee recommends that you take the required courses listed below in the order indicated.

Business Management

Requirements	Semester Units
Mgmt. 100, 235, 245, 220	12
Select 12 units from the following: Bus. 101, 180; CIS 110; Mgmt. 105, 110, 120, 125, 130, 135, 140, 215, 225	12
Total	24

Small Business Management

Requirements	Semester Units
Mgmt. 100, 235, 245; Bus. 150	12
Select 12 units from the following: Actg. 100, Bus. 101, 190, 180, Bus. 201, CIS 110; Mgmt. 105, 110, 120, 130, 140, 215, 220	12-13
Total	24-25

38 course requirements for transfer majors

A.A./A.S. degrees, certificate career programs

Industrial Management

Requirements	Semester Units
Mgmt. 100, 235, 245, 210	12
Select 12 units from the following: Bus. 101; CIS 110; Mgmt. 105, 110, 120, 125, 130, 135, 140, 200, 205, 215, 220	12
Total	24

Manufacturing Management

Requirements	Semester Units
Mgmt. 320, 324, 332, 340	12
Select 12 units from the following: Mgmt. 130, 140, 205, 210, 215, 235, 245, 328, 336	12
Total	24

Marketing Management

Requirements	Semester Units
Mgmt. 100, 235, 245; Bus. 180	12
Select 12 units from the following: Bus. 175, 190, 185; CIS 110; Mgmt. 105, 110, 120, 125, 140, 215, 230	12
Total	24

Business — Merchandising

Certificate Programs

Merchandising — General

Students may apply for a Merchandising—General Certificate upon completion of Bus. 101, 100, 170, 175, 190, 180, 641 (6 units), 810 (if required by test).

Merchandising — Fashion

(See Consumer Arts & Science)

Merchandising — Management

Students may apply for a Merchandising—Management Certificate upon completion of Bus. 101, 100, 170, 175, 190 or 180, 641 (6 units), 810 (if required by test), Actg. 100 or 111.

Associate in Arts Degree with a Major in Merchandising

By completing the Certificate Program above, as well as the General Education and other requirements for the A.A. degree, (see index: "General Education"), the student is eligible for both the Certificate in Merchandising and the Associate in Arts degree.

Business — Office Administration

Associate in Arts Degree with an Office Administration Major

Recommended High School Preparation: Typing, Shorthand, Business English, Business Arithmetic, and Office Machines.

Career Opportunities: Office career opportunities are currently available in a wide range of entry-level positions, including Staff Assistant, Administrative Assistant, Administrative Secretary, Word Processor, and Legal Staff Administrative areas. These programs offer advanced level training aiding the student in achieving skills in decision-making and administrative duties that are required for job promotion.

Requirements

Semester Units

Option 1— Staff Assistant: Bus. 100, 129 (2 units), 301, 810 or 115; OFAD 110 (3 units), 300 (2 units), 400, 412 (2 units)

Select 3 units from the following: Actg. 100; Bus. 101, 302, 311, 312, 321, 401; OFAD 120, 145, 200, 205, 304, 305, 410, 440

Option 2— Administrative Secretary. Actg. 100; Bus. 100, 401, 810 or 115; OFAD 120 (1 unit), 200 (5 units) or 205* (3 units), 304, 305, 306 (2 units), 400, 410, 412,

Option 3— Word Processor. Actg. 100; Bus. 100, 401, 810 or 115; OFAD 304, 305, 306, 400, 410, 412

Option 4— Legal Office Administration. Actg. 100; Bus. 100, 201, 810 or 115; OFAD 120 (1 unit), 305, 306 (2 units), 400, 412, 440, 448

*Required if student has not had 1 year of a shorthand system within the past 3 years.

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Requirements for the degree in excess of 18 units may be counted toward General Education requirements for graduation.

Certificate Programs

Students may apply for an Office Administration Certificate upon completion of the A.A. degree major requirements in the area(s) of Staff Assistant, Administrative Assistant, Word Processor, and/or Legal Office Administration. Courses must be completed with grades of C or better.

Business — Real Estate

Associate in Arts Degree with a Major in Real Estate

Requirements

Semester Units

Bus. 100 or Mgmt. 100; R.E. 100 and 105, or license equivalent; R.E. 110, 121, 131, 200 (if not substituted by R.E. 100), R.E. 141 or 143

Contact Real Estate Department for recommended course sequence.

*Bus. 810 or 115 are waived as a requirement for the Real Estate sequences. R.E. 100 and 105 are not required for persons with real estate broker's or salesman's licence. A photo copy of license must be filed with the Office of Registration and Admission.

Suggested Electives: Actg. 111 or 100, Econ. 100-102; Arch. 100; Bus. 101, 175, 150, 201, 401; Ins. 110; OFAD 100; CIS 110; Psych. 100

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Professional Certificate Program

Basic Training Required: Real Estate 100, 105.

Professional Courses Required: Prerequisite: A Real Estate Broker's or Salesman's License, or completion of R.E. 100 and 105 or equivalent, R.E. 110, 121, 131, 200 or 100, 141 or 143.

Advanced Professional Elective Courses: Three of the following are required: 235, 122, 132, 225, 143, 145, 215, 205, 220, 230.

Special Professional Courses: (These may be used for Certificate credit also.) R.E. 311, 301, 313, 303, 305.

Business — Transportation

Associate in Arts Degree with a Transportation Major

Career Opportunities: Transportation offers an unlimited future in rail, motor, marine and air transportation, plus the field of traffic management. Numerous positions are offered in sales, public relations, trade development, promotional services and management.

Requirements

	Semester Units
Bus. 100, 270, 271, 274, 275	15
Actg. 111 or 100	4
Econ. 102 or Mgmt. 140	3

Select one course from the following: Bus. 170, 272, 273, 276, 277, 201; CIS 110

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Certificate Program

Requirements

	Semester Units
Bus. 270, 271, 274, 275	12

Select three courses from the following: Bus. 641, 272, 273, 276, 277, 279, 201; CIS 110

Chemistry

Associate in Science Degree with a Major in Chemistry

Requirements

	Semester Units
Chem 210, 220, 250, 231	19

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Computer and Information Science

For all of the course work described in the CIS program, fluency in the English language and typing skills are essential. Typing skills may be improved in the Business Skills Lab. Testing for competence in the reading and writing of English is done on a regular schedule through the testing facilities of CSM Student Services. A score in at least the sixty-third percentile on the Cooperative English Test is considered satisfactory. Students who wish to be tested should contact the Testing Office in Room 1-205.

Associate in Science Degree with a Major in Computer and Information Science.

In addition to the units for the first two Certificates indicated below, students must complete course work up to 60 units in order to receive an A.S. degree in CIS. Students who complete the Certificate Program for Computer Operator and who wish to receive an A.S. degree with a major in CIS must complete 8 more units in CIS courses excluding CIS 100, and also must complete additional course work up to 60 units to satisfy General Education and other requirements.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program, Business Applications Programmer/Analyst

Requirements	Semester Units
CIS 110, 115-116, 120, 310-311, 320	17
Plus 8 units from the following: CIS 210-211, 212-213, 220-221, 230-231	8
Bus. 115 or Actg. 100 or Actg. 111	3-4
Engl 100 or Engl 420	3
Total	31-32

Certificate Program, Scientific Applications Programmer/Analyst

Requirements	Semester Units
CIS 110, 115-116, 240-241, 330-331	15
Plus 8 units from the following: CIS 230-231, 250-251, 290-291	8

Math 241-242 or Math 260-261	8
Engl 100 or Engl 420	3
Total	34

Certificate Program, Computer Operator

Requirements	Semester Units
CIS 105, 110, 115-116, 210-211, 310-311	19
Engl 100 or Engl 420	3
Total	22

Transfer Program for a Baccalaureate Degree in Computer Science.

Requirements for baccalaureate degrees in computer science vary substantially among the California colleges and universities; therefore, it is especially important to check degree requirements of the destination school as early as possible. The suggestions that follow apply to lower-division requirements as noted.

a.—Many of the California colleges and universities have courses equivalent to CIS 110, 115-116, 290, and include one or more of these in their curriculum requirements.

b.—In all cases, requirements at California colleges and universities specify course work which includes experience with one or more languages from the following list: CIS 210/211, 230/231, 240/241, 250/251.

c.—Most degree programs in Computer Science require one or more of the following courses:

i.—Math courses equivalent to CSM's Math 200, 260, 261, 262, 263, 270.

ii.—Physics courses equivalent to CSM's Phys 210, 220, or 250, 260, 270.

iii.—Chemistry courses equivalent to CSM's Chem 210, 220.

iv.—Accounting courses equivalent to CSM's Actg 111, 112, 113, if the program has an emphasis on business applications.

Computer concepts for general education and programming for the independent user.

For students who do not plan on majoring in CIS but wish to learn about computers, CIS 100 or CIS 110 are recommended as beginning courses. If the student wishes to learn some programming, he/she should complete first CIS 115-116 and then a programming language.

Consumer Arts & Science

Career Opportunities: A major in Consumer Arts & Science will prepare a student for occupations in the field of clothing design, construction and merchandising, in foods preparation and management and in interior furnishing and consumer problems, in jobs such as airline hostess, merchandising in clothing and furniture stores, dietetic assistants in hospitals, nursing homes, as well as practical experience relevant to the daily operation of a household.

Consumer Arts & Science— Fashion Merchandising

Associate in Arts Degree with a Major in Fashion Merchandising

The Fashion Merchandising curriculum is a study of the ready-to-wear apparel industry with consideration of the various factors (economical, political and societal change) which affect the merchandising of fashion apparel.

Requirements	Semester Units
CA&S 113, 117, 151, 152, 154, 412	17

40 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Bus. 100, 170, 175	9
	Total 26

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Certificate Program — Fashion Merchandising

Students may apply for a Certificate in Fashion Merchandising upon completion of the A.A. degree major requirements listed above, with grades of C or better.

Consumer Arts & Science — Nutrition & Foods

Associate in Science Degree with a Major in Nutrition and Foods

The Nutrition and Foods Program prepares the student for transfer to a four-year college or university. The A.S. degree graduate may pursue entry level employment in food service industries, school or health-care facilities.

Requirements	Semester Units
CA&S 301, 302, 310, 320	11
Chem 210 or 410	4-5
Biol 110, 230 or 240	4-5
Plus at least four units from the following:	
CA&S 412; Chem 101, 220, 420; Biol 260	4

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Cooperative Education

Cooperative Work Experience Education enables students to earn college credit for work and learning done on his/her current job. The job must be major or career related. Cooperative Education involves: **a.** — students attending CSM full or part time and working full or part time; or, **b.** — students working full time one semester and attending CSM the next. These programs allow students to earn additional college credit while learning through an actual job experience. In many cases, the opportunity is available to use classroom theory in the job setting. Further information is available in the Cooperative Education Office, located in the Career Development Center in Building 5, telephone 574-6171.

Cosmetology — Cosmetologist

Completion of tenth grade or equivalent is required by State Law. Students must be 17 years of age to be eligible for State Examination.

The cosmetology program consists of 1600 hours training in theory and practical skills in all phases of beauty culture. Units are based on hours in attendance. Students may qualify for the Associate in Arts degree.

Note: High school students may enroll in cosmetology training at College of San Mateo in their junior or senior year by contacting their respective schools and the Cosmetology Department.

Priorities for Admission (1) San Mateo County residence. (2) High school graduation or equivalent; 18 years of age or older. (3) Applications will be reviewed according to date and time of receipt in Bldg. 21, Rm. 101. Contact the Cosmetology Department, 574-6363, for application information.

Advanced Standing Students with previous training may be eligible for admission to the Advanced Standing program in Cosmetology at College of San Mateo within a one-year period of withdrawal from a previous school and upon submission of State Board records to the Cosmetology Department, when space is available. No student who has completed more than 1,000 hours of approved training in another school will be admitted to the Advanced Training program.

Associate in Arts Degree with a Major in Cosmetology

Requirements	Semester Units
Cosmetology 712, 722, 732, 742	40
Business 810 or 115	3
Suggested Electives: H.Ec. 118; Bus. 101; Actg. 100; Psych. 100; Soci. 100; Spch. 120.	

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

One-Year Certificate Program

This program prepares the student, upon satisfactory completion of 1600 hours (grades C or better) to write the California State Board of Cosmetology examination for licensure as a cosmetologist.

Requirements	Semester Units
Cosmetology 712, 722	Variable to 18
Cosmetology 732, 742	Variable to 30
	Total 40

Special Courses in Cosmetology

Cosm. 750 — Brush-up, units to be determined: Refresher course — upgrading persons who have satisfactorily completed an approved course of training with a minimum of 1600 hours, or for out-of-state Cosmetologists in preparation for California State Board of Cosmetology Examination.

Cosm. 754 — Manicurist, units to be determined: 350 hours prepares a special manicurist to take the California State Board of Cosmetology Examination and subsequent employment in this field only.

Cosm. 760 — Cosmetology Instruction Prep., units to be determined. Preparation for California State Board of Cosmetology Instructor examination: 600 hours instructor training, plus up to 150 hours, if necessary, to correct deficiencies.

Cosm. 791 — Advanced Cosmetology Workshop (1.5) (offered in the evening.)

Data Processing

(See Computer & Information Science)

Dental Assisting

Admission Requirements: To be eligible for enrollment in the Dental Assisting programs, the applicant must (1) be a high school graduate or equivalent; (2) have completed one year of high school Math or Algebra and one year of typing and English or their equivalent with a C grade or better; (3) attain placement in Engl. 801 or eligibility for Engl. 800; (4) be admitted to the college and have a C average in all completed college courses.

Associate in Science Degree with a Major in Dental Assisting

Requirements	Semester Units
D.A. 711, 712, 713, 721, 722, 731, 732, 735, 741, 742, 751, 752, 761, 762	30
Business 810; OFAD 100 or equivalent	3-6
Cooperative Education 641	1-4
Select three units from following: Psych. 108; Sociology 100, 300; Speech 120	3
A grade of C or better is required for all Dental Assisting courses.	

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

One-Year Certificate

First Semester	Semester Units
D.A. 711, 721, 731, 735, 741, 751, 761, Read. 812 or Dent. Asst.'s Engl. (680)	18.5

Second Semester	Semester Units
D.A. 712, 713, 722, 732, 742, 752, 762, Co-op 641, Dent. Asst.'s Speech (680)	18

Certificates

The College of San Mateo Dental Assisting Certificate will be awarded to all students completing Dental Assisting required courses with a grade of C or better.

Upon successful completion of either program with a grade of C or better in all courses required for the certificate, the student is eligible to take the National Certification Examination to become a Certified Dental Assistant, and the California Registration Examination to become a Registered Dental Assistant.

Drafting Technology

Associate in Science Degree with a Major in Drafting Technology

Recommended High School Preparation: Elementary Algebra, Mechanical Drawing. Students should check course descriptions and prerequisites, and discuss recommended sequence with counselors/advisors.

Requirements	Semester Units
Drafting Tech. 201-202, 301-302	28

Suggested Electives: See Certificate Requirements immediately below.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program-Day

Requirements The same 28 units of drafting as required for the A.S. degree with no grade less than C. In addition, the following 20 units of required courses must be completed with no grade less than C, along with the recommendation of the Drafting Department.

Requirements	Semester Units
Drafting Tech. 102, 400; E.T. 110; Manu. 100, 101, 120, 200	20

Associate in Science Degree with a Major in Drafting Technology, Evening Program.

Requirements	Semester Units
Drafting Tech. 120 or 721, 722, 731, 732, 740	15
Machine Tool 750 and one of the following:	
Math 416, 130, or 219; Drafting 102	6-8
Total	21-23

Suggested Electives: E.T. 110, Phys. 100.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program-Evening

A Certificate in Drafting Technology may be issued to those students who complete the following courses with no grade lower than C.

Requirements	Semester Units
Drafting Tech. 120 or 721; 722, 731, 732, 740 E.T. 110; Phys. 100; Manu. 200, and one of the following:	
Math 130, 219	32-40

Computer-aided drafting (CAD) has been integrated into the day and evening drafting programs.

Specific CAD courses will be offered beginning in the fall of 1985. For details, contact the Technology and Applied Sciences Division office at 574-6323.

Career Opportunities: Drafting is common to all manufacturing and construction activities. The draftsman interprets the engineers' ideas, presenting them in the language of manufacturing and construction. Graduates of the Drafting Technology Program have several opportunities available. They may go directly into industry as a draftsman with the potential to be a designer. They also have the option of continuing their education at one of the state colleges in pursuit of a Bachelor's degree in Industrial Technology.

Education

Transfer Program

Students who are planning for a career in teaching will concentrate on meeting the General Education requirements of the college they plan to attend. The program of courses recommended for a student who plans to teach will, to a considerable degree, depend upon the credential sought and the teacher education college the student plans to attend.

Students seeking a teaching credential should carefully plan their program with the assistance of their counselor/advisor.

Electronics Technology

Associate in Science Degree with a Major in Electronics Technology

Requirements	Semester Units
E.T. 200*, 250, 260, 280, 300, 302, 310, 330, 350, 360, 362, 380, 666	41

Suggested Electives: Bus. 100, 301; CIS 110, 150, 230; Draf 120; Phys. 100 or 210; OFAD 100.

The student will be required to purchase a set of personal tools and supplies for most laboratory classes.

**To meet math requirement, E.T. 230 or Math 120 or equivalent must be taken concurrently with E.T. 200.*

To obtain an A.S. degree in Electronics Technology, students must have a G.P.A. of 2.0 or better in the above courses required for the major.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program

The College of San Mateo will issue a Certificate of Completion to those students with a G.P.A. of 2.0 or better in the major requirements of 41 units.

The Electronics Technology Department will issue a Certificate of Proficiency to those students who successfully complete the major requirements of 41 units with a G.P.A. of 2.5 or better and no grade lower than C.

Associate in Science Degree with a Major in Electronics Technology—Evening Program

Requirements	Semester Units
E.T. 260, 310, 710*, 720, 730, 740, 280 or 330, 360	29

Suggested Electives: Bus. 100, 301; CIS 110, 150, 230; Draf 120; OFAD 100; Phys. 100; Mgmt. 210, 320, 324, 328, 332.

**To meet the math requirement, E.T. 230 or Math 120 or equivalent must be taken prior to or concurrently with E.T. 710.*

42 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program — Evening

An Evening College Certificate will be issued to those students who successfully complete the A.S. degree major requirements with a G.P.A. of 2.0 or better and no grade lower than C.

Advanced Placement — Day/Evening

Students with extensive background in electronics from military, industrial or other educational institutions, wishing to obtain advanced placement must complete a minimum of 19 units from specialization electives listed below, with a G.P.A. of 2.0 or better and no grade lower than C. To verify experience and/or course qualification, appropriate documents must be filed with the Office of Admissions and Records.

Specialization Electives: E.T. 230, 260, 280, 300, 302, 310, 350, 360, 362, 380, 720, 730, 740

Cooperative Education: A maximum of four units may be substituted.

Engineering

The basic Engineering program prepares for transfer to a four-year college or university in junior standing. Students should refer to the catalog of the college of their choice for special requirements; however, the following core subjects were approved unanimously by the Engineering Liaison Committee of the California Community Colleges, State Colleges and Universities, University of California and private institutions.

The following courses will satisfy the Engineering Liaison Committee core program requirements: Mathematics (beginning with Analytic Geometry and Calculus and completing a course in Ordinary Differential Equations, 16 units); Chemistry (for engineers and scientists, 8 units); Physics (for engineers and scientists, 12 units); Statics (3 units); Graphics and Descriptive Geometry (3 units); Computers, digital (2 units); Orientation and Motivation (1 unit); Materials Science (3 units); Electrical Circuits and Devices (3 units).

Transfer Program

Associate in Science Degree with a Major in Engineering

Recommended High School Preparation; Mathematics (four years); Chemistry (one year); Physics (one year); Mechanical Drawing (one year). Students should check course descriptions and prerequisites, and discuss recommended sequence with counselors/advisors. Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements	Semester Units
Engineering 200*, 220*, 230*, 260*, 270*,	13
Math 260, 261, 262, 263, 275	19
Chem 224, 225 or 210, 220	8-10
CIS 240-241	4
Phys. 250, 260, 270	12
*Plus 5 additional units from any of the above courses or from the following electives: Engr 111, 666; Chem 231; CIS 230, 231, 250, 251, 260, 261; Econ 100, 102; Geol. 210; Math 200, 270.	

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Engineering Technology — General

Engineering Technology is that part of the engineering field which blends scientific and engineering knowledge with technical skills in research, development and production. The College offers the general education, mathematics, science, engineering, and many of the technical courses for the lower division requirements in Engineering Technology. An articulation agreement with the state

colleges and universities assures the BSET degree within two years after transfer to the four-year school.

Transfer Program

Associate in Science Degree with a Major in Engineering Technology

Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements	Semester Units
Drafting Tech. 120, Engineering 150*, 160*, 200*, 220*,	13
Math 241*, 242*	8
CIS 240-241	4
Chem 224	4
Phys 210-220	8
Technical Elective	6
*Plus 6 units from area of technology specialization.	

Suggested Electives: Technical courses; Actg. 100; Engineering 666; CIS 230-231, 231; Math. 200.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Engineering Technology — Electronics

Transfer Program (Cal Poly pattern)

Associate in Science Degree with a Major in Engineering Technology—Electronics

Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements	Semester Units
E.T. 200, 250*, 260*, 280, 300, 302, 310*, 330, 350*, 360*, 362*, 380	37
(If evening courses E.T. 710, 720, 730 are substituted for corresponding day courses, additional units of technical electives must be included to make a total of 37 units.)	
Math 241*-242*	8
Phys 210-220	8
Chem 224	4

Suggested Electives: Engineering 666; CIS 230-231, 240-241; Math. 200; Bus. 301.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

English

Associate in Arts Degree with a Major in English

Requirements	Semester Units
18 units from Humanities courses listed under Graduation Requirements (see Index), with a minimum of 9 units from English or Literature courses (other than Engl. 110, 120, 130, 140)	18

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Ethnic Studies

Transfer Program

Associate in Arts Degree with a Major in Ethnic Studies

The Ethnic Studies program is structured for the student who plans to major in the Social Sciences, Social Welfare, Humanities, Ethnic Studies or related areas in either a two-year program or as transfer to a four-year institution. Ethnic Studies courses are transferable as Social Science, Humanities, Electives or Ethnic Studies, depending upon the respective institution. In addition, Ethnic Studies courses allow public school teachers the opportunity to meet California State requirements in ethnic education. The

multicultural emphasis of the department has attracted many persons currently employed in public school systems, social services and human relations, and professionals whose jobs involve interpersonal situations with multiracial groups.

Requirements	Semester Units
Ethnic Studies 101 and 102 plus 12 units from the following: Ethn. 425, 151, 152, 160, 350, 351, 267, 150, 510, 290, 261, 262, 288, 585	18
General Education and other requirements for the A.A. degree: (see Index: "General Education.")	

Filmmaking

Associate in Arts Degree with a Major in Filmmaking

Filmmaking majors should check requirements for transfer in junior standing to the college of their choice, or consult with their College of San Mateo counselor/advisor.

Requirements	Semester Units
Film 451, 452, 461, 462 and at least 6 units from Art 201, 350, 301, 350, 351, 352, 353, 354, 355; Bus. 175, 180; Engl. 161, 162	20
General Education and other requirements for the A.A. degree: (see Index: "General Education.")	

Fire Science Technology

Associate in Science Degree with a Major in Fire Science Technology

The Fire Science Technology program is designed to give the student an opportunity to prepare to meet the high standards necessary in pursuing a career in fire service. It is recommended that the transfer student take the six core courses and six units of Fire Science Technology electives only, and concentrate in the area of general education for transfer to a junior standing in a four-year institution.

For the awarding of a degree or Certificate, a grade of C or better is required in all Fire Science Technology courses.

Requirements	Semester Units
Fire Science 700, 705, 715*, 720, 731, 755,	18
Select two courses from Fire Science electives or related subjects	6
	Total 24

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program

Students may apply for a Fire Science Technology Certificate upon completion of the A.S. degree requirements listed above, with grades of C or better.

*In all Fire Science Technology programs, Fire Science 715, Introduction to Fire Protection and Suppression, may not be required for those students who have three or more years of certified service as professional fire fighters. If Fire Science 715 is not required for this reason, another three units of Fire Science courses must be substituted. Six units of Emergency Medical Technician may be used to satisfy the Fire Science electives; ADMJ 120 may be substituted for Fire Science 760 as a Fire Science elective.

Fire Science Technology — Basic Fire Academy

Certificate Program

Requirements	Semester Units
Fire Science 781, 782	10

Fire Science Technology — Emergency Medical Technician

Certificate Program

Requirements	Semester Units
Fire Science 785, 786	5

Floristry

Certificate Program

See Horticulture Courses

Foreign Languages

Associate in Arts Degree with a Major in Foreign Languages

Requirements	Semester Units
Foreign languages courses	18

Option 1: See specific headings for majors in French, German and Spanish; **Option 2:** Completion of level 4 in one language plus completion of 15 units in one other language (transfer courses); **Option 3:** Completion of level 4 in one foreign language, completion of level 4 in a second foreign language and completion of level 3 in a third foreign language. Note: Certain courses in Art, English, History and Philosophy may be accepted as part of the 18 units, with Language Arts Division approval.

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

French

Associate in Arts Degree with a Major in French

Requirements	Semester Units
French language courses	18
Art 103 and History 101 may be accepted with Language Arts Division approval.	

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Geological Sciences

Associate in Science Degree with a Major in Geological Sciences

Requirements	Semester Units
Chem 210; Geol 130, 210, 220; Paln 110	20

Recommended: Oceanography 100 and 101.

Additional requirements to complete lower division transfer program for B.A. degree in Geology*: Chem 220; Math 241-242 or 260-262; phys 210-220 or 250, 260, 270.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

*The mathematics and physics requirements vary at different four-year institutions. Consult the appropriate college catalog or your counselor/advisor for specific requirements.

German

Associate in Arts Degree with a Major in German

Requirements	Semester Units
German language courses	18
Engl. 200, Hist. 150 and Phil. 190 may be accepted with Language Arts Division approval.	

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

44 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Horticulture

Five programs in Horticulture are available to interested students, two during the day and three in the evening. These programs, though similar, afford specific training geared to meet the individual requirement of the Horticulture student. Although these programs are designed to provide certification in Horticulture, it is possible to enroll in individual classes without regard to the Certificate program. No prerequisites are required. Consult individual course listings under Horticulture. For the awarding of a degree or Certificate, a grade of C or better is required in all horticulture courses.

Horticulture — Environmental

Associate in Science Degree with a Major in Environmental Horticulture

Requirements	Semester Units
Option 1, 2, or 3 below	18
Suggested Electives: Hort. 412, 320, 415, 341; Actg. 100; Bus. 170.	

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program (One-Year Day Program)

Requirements	Semester Units
Option 1 (Nursery)	
Hort. 311-312, 315, 327, 342, 330	18
Option 2 (Landscape)	
Hort. 311-312, 315, 342, 330, 340	18
Option 3 (General)	
Hort. 311-312, 315, 327, 330, 411	18

Horticulture — Floristry

Certificate Program (One-Year Day Program)

Requirements	Semester Units
Hort. 327, 411, 412, 413, 415, 416, 420	21

Horticulture — Ornamental

Associate in Science Degree with a Major in Ornamental Horticulture

Requirements	Semester Units
Hort. 711-712, 705, 706 plus 6 units from 771, 772, 773, 774, 775, 776 plus 12 units from Hort. 701-702, 709, 721-722, 731, 741-742	30

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Certificate Program — Evening

Requirements	Semester Units
Hort. 711-712, 705, 706, 771-772 plus 6 units from 773, 774, 775, 776, plus 12 units from Hort. 701-702, 709, 721-722, 731, 741-742	30

Horticulture — Pest Control

Certificate Program — Evening

Requirements	Semester Units
Hort. 711, 712, 771, 772, 773, 774, 775, 776	24

Humanities

Associate in Arts Degree with a Major in Humanities

Requirements	Semester Units
Hum. 111, 112, 113, 114	12
Electives chosen from the list of courses satisfying the General Education Humanities requirement. (see Index)	6
Total	18

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Journalism

Associate in Arts Degree with a Major in Journalism

Requirements	Semester Units
Jour. 110, 120, six units from Jour. 300 and 310 and six units from English or Literature courses listed under Humanities	18
General Education and other requirements for the A.A. degree: (see Index: "General Education.")	

Liberal Studies

Associate in Arts Degree with a Major in Liberal Studies

Students should confer with a counselor/advisor and refer to the catalog of the college of their choice for special requirements in specific fields.

Requirements	Semester Units
Eighteen units selected from the lists provided under Graduation Requirements (See Index: "General Education") for Natural Sciences, Social Science, and Humanities, with at least 3 units in each area	18

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

(New students (Career Entry) may fulfill NAT.Sci. Hum. or SS if 2 courses chosen as a major.)

Life Sciences

Transfer Program

Recommended High School Preparation: Biology (1 year); Chemistry (1 year); Physics (1 year); Mathematics—(Algebra, 2 years; Geometry, 1 year; Trigonometry, 1 semester).

For those students wishing to major in Biological Science or Medical Science who have little or no high school preparation in one or more of the above subjects, the following courses should be completed prior to attempting courses in the major sequence: Biol. 110; Chem. 192; Math. 110 or other appropriate level of Math; Phys. 100.

The programs outlined below are typical of requirements to transfer in junior standing to a four-year college or university. In order to meet the requirements of specific institutions, the students should refer to the catalog of the college of their choice.

Life Sciences — Biological

Associate in Science Degree with a Major in Biological Sciences (Botany, Forestry, Marine Biology, Zoology, etc.)

Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements

	Semester Units
Biol. 210*, 220*, 230*	14
Chem. 210*, 220, 231, 232	16
Biology Electives (excluding Biol. 100 and 110).	12
Math. 120, 130 (or equivalent)	1-6
Science Electives (Phys. 210, 220) or Phys. 250, 260, 270 ..	8-12
General Education and other requirements for the A.S. degree: (see Index: "General Education.")	

Chem. 210, 220*, or 410, 420*	8-10
Science Electives (Phys. 210, 220 or 100)	3-8
General Education and other requirements for the A.S. degree: (see Index: "General Education.")	

Students should refer to the catalog of the institution at which they plan to take their formal nursing training for other specific requirements.

Life Sciences — General

Associate in Arts Degree with a Major in Life Sciences

For students who wish to receive a general life sciences degree but who do not necessarily plan on transferring to a four-year institution as biology majors. Those who plan on transferring as biology majors in various areas of life sciences should refer to the descriptions below.

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Requirements

	Semester Units
4-5 units from Biol. 110, or 210, 220, 230	4-5
12-15 units from Biol. 101, 102, 111, 125, 130, 131, 140, 145, 150, 160, 180, 184, 200	12-15
Physical Science	3

Students are encouraged to group courses to emphasize their major interests to meet personal or academic needs as follows:

Human Biology: Biol. 101, 110, 125, 130, 131, 160, and either Chem 410 or 210

Marine Biology: Biol. 110, 111, 150, 200, and either Ocen 100 or Geol 100

Natural History: Biol. 110, 111, 150, 200, and one of the following: Geol 100, Mete 100, Geog 100

Wildlife/Forestry: Biol. 102, 110, 111, 200, 180 or 184, and either Geol 100 or Mete 100

Life Sciences — Medical

Associate in Science Degree with a Major in Medical Sciences
(Pre-Med., Pre-Dental, Pre-Vet., Medicine, etc.)

Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements

	Semester Units
Biol. 210*, 230*	9
Biology Electives (Biol. 240, 250, 260)	4-12
Chem. 210*, 220*, 231, 232	15-20
Math. 241, 242 or 260, 261, 262	8-12
Phys. 210, 220 or 250, 260, 270	8-12

General Education and other requirements for the A.S. degree:
(see Index: "General Education.")

Life Sciences — Pre-Nursing

Transfer Program

Associate in Science Degree with a Major in Pre-Nursing

Courses listed below are suggested transfer requirements; those courses marked with an asterisk are A.S. degree requirements.

Requirements

	Semester Units
Biol. 250*, 260*, and 240 or 243	14
Biology Elective (excluding Biol. 100 and 110)	4

Machine Tool Technology

Associate in Science Degree with a Major in Machine Tool Technology

Recommended High School Preparation: General mathematics, drafting, metals shop, and related courses. Students should check course descriptions and prerequisites and discuss recommended sequence with counselors/advisors. Laboratory supplies required.

Requirements

	Semester Units
Mach 102, 510, 511, 610, 611, 700, 710, 720	21
Manu 101, 120, 210, 230, 310, 330, 760/761, 765	22
Draf 120; Weld 300; Engl 420	8
Total	51

General Education and other requirements for the A.S. degree:
(see Index: "General Education.")

Certificate Program — Day

Students successfully completing the machine tool technology courses listed above with a G.P.A. of 2.0 or better will be eligible to receive a Certificate in Machine Tool Technology.

Career Opportunities: The machine tool technician is a vital figure in any manufacturing industry. He or she must work from blueprints, understand manufacturing processes, and fabricate necessary parts through the use of lathes, mills, drills, grinding, numerical-control programming and many other processes.

Certificate Program — Evening

This program is designed specifically for the working student who wishes to enter a new career field or who is currently employed in the machining industry and has the need for additional occupational development.

This is a vocational skills program and will not lead to an A.S. degree.

Students successfully completing the courses listed below with a GPA of 2.0 or better will be eligible to receive a Certificate in Machine Tool Technology.

Requirements

	Semester Units
Mach 680 (Applied Math/Blueprint Reading), 750, 755, 760, 770	12
Plus six units from CIS 110; Draf 120; Elec 110; Weld 300	6
Total	18

Manufacturing and Industrial Technology

Associate in Science Degree with a Major in Manufacturing and Industrial Technology

This major focuses on a wide range of subject material and is less specialized than the single field major.

The Manufacturing and Industrial Technology major will utilize knowledge and skills in drafting, machining, fabrication, applied mathematics, welding, industrial computer, power systems, and other related subjects. Classes will focus on the applied technology through a combination of theory and laboratory.

46 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Graduates of the program will have a working knowledge in a wide range of manufacturing processes and may be qualified to work in areas including: engineering prototype, applied design, equipment modification, maintenance and repair, and related industrial activities.

Most courses are applicable to upper division majors for transfer, in addition to being useful background for engineering and other applied science studies.

Requirements	Semester Units
Manu 101, 120, 210, 230; Mach 510, 511	13
Mach 102; Manu 100; Weld 300; Elec 110; Engl 420	14
Draf 120; Manu 310, 320, 330	11
Manu 760/761, 765	9
Total	47

Mathematics

Transfer Program

College of San Mateo offers a wide variety of courses for students who wish to major in Mathematics, enabling them to transfer to a university or four-year college at the end of the sophomore year. Students should consult the catalog of the college of their choice for special requirements.

Recommended High School Preparation: Four years of high school level Mathematics, Physics (one year), Mechanical Drawing (one year), two or more years of a Foreign Language (German, French, or Russian).

Associate in Arts Degree or Associate in Science Degree with a Major in Mathematics.

Requirements	Semester Units
Math 260, 261, 262, 263 and 6 to 8 units from Math 200, 270, 275; CIS 230/231, 240/241, 250, 251	26-28

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Medical Assisting

Associate in Arts Degree with a Major in Medical Assisting

Recommended High School preparation: Written and oral communication skills, typing, biology, psychology, and basic mathematics.

Career Opportunities for persons trained as medical assistants occur primarily in physicians' offices and clinics. Related positions are found in hospitals, insurance companies, medical publishing firms, laboratories, and pharmaceutical firms.

Requirements	Semester Units
Biol. 130; OFAD 110 (3 units); Actg. 100; MEDA 100, 110, 120, 140, 150, 160, 170, 190	31

See Index: "Business," for Business Division's Mathematics requirement.

General Education and other requirements for the A.A./A.S. degree: (see Index: "General Education.")

Certificate Program

Students may apply for the Medical Assisting Certificate upon completion of the above A.A. degree major requirements with grades of C or better.

Certificate in Medical Transcription

Requirements	Semester Units
OFAD 110 (3 units), 304, 305 (4 units); Biol. 130; MEDA 110, 140, 141 (3-4 units), 190	24-25

Military Science

Military Science is offered to qualified students on a full-time basis at College of San Mateo. Classes and leadership laboratory are conducted at San Jose State University under the supervision of the Professor of Military Science, San Jose State University.

Students may complete the first two years of Army ROTC while enrolled at College of San Mateo and qualify for enrollment in the advanced course (third and fourth year) at degree granting colleges and universities. Completion of ROTC and a baccalaureate degree qualify students for a commission in the United States Army Reserve or Regular Army.

Students may obtain enrollment forms from their counselor/advisor or the Department of Military Science, San Jose State University (telephone (408) 277-2985/2986).

Naval ROTC

College of San Mateo students may enroll in Navy ROTC at the University of California, Berkeley. Interested students should contact the Department of Naval Science, University of California, Berkeley, (telephone 642-3551) for further information.

Music

Transfer Program

Associate in Arts Degree with a Major in Music

Music majors should check requirements for transfer in junior standing to a four-year college or university. Students should refer to the catalog of their choice for specific requirements, or consult with their College of San Mateo counselor/advisor.

Music classes are also available to the general student body and members of the community for personal enrichment and to apply toward general education requirements for transfer to four-year institutions. Auditions may be required. All qualified students are invited to join a performing organization. Majors must have three semesters of performance classes.

Requirements	Semester Units
9 units from Music 100, 101, 102, 103, 104, 131, 132, 133, 134, 150, 170;	
3 units from Music 202, 270, 275;	
6 units from Music 170, 430, 440, 445, 451, 453, 460, 470, 480, 490	
1 to 1.5 units of Music 496;	
2 units from Music 301, 302, 303, 304, 320, 340, 360, 371, 372, 402, 403	21-25

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Nursing

Transfer Program

Students who intend to transfer to a major in Nursing should plan their course at College of San Mateo to meet the general requirements for junior standing, as well as the lower division departmental requirements, of the college or university to which they wish to transfer.

Please refer to Life Science Pre-Nursing Program in College of San Mateo catalog.

Nursing — Registered Nursing

Associate in Science Degree with a Major in Nursing

The College of San Mateo Associate in Science Nursing Program provides students with opportunities for learning at the College, local hospitals and related health agencies. Clinical practice begins early in the first semester.

A graduate of this program is prepared to care for patients in homes, hospitals, clinics and doctor's offices.

Upon graduation, the candidate receives an Associate in Science degree and is eligible to write the California Board of Registered Nursing licensing examination.

Admission Requirements:

To be eligible for enrollment in the program, the applicant must:

1. Be a high school graduate or equivalent.
2. Have completed the Math Competency Requirement for graduation.
3. Have completed one year of high school algebra and chemistry with lab or their equivalents with C grade or above within the last five years.
4. Be eligible for Engl 100.
5. Have completed Biology 265 or Biology 250 or equivalent with grade C or better within the last five years.
6. Meet College of San Mateo admission requirements for regular student status.
7. Have a cumulative GPA of 2.5 in all college courses taken—or attain an overall 60th composite percentile on the National League for Nursing examination and attain a minimum GPA of 2.5 in all nursing related courses.
8. Contact the Nursing Program Office for application information.

Priorities for Admission: Preference will be given to: (1) applicants on the basis of the greatest number of units completed from nursing related courses. Total units counted in the nursing related courses shall not exceed the numbers of units listed below. Final selection will take into consideration the GPA earned in these courses; (2) residents of San Mateo County.

The following program shall be completed before qualifying for the California State licensing examination:

Requirements	Semester Units
Nurs. 211, 212, 221, 222, 231, 232, 241, 242	38
Nursing Related Courses:	
Biol. 265, 266, or 250, 260 and 243	14
Psych. 100, 201; Soci 100	9
Speech 100 or 120; Engl. 100	6

All nursing and nursing-related courses must be completed with grade of C or better.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Nursing: Nursing Assistant-Home Health Aide

(Suspended for 1985-86.)

Physical Education

Transfer Program

Recommended High School Preparation: Elementary Algebra, Plane Geometry, Biology, Chemistry, competency in aquatics, rhythms and dance, individual sports and team sports.

Students who intend to transfer to a major in Physical Education should enroll and participate in two P.E. activity classes per semester. Participation on at least one varsity athletic team is also recommended. (The semester of varsity participation would satisfy the two activity classes recommended for that semester.)

Students should refer to the catalog of the college of their choice for specific requirements, or consult with their College of San Mateo counselor/advisor.

Suggested Electives: Biology, Chemistry, Anatomy, Physiology, Physics.

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Physical Science

Transfer Program

Associate in Science Degree with a Major in Physical Science

Recommended High School Preparation; Elementary Algebra, Plane Geometry, Intermediate Algebra, Trigonometry, Chemistry, Physics.

Students should refer to the catalog of the college of their choice for specific requirements, or consult with their College of San Mateo counselor/advisor.

Requirements

Semester Units

At least one course in each of the following areas:

Astr. 100, 101, 110; Chem. 100, 410, 210;
Geology 100, 210; Phys. 100, 210, 250

18

Suggested Electives: Chem. 231, 250; Hum. 113, 125, 127, 128; CIS 230/231, 240/241; Math. 260, 261, 262, 263, 275; Meteorology 100; Phys. 250, 260, 270; Phys. Science 100, 129..

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Physics

Associate in Science Degree with a Major in Physics.

Requirements

Semester Units

Phys. 250, 260, 270 12
Plus 6 units from Chem 210, 220, 224, 225, 231, 232, 250, 260;
CIS 230/231, 240/241, 250/251 ; Math. 200, 260, 261, 262, 263, 270, 275.

General Education and other requirements for the A.S. degree: (see Index: "General Education.")

Recreation Education

Transfer Program

Recommended High School Preparation: See Physical Education Transfer Program.

Students who intend to transfer to a major in Recreation Education should enroll and participate in two two P.E. activity classes per semester. Participation on at least one varsity athletic team is also recommended. (The semester of varsity participation would satisfy the two activity classes recommended for that semester.)

Suggested Electives: Biology, Chemistry, Anatomy, Physiology, Physics.

Social Science

Transfer Program

Associate in Arts Degree with a Major in Social Science

Social Science fields are many and varied, and include such areas as Cultural Anthropology, Economics, Ethnic Studies, Geography, History, International Relations, Philosophy, Political Science, Psychology, and Sociology.

48 course requirements for transfer majors A.A./A.S. degrees, certificate career programs

Students should refer to the catalog of the college of their choice for special requirements.

Requirements

Semester Units

The requirements for a Social Science major will total 18 units selected from at least 3 of the following, with a minimum of 2 courses in one of the following:

Anthropology; Economics; Ethnic Studies (not including Ethn. 350, 351, 510, 288, 585); Geography (not including Geog. 100); Political Science: Psychology (not including Psych. 121); Social Science (not including Soc. Sci. 111); Sociology 18

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Spanish

The program is designed to give the student a functional proficiency in the language, while at the same time preparing him or her to transfer to a four-year institution with a minor or major in Spanish.

Associate in Arts Degree with a Major in Spanish

Requirements

Semester Units

Spanish language courses 18
Anthro. 110 may be accepted with Language Arts Division approval.

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Certificate Program

Students who feel written proof of their proficiency would be beneficial to their careers may apply for a Certificate of Proficiency in Spanish after they have completed the advanced intermediate course (Span. 140), and a minimum of two additional units, and have passed the department tests on aural comprehensive and speaking fluency.

Speech

Associate in Arts Degree with a Major in Speech

Requirements

Semester Units

Spch 100, 111 or 112, 120, 130 12
Humanities Courses 9

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Technical Art/Graphics

Associate in Arts Degree with a Major in Technical Art and Graphics

Requirements

Semester Units

Technical Art/Graphics 201-202, 210, 220, 300, 310, 351-352, 400 or TA/G 642 33
Art 202 or 328 3

Total 36

General Education and other requirements for the A.A. degree: (see Index: "General Education.")

Certificate Program

A Certificate of Completion will be issued to those students with a G.P.A. of 2.0 or better in the major requirements.

Those students who successfully complete the above curriculum with grades of C or better with no grade lower than C will receive the Certificate of Proficiency in Technical Art/Graphics.

Career Opportunities: There are career opportunities for artists with technical art and graphics training in many areas, including research and development centers, technical publications, manufacturing plants, state and federal bureaus, educational institutions, and advertising agencies.

Technical Art/Graphics Graphic Communications

Certificate Program

A Certificate of Completion will be issued to those students with a GPA of 2.0 or better in the major requirements.

Those student who successfully complete the above curriculum with grades of C or better with no grade lower than C will receive the Certificate of Proficiency in Technical Art/Graphics.

Career Opportunities: There are career opportunities for artists with technical art and graphics training in many areas including research and development centers, technical publications, manufacturing plants, state and federal bureaus, educational institutions, graphics studios, and advertising agencies.

Technical Art/Graphics Industrial Design

Transfer Program

Students should refer to the catalog of the college of their choice for special requirements since the three California colleges approved by the Industrial Design Society of America vary considerably in their recommendations for undergraduate preparation. Typical requirements for transfer include: Art 102, 103; Biol. 110; Econ. 100; Phys. 210, 220; Spch 100.

Requirements

Semester Units

TA/G 201, 210, 220, 310 18

Suggested Electives: TA/G 351; Manu 120.

Career Opportunities: Industrial designers work for manufacturing companies and independent design offices. Today, nearly every manufacturer of consumer hard goods, housewares, appliances, automobiles and electronic equipment has a design staff or retains a consultant.

Vocational Gardening

Certificate Program

See Horticulture Courses.

Welding Technology

Welding Technology — Technician

Priorities for admission: (1) high school graduation or equivalent; 18 years or older. (2) Applications will be reviewed in order of receipt in Technology and Applied Sciences Division Office, Bldg. 17, Rm. 169. Contact the Technology and Applied Sciences Division, 574-6323, for application information.

Associate in Science Degree with a Major in Welding Technology

Recommended High School preparation: Elementary Algebra, Physics, Mechanical Drawing.

Requirements

Semester Units

Welding Tech. 110, 111, 120, 121, 210, 211, 220, 221, Manu 101 33

Drafting 120; Manu 100 or Phys. 100, Manu 200	8
E.T. 110	3
Total 44	

General Education and other requirements for the A.A. degree:
(see Index: "General Education.")

Students will be required to purchase personal safety equipment and adhere to all safety rules.

Certificate Program

Those students who successfully complete the above curriculum with a G.P.A. of 2.0 or better will be eligible to receive the Certificate in Welding Technology.

General Welder

Certificate Program

Recommended High School preparation: Elementary Algebra, Physics, Mechanical Drawing.

Requirements	Semester Units
Weld 110, 111; Manu 100, 101; Physics 100;	
Engl 420	16
Weld 120, 121; Manu 200	12
Total 28	

Career Opportunities: The field of welding offers employment in automotives, aircraft, guided missiles, nuclear energy, railroads, radio, television, appliances, department stores and food processing plants. The welding technician can join, separate and remove excess metals with various techniques, and is able to work with ferrous, non-ferrous and exotic metals using TIG and MIG processes. The welding technician is the liaison between the welding engineer and the welder.

Women's Studies

College of San Mateo currently offers Women's Studies courses in various academic disciplines. These include History 260: Women in American History (3 units), which surveys the accomplishments of American women from colonial times to the present. The roles played by American women of different racial and local origins are explored in depth. Literature 251: Women and Literature (3 units) investigates the images of women in English and American literature and introduces students to important contemporary women writers. Pol. Sci. 255: Women, Politics & Power (3 units) examines the changing role of women in the American political process. Career & Personal Development 808 (1-3 units) analyzes the student's present abilities and interests, develops college-level study skills, examines career opportunities for women, and provides academic and career counseling in a milieu supportive of women.

An academic major in Women's Studies is now available at some four-year colleges and universities. Students interested in majoring in Women's Studies should consult the catalog of the college of their choice for detailed information. In addition, the College of San Mateo offers a College Re-Entry Program for students whose formal education has been interrupted or postponed. (see Index: "Re-entry Programs.")

Accounting

†100 ACCOUNTING PROCEDURES (4). Five lecture hours. Prerequisite: Completion of or concurrent enrollment in Bus. 810 or 115, or equivalent. Application of accounting procedures for a small business using general and special journals, general ledger, subsidiary ledgers, petty cash records and payroll records for cash or accrual basis. Preparation of trial balances, work sheets, adjusting and closing entries and financial statements.

105 ACCOUNTING FOR SPECIALTY OFFICES (2-3). Four lecture hours per week. Prerequisite: Bus. 810 or 115, or equivalent. Fundamentals of accounting, including instruction and practice in organizing, recording, and interpreting basic record-keeping essentials. For the student who needs a general knowledge of accounting.

†111 ACCOUNTING PRINCIPLES I (4). Five lecture hours per week. Prerequisite: Sophomore standing recommended. Records, accounts and statements of proprietorship and partnership enterprises. Debit and credit theory and generally accepted accounting principles and concepts.

†112 ACCOUNTING PRINCIPLES II (4). Five lecture hours per week. Prerequisite: Actg. 111, or equivalent with grade of C or better. Applications of theory, concepts and principles to corporations. Introduction to departmental, cost and manufacturing accounting, budgeting, analysis and management decisions.

†113 ACCOUNTING PRINCIPLES III (4). Three and one half lecture hours and one half hour lab per week. Prerequisite: Actg. 112 or equivalent with grade C or better. Management concepts of internal control; analysis, design and implementation of an accounting information system; completion of an accounting practice set utilizing a microcomputer.

171 FEDERAL INCOME TAX I (3). Three lecture hours per week. Prerequisite: Actg. 111. Study of the procedures for computing the income tax liability of individuals in accordance with the latest income tax laws and regulations. Practice in solving typical problems and in the preparation of tax returns.

172 FEDERAL INCOME TAX II (3). Three lecture hours per week. Prerequisite: Actg. 111 or equivalent. Study of the procedures for computing the income tax liability of partnerships, corporations, estates and trusts in accordance with the latest income tax laws and regulations. Practice and solving of typical problems in the preparation of tax returns.

†195 INTRODUCTION TO PROGRAMMING AND BUSINESS COMPUTER SYSTEMS (4). Three lecture hours and three lab hours per week. Prerequisites: Concurrent enrollment in or completion of Actg. 111 and completion of Math 120 or equivalent. Concepts and components of computers; flowcharting, programming logic and source language programming. business systems design; economic and social implications of the use of computers in accounting and business applications.

†641 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN BUSINESS ADMINISTRATION (1-3). Hours by arrangement. Selected topics in Business Administration not covered by regular catalog offerings. Course content and unit credit to be determined by the Business Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

(†) Transferable to California State Universities & Colleges

†690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Administration of Justice

(Law Enforcement)

†100 INTRODUCTION TO ADMINISTRATION OF JUSTICE (3). Three lecture hours per week. Required of all Administration of Justice majors in the freshman year. History and philosophy of administration of justice in America; recapitulation of the system; identifying the various subsystems, role expectations, and their interrelationships; theories of crime, education and training for professionalism in the system. (This course is part of the core curriculum.)

†102 PRINCIPLES AND PROCEDURES OF THE JUSTICE SYSTEM (3). Three lecture hours per week. An in-depth study of the role and responsibilities of each segment within the administration of justice system: law enforcement, judicial, corrections. A past, present and future exposure to each subsystem, procedures from initial entry to final disposition and the relationship each segment maintains with its system members. (This course is part of the core curriculum.)

†104 CONCEPTS IN CRIMINAL LAW (3). Three lecture hours per week. Historical development, philosophy of law and constitutional provisions; definitions, classification 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. (This course is part of core curriculum.)

†106 LEGAL ASPECTS OF EVIDENCE (3). Three lecture hours per week. Origin, development, philosophy and constitutional basis of evidence; constitutional and procedural considerations affecting arrest, search and seizure; kinds and degrees of evidence and rules governing admissibility; judicial decisions interpreting individual rights and case studies. (This course is part of core curriculum.)

†108 COMMUNITY RELATIONS (3). Three lecture hours per week. An in-depth exploration of roles of administration of justice practitioners and their agencies. Interrelationships and role expectations between agencies and the public. Emphasis is on professional image of system of justice administration and development of positive relationships between system and public. (This course is part of core curriculum.)

†120 CRIMINAL INVESTIGATION (3). Three lecture hours per week. Study of basic principles of all types of investigations utilized in the justice system. Coverage will include human aspects in dealing with the public; specific knowledge necessary for handling crime scenes; interviews, evidence, surveillance, follow-up, technical resources and case preparation.

†125 JUVENILE PROCEDURES (3). Three lecture hours per week. Study of extent, causation and prevention of juvenile delinquency; an analysis of juvenile courts, probation, institutional treatment, parole and prevention programs. The sociological and anthropological approaches to juvenile delinquency in terms of their relationship to the administration of justice systems.

†140 FINGERPRINT CLASSIFICATION (1). One lecture hour per week. Prerequisite: Admj 120. Study of the biological structure of the layers of the skin; the history of fingerprinting. Development of knowledge and identification capabilities for fingerprint patterns. Henry and FBI systems of classifications with ability to file and search, and demonstration of practical application.

†141 FINGERPRINTING, LATENT (1). *One lecture hour per week. Prerequisite: Admj 120.* Discussion of modus operandi leading to the location of areas containing latent impressions. Development of latent impressions by mechanical and chemical mediums, photography and lifting techniques. Comparison of latents with rolled impression. Courtroom comparison with practical application.

†142 CRIMINAL IDENTIFICATION (1). *One lecture hour per week. Prerequisite: Admj 120.* Study of basic methods of identification: Portrait Parlé, Bertillon system and current identification systems and equipment available for development of composite images. Identification and field photography, camera and darkroom procedures and techniques.

†150 TRAFFIC SUPERVISION AND CONTROL (3). *Three lecture hours per week. Prerequisite: Admj. 100.* Laws relating to the operation of motor vehicles: California vehicle code sections most often encountered and violated; regulation and traffic accident investigation; emphasis on causes and contributory aspects of driver behavior.

†153 PATROL PROCEDURES (3). *Three lecture hours per week. Prerequisite: Completion of or concurrent enrollment in Admj. 100.* Methods, techniques and responsibilities of the patrol unit. The value of one-man car as opposed to two-man car; marked vs. unmarked patrol cars. Beat patrol and observation, police hazards and how to handle them.

†165 POLICE ORGANIZATION AND ADMINISTRATION (3). *Three lecture hours per week. Prerequisites: Admj. 100 and 102 and sophomore standing.* Functions of the police organization. Concepts of chain of command, span of control, functional supervision, unity of command and the purpose of the police organization and administration.

†170 POLICE DEFENSE TACTICS (1). *Two lecture hours per week.* Modern police techniques in self-defense. Use of techniques which subdue with least amount of violence; controls with least possibility of injury to both parties. Teaches the art of judo and jujitsu and baton training.

†649 COOPERATIVE EDUCATION (1-4). *(Grade option.)* Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN ADMINISTRATION OF JUSTICE (1-3). *Hours by arrangement.* Selected topics in Administration of Justice not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

755 ADVANCED OFFICERS COURSE (1-2). *Twenty to forty lecture hours per semester by arrangement. Prerequisites: Satisfactory completion of a Peace Officer Standards and Training Commission (POST) approved Basic Law Enforcement course (formerly ADMJ 99).* New laws, recent court decisions, current enforcement procedures, new concepts in law enforcement technology, community human relations and other refresher training as may be necessary. Certified by the Commission on Peace Officer Standards and Training (POST). (To increase competency, may be repeated three times for credit.)

760 PEACE OFFICERS ORIENTATION (1). *One week, by arrangement: 26 hours.* Laws of arrest, search and seizure, methods of arrest and discretionary decision-making. The care and use of firearms, moral and legal applications of firearms. This course certified by Peace Officer Standards & Training (POST) as required by Penal Code Section 832 for Peace Officers who do not require firearms or who require separate completion of ADMJ 761.

761 STATE SECURITY REQUIREMENTS: FIRE ARMS TRAINING (.5). *Eight lecture and six lab hours per semester.* Designed to train contract, private patrol and proprietary guards in handgun usage. Course requires lecture and range qualification. (Meets State of California requirements. College will certify student to Bureau of Collection and Investigation Services upon successful completion of exam and range firing.) (Note: Any person convicted of a felony may be in violation of the law by participating in this firearms course.)

762 SECURITY BATON TRAINING (.5). *Twelve hours (one week by arrangement).* A course in the legal and moral aspects as related to use of force. Familiarization with various baton procedures, defensive and offensive control and arrest techniques. Ability to demonstrate performance objectives. This course certified by Peace Officers Standards and Training (POST) and fulfills requirements of Consumer Affairs Division.

766 CHEMICAL FIREARM INSTRUCTION (.5-1). *Offered for either 4 hours lecture and 4 hours lab per semester; or 8 hours lecture and 32 hours lab per semester, by arrangement.* History and use in law enforcement of nonlethal chemical agents. Field application and exposure to various agents and first aid for exposure victims. Safety instruction for firing range operation; care, safety and use of various police weapons including range familiarization. (Conforms to peace officers standards and training (POST) for chemical agents training.) (Note: Any person convicted of a felony may be in violation of the law by participating in the firearms portion of this course.)

770 ADVANCED DISPATCHER/CLERK (1-2). Preparation for a position with a law enforcement agency in the position of dispatcher and/or complaint clerk. It will also serve to upgrade those presently employed in this field.

771 RESERVE OFFICERS BASIC TRAINING Module A (2). *Twenty six lecture and fourteen lab hours per semester.* Arrest, search and seizure, law theory and practical application; firearms, legal aspects, safety standards and procedures. Range-firing of weapon and qualification by student. Student must be able to demonstrate performance objectives upon completion of course. Course is certified by Commission on Peace Officer Standards and Training (POST) as required under Penal Code Section 832.6 (a) (1). (Note: Any person convicted of a felony may be in violation of the law by participating in the firearms portion of this course.)

772 RESERVE OFFICERS BASIC TRAINING Module B. (2). *Twenty-five lecture and 15 lab hours per semester.* Role of the back-up officer, including patrol procedures, defensive tactics, vehicle stops; range, with shotgun. Booking procedures and communications. The student, upon completion of the course, must be able to satisfactorily complete the required performance objectives. Course certified by Peace Officers Standards and Training (POST) to partially fulfill requirements for Reserve Peace Officers defined under Penal Code Section 822.6 (a) (2). (Note: Any person convicted of a felony may be in violation of the law by participating in the firearms portion of this course.)

773-774 RESERVE OFFICERS BASIC TRAINING Module C (6-6). *One hundred twenty-four lecture hours.* Administration of Justice, Criminal Law, Criminal Evidence, Criminal Investigation, Defensive Tactics, Introduction to Law Enforcement, Juvenile Procedures, Patrol Procedures, Police-Community Relations, Traffic Laws & Control. Certified by the California Commission on Peace Officer Standards and Training (POST) and when successfully completed

with ADMJ 771 and 772 meets minimum classroom requirements for Non-designated Level 1 Reserve Officers.

Aeronautics

(Also see Meteorology 100 and 110)

Students in airframe and powerplant courses will be expected to pay a fee for airplane taxiing at the airport site, and other fees for supplies, in addition to providing personal tools.

†100 PRIVATE PILOT GROUND SCHOOL (3). *Three lecture hours per week. Concurrent enrollment in Aero. 126 required (Aero. 126 not required for evening session). Preflight requirements, basic navigation, flight computer, use of basic flight manuals, aviation aeronautical chart reading, aviation weather, Federal Aviation Regulations and enroute emergency procedures.*

†101 INSTRUMENT PILOT GROUND SCHOOL (3). *Three lecture hours per week. Prerequisites: Aero. 100 and concurrent enrollment in Aero. 115, 137, Meteorology 110 or 100. (Private pilot license or Aero. 100 required for evening session.) Federal Aviation regulations, navigation and Meteorology, requirements for instrument flight. Preparation of flight logs and related flight planning.*

†102 COMMERCIAL PILOT GROUND SCHOOL (3). *Three lecture hours per week. Prerequisites: Aero. 100, 101 and 137. (Private pilot license or Aero. 100 required for evening session.) Aircraft weight and balance, performance charts, high performance aircraft systems and operation. F.A.A. Regulations parts 1, 61, 91 and 135, NTSB 830. Prepares students to take F.A.A. Commercial Pilot Airplane written examination.*

†115 AIRCRAFT POWERPLANT (3). *Three lecture hours per week. Theory, operation and nomenclature of reciprocating and turbine powerplants. Basic construction of induction, ignition, lubrication, propellers, systems and use of performance curves.*

†126 AIRCRAFT (3). *Three lecture hours per week. Study of subsonic, transonic and supersonic flight with emphasis on stability and control. Aircraft nomenclature, design features, systems components and construction, including fixed and rotary wing aircraft. Weight and balance, load factors calculations on aircraft and introduction to the federal aviation regulations systems.*

†130 INTRODUCTION TO AERONAUTICAL TECHNOLOGY (3). *Three lecture hours per week. An introduction to aeronautical technology including basic electricity, shop mathematics, history of flight, aerodynamics, and aircraft propulsion systems. Designed primarily for students planning to enter the F.A.A. approved maintenance curriculum.*

137 FEDERAL AVIATION REGULATIONS (3). *Three lecture hours per week. Prerequisite: Aero. 101 or concurrent enrollment. The study and practical application of Federal Aviation Regulations and the Airman's Information Manual as it pertains to general operating and flight rules, definitions, and abbreviations, pilot certification and National Transportation Safety Board accident reporting.*

†300 GENERAL MAINTENANCE I (2.5). *Five lecture hours per week for 8 weeks. Prerequisite: Concurrent enrollment in Aero. 301. Blueprint reading, mechanical drawing, aircraft weight and balance procedures, and other maintenance functions as specified in Federal Aviation Regulation Part 147.*

†301 GENERAL MAINTENANCE LAB I (4). *Twenty-five lab hours per week for 8 weeks. Prerequisite: Concurrent enrollment in Aero. 300. Aircraft weighing, nondestructive testing, basic heat treating, use of technical manuals and other maintenance functions as specified in Federal Aviation Regulation Part 147.*

†310 ADVANCED GENERAL MAINTENANCE II (2.5). *Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301 and concurrent enrollment in Aero. 311. Fundamentals of direct and alternating current electricity, fundamentals of applied mathematics, fundamentals of applied physics as specified by Federal Aviation Regulation Part 147.*

†311 ADVANCED GENERAL MAINTENANCE LAB II (4). *Twenty-five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, and concurrent enrollment in Aero. 310. Calculate and measure electrical power volts, amps, and resistance, start, ground operate, and move aircraft, overhaul piston and turbine engine ignition systems in accordance with Federal Aviation Regulation Part 147.*

†320 POWERPLANT MAINTENANCE I (2.5). *Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, and concurrent enrollment in 321. Fundamentals of piston engine construction and operation, basic powerplant indicating systems, as specified in Federal Aviation Regulation Part 147.*

†321 BASIC POWERPLANT MAINTENANCE LAB I (4). *Twenty-five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, and concurrent enrollment in Aero. 320. Inspect and repair opposed and radial piston engines, perform powerplant inspections, inspect engine indicating systems as specified by Federal Aviation Regulation Part 147.*

†330 AIRFRAME MAINTENANCE I (2.5). *Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, and concurrent enrollment in Aero. 331. Principles of aircraft sheet metal structures, identification of aircraft fasteners, aircraft sheetmetal layout and fabrication as specified in Federal Aviation Regulation Part 147.*

†331 AIRFRAME MAINTENANCE LAB I (4). *Twenty five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, and concurrent enrollment in Aero. 330. Install special rivets and fasteners, inspect and repair sheet metal structures, fabricate tubular structures and other aircraft structural maintenance functions as specified by Federal Aviation Regulation Part 147.*

†340 POWERPLANT MAINTENANCE II (2.5). *Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 320, 321, and concurrent enrollment in Aero. 341. Fundamentals of turbine engine construction and operation, piston and turbine engine fuel metering systems as specified in Federal Aviation Regulation Part 147.*

†341 POWERPLANT MAINTENANCE LAB II (4). *Twenty-five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 320, 321 and concurrent enrollment in Aero. 340. Inspect and service turbine engines, repair engine fuel metering components as specified in Federal Aviation Regulation Part 147.*

†350 AIRFRAME MAINTENANCE II (2.5). *Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 330, 331, and concurrent enrollment in Aero. 351. Principles of construction of aircraft wooden structures, repair of aircraft synthetic material, principles of rigging fixed and rotary wing aircraft as specified in Federal Aviation Regulation Part 147.*

†351 AIRFRAME MAINTENANCE LAB II (4). *Twenty-five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 330, 331, and concurrent enrollment in Aero. 350. Application of aircraft covering material, aircraft painting, rig rotary and fixed wing aircraft as specified in Federal Aviation Regulation Part 147.*

†360 POWERPLANT MAINTENANCE III (2.5). Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 320, 321, 340, 341, and concurrent enrollment in Aero. 361. Theory of operation of engine fire detection and control systems, theory of operation and construction of aircraft propellers, and related components as specified in Federal Aviation Regulation Part 147.

†361 POWERPLANT MAINTENANCE LAB III (4). Twenty-five hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 320, 321, 340, 341, and concurrent enrollment in Aero. 360. Inspect and repair engine exhaust and cooling systems, repair and balance propellers as specified in Federal Aviation Regulation Part 147.

†370 AIRFRAME MAINTENANCE III (2.5). Five lecture hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 330, 331, 350, 351, and concurrent enrollment in Aero. 371. Theory of operation of aircraft hydraulic pneumatic, oxygen, and auto-pilot systems, other aircraft systems and components as specified in Federal Aviation Regulation Part 147.

†371 AIRFRAME MAINTENANCE LAB III (4). Twenty-five lab hours per week for 8 weeks. Prerequisites: Aero. 300, 301, 310, 311, 330, 331, 350, 351, and concurrent enrollment in Aero. 370. Inspect and repair aircraft hydraulic, fuel, pneumatic, and instrument systems and other aircraft components and systems as specified in Federal Aviation Regulation Part 147.

†649 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN AERONAUTICS (1-3.) Hours by arrangement. Selected topics in Aeronautics not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Anthropology

†110 CULTURAL ANTHROPOLOGY (3). Three lecture hours per week. Study of culture as the man-made environment of particular societies. Introduction to the anthropological point of view. Cross-cultural comparisons of cultural practices in specific societies and sub-cultures, including contemporary ethnic groups in the United States.

†180 MAGIC, SCIENCE & RELIGION (3). Three lecture hours per week. A cross-cultural study of preliterate societies' beliefs about the nature of reality, and their religious, scientific, and magical practices as a consequence of these beliefs. Primitive techniques for controlling both the natural and the supernatural.

†680 SELECTED TOPICS IN ANTHROPOLOGY (1-3.) Hours by arrangement. Selected topics in Anthropology not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 SPECIAL PROJECTS IN ANTHROPOLOGY (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Apprenticeship Training

The courses in this section are administered by College of San Mateo in conjunction with various trade and industry apprenticeship committees. Registration is limited to those individuals fulfilling the related instruction requirements of the State of California as an indentured apprentice. For more information contact the Technology and Applied Science Division Office.

†649 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN APPRENTICESHIP TRAINING (1-3) Hours by arrangement. Selected topics in Apprenticeship Training not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

ELECTRICAL APPRENTICESHIP (ELEL)

701 ELECTRICAL APPRENTICESHIP I (3). Two and one half lecture, two and one half lab hours per week. Prerequisites: Registration in the Electrical Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Topics include safety, wiring methods, tools, introduction to the code, structure of matter, wire, electron theory, resistance, Ohm's Law, electrical math, power, fastening devices, conduit, series and parallel circuits, combination circuits, and overcurrent protection devices.

702 ELECTRICAL APPRENTICESHIP II (3). Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 701. Safety, wiring methods, voltage drop, magnetism, grounding, principles of generation, electrical plans, circuit calculations, DC motors and generators, three-phase AC, resistive circuits, general lighting and first aid.

703 ELECTRICAL APPRENTICESHIP III (3). Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 702. Safety, wiring methods, math of AC circuits, incandescent lamps, electrical testing, inductance, AC and DC meters, rectifiers, transformers, reactance, capacitance, capacitors, Wholt job, projection and isometric line sketching.

704 ELECTRICAL APPRENTICESHIP IV (3). Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 703. Safety, wiring methods, series and parallel RC & RL circuits, rigging, motor drives, calculations, LC circuits, fire alarms, refrigeration cycle, basic air conditioning, short circuit calculations and T.I.

705 ELECTRICAL APPRENTICESHIP V (3). Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 704. Safety, theory, wiring systems, distribution systems, basic principles of A/C motors, power in A/C circuits (power factor) capacitors, split phase motors, repulsion motors including pole shaded, universal and three-phase and electrical riser diagrams, service and feeders and three-phase transformers.

706 ELECTRICAL APPRENTICESHIP VI (3). *Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 705.* Motor starting, protective controls, hazardous locations, starters and relays, developing simple circuits, sequence control circuits, current analysis, trouble shooting, fluorescent lamps, wiring and piping and circuit economics.

707 ELECTRICAL APPRENTICESHIP VII (3). *Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 706.* Nuclear safety, foremanship, resonance (series & parallel), semiconductors, busways, transistors, wiring roughing, amplifiers, electric closets, coupling networks, and oscillators.

708 ELECTRICAL APPRENTICESHIP VIII (3). *Two and one half lecture, two and one half lab hours per week. Prerequisites: ELEL 707.* Application of electronics, measurement and control, emergency lighting, temperature, pressure and levels, metric system, static control, metrication, journeyman status, and code review.

FIRE-MEDIC APPRENTICESHIP (FIME)

701 FIRE COMMAND IA APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the Fire-Medic Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* The role of the fireground officer, the emergency decision making process, basic tactics and strategies, fireground stress, operational standards, and command and control components.

702 FIRE COMMAND IB APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: FIME 701.* Management of hazardous materials incidents, emergency response, D.O.T., CHEMTREC, protective clothing and decontamination, evacuation, containment and disposal.

703 FIRE INSTRUCTOR 1A APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: FIME 702.* Preparation of course outlines, job breakdowns, behavioral objectives and manipulative lesson plans. Instruction in the importance of the occupational analysis, terms of instruction, teaching methods and the psychology of learning.

704 FIRE INSTRUCTOR IB APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: FIME 703.* Preparation of technical lesson plans, supplementary instruction sheets, test planning sheets and written and oral examinations. Instruction in the importance of the fundamentals of evaluation, lesson plan formats and the principles of effective instruction.

705 FIRE INVESTIGATION I APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the Fire-Medic Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* Responsibilities of the investigator, cause and origin investigation, techniques and reports, and legal responsibilities.

706 FIRE MANAGEMENT I APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the Fire-Medic Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* Management techniques, the concept of management by objective and participatory management, understanding human needs, decision making and team building, Equal Employment Opportunity, communications and disputes.

707 FIRE PREVENTION IA APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the Fire-Medic Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* The duties and responsibilities of prevention personnel, relation of building and fire codes, type and classification of flammable liquids, regulatory identification and extinguishing systems.

708 FIRE PREVENTION IB APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: FIME 707.* Life safety requirements in building construction, exiting, sprinkler systems, hood and duct systems, and smoke and fire detection and alarm systems.

711 FIRE—HEAVY RESCUE I (A & B) APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the Fire-Medic Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* Heavy rescue method operations, basic building construction and collapse characteristics, organization, personnel limitations, environmental consideration, resource identification, ropes and application, vertical techniques, considerations and aerial hazards, damaged building operations, specialized situations, transportation emergencies, high-rise and elevator rescue.

771 EMERGENCY MEDICAL TECHNICIAN/NONAMBULATORY (6). (Credit/No credit.) *One hundred lecture and five lab hours per semester by arrangement. Prerequisites: Registration in the E.M.T. Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* An overview of the Emergency Medical Technician; his/her role and responsibilities in the primary and secondary survey and treatment of the patient.

775 EMERGENCY MEDICAL TECHNICIAN/NONAMBULATORY — RE-CERTIFICATION APPRENTICESHIP (2.5). (Credit/No credit.) *Forty lecture hours per semester by arrangement. Prerequisites: Registration in the E.M.T. Apprenticeship Program, approved by the California State Division of Apprenticeship Standards and possession of a valid E.M.T.-1 NA Certificate.* A refresher course for those persons in need of EMT/Fire Service re-certification. Designed to present updated and new technology in the areas of emergency pre-hospital care.

LITHOGRAPHER APPRENTICESHIP (LITH)

701 LITHOGRAPHER APPRENTICESHIP I (1.5). (Credit/No credit.) *One lecture, two lab hours per week. Prerequisite: Registration in the Lithographer Apprenticeship Program, approved by the California State Division of Apprenticeship Standards.* Basic lithography. May include mechanical art assembly and color correction depending on the need of the individual apprentice.

702 LITHOGRAPHER APPRENTICESHIP II (1.5). (Credit/No credit.) *One lecture, two lab hours per week. Prerequisite: LITH 701.* Mechanical art assembly, densitometry/sensitometry, camera I, color correction, image assembly I, platemaking, basic offset press operation and ink technology. Specific topics will be adapted to needs of the individual apprentice.

703 LITHOGRAPHER APPRENTICESHIP III (1.5). (Credit/No credit.) *One lecture, two lab hours per week. Prerequisite: LITH 702.* Mechanical art assembly, densitometry/sensitometry, camera I, camera II, color correction, image assembly II, platemaking, basic offset press operation, advanced offset press operation and ink technology. Specific topics will be adapted to the needs of the individual apprentice.

704 LITHOGRAPHER APPRENTICESHIP IV (1.5). (Credit/No credit.) One lecture, two lab hours per week. Prerequisite: LITH 703. Mechanical art assembly, densitometry/sensitometry, camera I, camera II, camera III, scanner operation, color correction, image assembly I, image assembly II, image assembly III, platemaking, basic offset press operation, advanced offset press operation and ink technology. Specific topics will be adapted to needs of the individual apprentice.

PLUMBING APPRENTICESHIP (PLUM)

701 PLUMBING APPRENTICESHIP I (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: Registration in the Plumbing Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Safety, first aid, use and care of tools, history of and materials used in the plumbing industry, and shop assembly.

702 PLUMBING APPRENTICESHIP II (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 701. Mathematics, science, and mechanics applying to plumbing.

703 PLUMBING APPRENTICESHIP III (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 702. Plumbing codes and water supply systems.

704 PLUMBING APPRENTICESHIP IV (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 703. Introduction to drawing and plumbing fixtures.

705 PLUMBING APPRENTICESHIP V (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 704. Advanced plumbing and piping layout, pipe fixtures and supports and drainage.

706 PLUMBING APPRENTICESHIP VI (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 705. Various aspects of plumbing service work.

707 PLUMBING APPRENTICESHIP VII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 706. Cutting, gas and arc welding.

708 PLUMBING APPRENTICESHIP VIII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 707. Hydronic and solar heating.

709 PLUMBING APPRENTICESHIP IX (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 708. Continuation of drawing and plan reading.

710 PLUMBING APPRENTICESHIP X (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 709. Continuation of plumbing codes, builders' transit levels, and basic heating.

721 STEAMFITTER, PIPEFITTER APPRENTICESHIP I (3). Two and one half lecture, two and one half lab hours per week. Registration in the Steamfitter, Pipefitter Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Safety and health, use and care of tools, soldering and brazing.

722 STEAMFITTER, PIPEFITTER APPRENTICESHIP II (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 721. Mathematics and pipe measurements.

723 STEAMFITTER, PIPEFITTER APPRENTICESHIP III (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 722. Oxy-acetylene cutting and burning, and basic shielded metal arc welding.

724 STEAMFITTER, PIPEFITTER APPRENTICESHIP IV (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 723. Drawing interpretation.

725 STEAMFITTER, PIPEFITTER APPRENTICESHIP V (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 724. Rigging and signaling, pipe materials, and basic science.

726 STEAMFITTER, PIPEFITTER APPRENTICESHIP VI (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 725. Pumps and steam systems.

727 STEAMFITTER, PIPEFITTER APPRENTICESHIP VII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 726. Introduction to industrial pipe fitting and hydronic heating systems.

728 STEAMFITTER, PIPEFITTER APPRENTICESHIP VIII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 727. Pipe drafting and blueprint reading.

729 STEAMFITTER, PIPEFITTER APPRENTICESHIP IX (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 728. Advanced welding.

730 STEAMFITTER, PIPEFITTER APPRENTICESHIP X (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 729. Gas tungsten arc welding.

741 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP I (3). Two and one half lecture, two and one half lab hours per week. Registration in the Refrigeration & Air Conditioning Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Basic refrigeration.

742 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP II (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 741. Basic electricity.

743 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP III (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 742. Refrigerant controls.

744 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP IV (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 743. Basic and pneumatic controls.

745 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP V (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 744. Brazing, piping and hydronics.

746 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP VI (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 745. Advanced electricity.

747 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP VII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 746. Electrical controls and wiring diagrams.

748 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP VIII (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 747. Heat pumps.

749 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP IX (3). Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 748. Supermarket installations and refrigerator box load.

750 REFRIGERATION & AIR CONDITIONING APPRENTICESHIP X (3). *Two and one half lecture, two and one half lab hours per week. Prerequisite: PLUM 749. Start up testing and air balance.*

SHEET METAL APPRENTICESHIP (SHMT)

701 SHEET METAL APPRENTICESHIP I (2.5). *Two lecture, two lab hours per week. Registration in the Sheet Metal Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Introduction to sheet metal industry, opportunity and obligations, history, layout and pattern development, drafting and sketching, safety and first aid.*

702 SHEET METAL APPRENTICESHIP II (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 701. Introduction to tools, handling of sheet metal, fastenings, types of materials, mathematics, service work, field installation, introduction to architectural sheet metal and parallel line development.*

703 SHEET METAL APPRENTICESHIP III (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 702. Employee/employer relations, layout and pattern, fabrication and installation of architectural sheet metal.*

704 SHEET METAL APPRENTICESHIP IV (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 703. Service work, field installations, introduction to blueprint reading, and radial line development.*

705 SHEET METAL APPRENTICESHIP V (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 705. Use of time, layout and pattern development with introduction to triangulation, mathematics, and continuation of service.*

706 SHEET METAL APPRENTICESHIP VI (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 705. Mechanical field installation, use of power actuated tools, continuation of blueprint reading, blow pipe, introduction to plastic and fibers, food service and beverage equipment and advanced triangulation.*

707 SHEET METAL APPRENTICESHIP VII (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 706. Round pattern development, skylights, boiler breechings, lagging, rollation, short cut methods, and special problems.*

708 SHEET METAL APPRENTICESHIP VIII (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 707. Duct design and assembly, calculation of airflow (CMF), and engineering of complete air conditioning systems.*

721 SHEET METAL SERVICE APPRENTICESHIP I (2.5). *Two lecture, two lab hours per week. Registration in the Sheet Metal Service Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Introduction to sheet metal service trade including basic electricity and electrical controls, cooling, heating and its controls, air movement and filtration and special emphasis on safety.*

722 SHEET METAL SERVICE APPRENTICESHIP II (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 721. Continuation of heating and combination controls, advanced electrical theory, motors, heating pumps, and safety.*

723 SHEET METAL SERVICE APPRENTICESHIP III (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 722. Review of Sheet Metal Service I & II, basic refrigeration, and safety.*

724 SHEET METAL SERVICE APPRENTICESHIP IV (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 723. Compressor changeout, basic piping, multi-system control, basic heat pump application, and safety.*

725 SHEET METAL SERVICE APPRENTICESHIP V (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 724. Theory of multi-system controls, air distribution and valves and safety.*

726 SHEET METAL SERVICE APPRENTICESHIP VI (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 725. Theory of hydronic piping, hydronic and water pumps. Includes safety.*

727 SHEET METAL SERVICE APPRENTICESHIP VII (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 726. Boilers, chillers, combination systems, and safety.*

728 SHEET METAL SERVICE APPRENTICESHIP VIII (2.5). *Two lecture, two lab hours per week. Prerequisite: SHMT 727. Airflow and control systems (MFG), cooling towers, evaporator condensers, energy and management systems and safety.*

743 SHEET METAL WELDING APPRENTICESHIP I (2). *One lecture, three lab hours per week. Prerequisite: SHMT 701. Introduction to and safety of welding sheet metal, oxy-fuel welding, and power sources.*

744 SHEET METAL WELDING APPRENTICESHIP II (2). *One lecture, three lab hours per week. Prerequisite: SHMT 743. Shielded metal arc welding, gas tungsten arc welding, and gas metal arc welding.*

745 SHEET METAL BLUEPRINT READING APPRENTICESHIP I (2). *Two lecture hours per week. Prerequisite: SHMT 701. Introduction to reading plans and specifications, architectural plans, and structural plans.*

746 SHEET METAL BLUEPRINT READING APPRENTICESHIP II (2). *Two lecture hours per week. Prerequisite: SHMT 745. Mechanical plans, electrical plans, and specialty plans.*

747 SHEET METAL SOLAR APPRENTICESHIP I (2). *Two lecture hours per week. Prerequisite: SHMT 721. Introduction to solar heating, theory of operation, operation of an active system, collectors, heat storage, control systems, typical configurations, building considerations, basic collectors, installing rocks, and sensors and thermostats.*

748 SHEET METAL SOLAR APPRENTICESHIP II (2). *Two lecture hours per week. Prerequisite: SHMT 747. Duct installation, fans and conventional heating devices, instrumentation, system check and start-up, leak temperature and pressure testing, hydronic systems, schematics, installing components, piping installation, and heat pump systems.*

SPRINKLER FITTER APPRENTICESHIP (SPFI)

701 SPRINKLER FITTER APPRENTICESHIP I (3). *Three lecture, one lab hour per week. Registration in the Sprinkler Fitter Apprenticeship Program, approved by the California State Division of Apprenticeship Standards. Introduction to fire protection, including safety, first aid and blueprint reading.*

702 SPRINKLER FITTER APPRENTICESHIP II (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 701. Basic mathematics, introduction to National Fire Association 13 (N.F.P.A.), introduction to underground piping and overhead piping, learning to read underground plans.*

703 SPRINKLER FITTER APPRENTICESHIP III (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 702. Related mathematics, continuation of N.F.P.A. 13, knowledge of sprinkler heads, occupancy classification, valves, hanging and bracing piping, and introduction to basic soldering and brazing.*

704 SPRINKLER FITTER APPRENTICESHIP IV (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 703.* Review of blueprint reading, knowledge of valve types and related devices, continuation of N.F.P.A. #13, introduction to various types of sprinkler systems, and math review.

705 SPRINKLER FITTER APPRENTICESHIP V (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 704.* Math review with transit and level operations, underground installation review, N.F.P.A. #13 continued, introduction to water supply for sprinkler systems, introduction to fire pumps; N.F.P.A. #20 and #24.

706 SPRINKLER FITTER APPRENTICESHIP VI (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 705.* N.F.P.A. #13 continued, introduction to hydraulics, knowledge of pre-action and dry pipe systems, continuation of fire pumps, introduction to principles of foremanship.

707 SPRINKLER FITTER APPRENTICESHIP VII (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 706.* N.F.P.A. #13 continued, introduction to alarms for sprinkler systems, continuation of fire pumps, advanced soldering and brazing, use of gas and acetylene equipment; trouble shooting.

708 SPRINKLER FITTER APPRENTICESHIP VIII (3). *Three lecture, one lab hour per week. Prerequisite: SPFI 707.* Introduction to arc welding, emphasis on good foremanship, leadership, and the development of all-around techniques.

Architecture

Students intending to major in Architecture are advised to consult with the architectural counselor/advisor in the Math/Science Division before registering.

+100 SURVEY OF CONTEMPORARY ARCHITECTURE (3). *Three lecture hours per week.* Basic values in contemporary architecture; its relationship to the environment, the individual and society, the home, the neighborhood, and the urban structure in general. An overview of outstanding architects, engineers and planners, and their contributions to our society. Films, slides, lectures and individual research.

+112 SURVEYING (2). *Two lecture and 3 lab hours per week for 12 weeks. Prerequisite: Math 130 with grade C or better.* Theory of measurements in surveying: measurement of distance, differential leveling and measurements of angles and directions, stadia techniques and topographic mapping.

+114-115 BUILDING CONSTRUCTION I AND II (3-3). *Three lecture hours per week. Need not be taken sequentially.* Examines the roles of the people and organizations that comprise the building industry and determine its functioning, followed by study of the characteristics and applications of building materials.

+117 CONTRACT DOCUMENTS OF CONSTRUCTION (3). *Three lecture hours per week.* Study of the basic documents of construction; working drawings, specifications, contracts, flow charts, change orders. Review of areas of responsibility for client, contractor, architect, engineer.

+118 BASIC LAND SURVEYING (3). *Three lecture and two lab hours per week.* Overview of land surveying, its importance and techniques. Investigates the documentation necessary to properly describe and record land ownership. Introduction to the use of basic surveying instruments. Extra supplies may be required.

+120 BLACK AND WHITE GRAPHICS (2). *One lecture and three lab hours per week plus two hours by arrangement.* Representational freehand drawing. Involves composition, visual perspective, three-dimensional thinking. Includes an introduction to photography. A 35mm or larger format camera is desirable. Graphic supplies will be required. (To increase competency, may be repeated for a maximum of 4 units of credit.) (Fall only.)

+125 ARCHITECTURAL PHOTOGRAPHY (2). *One lecture plus two lab hours per week by arrangement. Prerequisite: Arch 120 or equivalent.* The use of photography as a visual process in the interpretation of architecture. Techniques of preparing a portfolio for transfer to professional schools of architecture. Extra supplies may be required. (Spring only.)

+130 COLOR GRAPHICS (1). *One lecture and two lab hours per week.* Representational freehand drawing involving water color and ink. Further development in composition, visual perspective, three-dimensional thinking related to form and space. Graphic supplies will be required. (To increase competency, may be repeated for a maximum of 2 units of credit.) (Spring only.)

+140 PERSPECTIVE DRAWING (3). *Two lecture and four lab hours per week. Prerequisite: Arch. 120, Math 115 or equivalent. Arch. 110 or equivalent.* Basic techniques in the graphic communication of architects: orthographic and isometric projection, descriptive geometry, mechanical perspective, and shades and shadows. Graphic supplies will be required. (Spring only.)

+145 DELINEATION (3). *Two lecture and four lab hours per week. Prerequisites: Arch 120, 130, 140.* Three-dimensional representations with various drawing media which will enable the student to express architectural ideas and designs. Graphic supplies will be required. (To increase competency, may be repeated for a maximum of 6 units of credit.) (Fall only.)

+170 STRESS ANALYSIS (2). *Two lecture hours per week. Prerequisites: Engr. 150, 160; Math 241 or 260.* Stress analysis of statically determinate and indeterminate structures. Deflection theory. Synthesis and analysis in the structural design process. (Spring only.)

+210 ARCHITECTURAL DESIGN (4). *Three lecture hours and three lab hours per week plus three hours by arrangement. Prerequisites: Concurrent enrollment in Arch. 120 and 666.* Investigation into how design affects the environment and human existence; research into related areas through the use of architecture related problems springing from this exposure. Introduction to graphic thinking and three-dimensional awareness. Problems in form, line, space and composition. Graphic supplies will be required. (Fall only.)

+220 ARCHITECTURAL DESIGN AND MATERIALS (4). *Three lecture and three lab hours per week plus three hours by arrangement. Prerequisites: Arch. 120, 210, concurrent enrollment in Arch. 130 and Engr. 150. Transfers admitted by portfolio evaluation only.* Basic studies in spacial relationships involving human and architectural criteria. Continuation of environmental design concepts on a more complex and higher plane. Problems in form, line space and composition. Introduction to the language and application of building materials. Graphic supplies will be required. (Spring only.)

+230 ARCHITECTURAL DESIGN AND PRACTICE I (4). *Three lecture and three lab hours per week plus three hours by arrangement. Prerequisite: Arch. 220 with grade C or better and concurrent enrollment in Engr. 160. Recommended: Arch. 112. Transfers admitted by portfolio evaluation only.* Advanced studies in spacial and visual relationships involving human and architectural criteria. Introduction to design determinants as they relate to architectural practice. Introduction to electrical, mechanical, plumbing, solar systems and structure as design determinants. Graphic supplies will be required. (Fall only.)

+240 ARCHITECTURAL DESIGN AND PRACTICE II (4) *Three lecture hours and three lab hours per week, plus three hours by arrangement. Prerequisites: Arch. 230 with grade C or better and Engr. 160. Transfers admitted by portfolio evaluation only.* Advanced studies in the application of design determinants to architectural problems with an emphasis on integrated design solutions. Course brings into Basic introduction to the language of working drawings as a means of architectural communication. Graphic supplies will be required. (Spring only.)

+644 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

+666 INTRODUCTION TO ARCHITECTURE (1) (Credit/No credit.) *Three lecture hours per week for first six weeks.* An intensive introduction to the problems faced by a beginning architecture student; academic and professional requirements, opportunities, available areas of specialization and alternatives. (Fall only.)

+680 SELECTED TOPICS IN ARCHITECTURE (1-3). *Hours by arrangement.* Selected topics in architecture not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2) *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: students normally may receive credit for only one Special Project per semester.)

Art

+101 HISTORY OF ART I (3) *Three lecture hours per week.* Ancient, Classic, Early Christian and Medieval art. A survey of artistic expression from prehistoric times to the late Middle Ages, with emphasis on architecture and sculpture.

+102 HISTORY OF ART II (3) *Three lecture hours per week.* A survey of Gothic, Renaissance and Baroque art. Emphasis on the development of painting from the 14th to the 18th centuries.

+103 HISTORY OF ART III (3) *Three lecture hours per week.* A survey of European and American art from mid-18th Century to the present. Emphasis on the development of modern painting as a reaction against earlier traditions.

+106 SURVEY OF CONTEMPORARY ART (3) *Three lecture hours per week.* A survey of modern art with an emphasis on present works. Painting, sculpture, ceramics, glass, etc. Field trips to Bay Area galleries and museums are included.

+108 HISTORY OF AMERICAN ART (3) *Three lecture hours per week.* A study of art in America, its native artists and its relations to the historical evolution of this country. Emphasis on portraiture, nature and genre painting, realism, fantasy and symbolism.

+111 INTRODUCTION TO RELATED ARTS (3) *Three lecture hours per week.* Introduction to painting, music and theatre, stressing basic elements, problems of organization. Students may participate as audience and artists.

+141 INTERIOR DESIGN I (3) *Three lecture hours per week.* A survey of the modern home site, design, furnishings and decoration.

+142 INTERIOR DESIGN II (3) *Three lecture hours per week.* A survey of the history of furniture, with examination of "period styles," their influence on modern interior decoration, and their values in solving problems.

+145 BASIC CONCEPTS FOR INTERIOR DESIGN (3) *Three lecture-critique hours and three lab hours per week.* Study and directed experiments utilizing the elements and principles of design. Lectures, demonstrations of techniques and design concepts specifically related to interior design practice.

+147 SPACE PLANNING (3) *Three lecture-critique hours and three lab hours.* Organization, creative design, planning and construction of open and closed architectural spaces. Investigation of techniques and styles of executing floor plans and elevations. The course includes the organization and drawing of both residential and commercial structures.

+148 COLOR APPLIED TO INTERIOR (3). *Three lecture hours per week.* The application of color theory to aesthetic, functional and psychological uses in textile design and interior decorating. The element of color is studied and applied to interiors with consideration to texture, scale, intensity and room arrangement.

+149 GRAPHIC INTERIOR DESIGN (3) *Three lecture-critique hours and three lab hours. Prerequisite: Art 147.* Rendering and presentation techniques utilizing linear perspective drawing and color manipulation. Class problems involve one and two point perspective and rapid sketch exercises.

+151 HISTORY OF FURNITURE I (3) *Three lecture hours per week.* A survey of the furniture and decoration of the Western world from ancient times to the 18th Century. Course content covers interior architectural detail of the Egyptian, Greek, Roman, Medieval, Renaissance and Oriental styles.

+152 HISTORY OF FURNITURE II (3) *Three lecture hours per week. Prerequisite: Art 151.* A study of principal styles of furniture, accessories and architectural details of the 18th Century, through contemporary furniture and decoration of the 20th Century.

+153 MATERIALS AND APPLICATION (3). *Three lecture hours and one lab hour per week.* An analysis of the functional use and aesthetic effect of various materials, including synthetics, masonry, metal, wood, glass, leather, fabric, carpeting, paint, paper and plastics.

+155 INTERIOR DESIGN WORKSHOP (3) *Three lecture-critique hours and three lab hours per week. Prerequisites: Art 145, 147, 149.* Development of verbal and visual communication skills in preparation for use in dealing with domestic and commercial clients, sub-contractors and architects. Practical experience involving presentation, coordination and resolving all facets of design problems using sketches, models and sample boards.

+156 INTERIOR DESIGN PORTFOLIO (3) *Three lecture hours per week. Prerequisite: Art 155.* An occupational course for the advanced student in interior design, emphasizing professional presentation of interior design projects to potential clients and potential employers.

+157 INTERIOR DESIGN MANAGEMENT (3). *Three lecture hours per week. Prerequisites: Art 145, 147 and 149.* Instruction in setting up an interior design practice, residential and commercial. Merchandising, licensing, purchasing and pricing of furnishings. The communication of ideas: designer-client relations and business practices.

- †201 **FORM AND COMPOSITION I (3).** *Three lecture-critique hours and three lab hours per week.* Basic drawing course for college students. The study of two and three dimensional form and space relationships and the elements of design in pictorial composition. Sequence of problems based on still life, landscape, etc. Drawing in various media from conte through pencil, pen and ink to wash.
- †202 **FORM AND COMPOSITION II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 201.* Advanced composition; further study of three-dimensional form, in black and white and color; advanced pictorial composition in illustration and the fine arts.
- †206 **FIGURE DRAWING AND PORTRAITURE (3).** *Three lecture-critique hours and three lab hours per week.* Drawing the human figure from both live models and plaster anatomical casts using charcoal, conte and ink. Emphasis is on proportion, action, structure, form and foreshortening. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †207 **LIFE DRAWING (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 201.* The human figure in action and repose, from the standpoint of classical and modern artistic anatomy, with lecture demonstration on the skeleton, musculature and surface forms. Drawing in various media from the nude model, as a basis for figure and portrait painting and sculpture. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †214 **COLOR (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 201, 301.* Course study is based on the psychological perception of color and the aesthetics of harmony. Stressed is the use of color for the designer and artist.
- †220 **CREATIVITY WITH MATERIALS (3).** *Three lecture-critique and three lab hours per week. Basic drawing or design recommended.* Explores creative uses of art materials, form, and figure. Abstraction will be stressed. Large format work with a variety of wet & dry media. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †223 **OIL PAINTING I (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: 201 or 202; 214 recommended.* Introduction to basic oil painting techniques. Emphasis on the use of value, color and light to model forms and create the illusion of 3D objects in space.
- †224 **OIL PAINTING II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 223; Art 214 recommended.* Continuation of Art 223 with increased emphasis on technique, color and composition as a means of achieving personal expression. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †231 **WATERCOLOR I (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 201; Art 214 recommended.* Through exercises and renderings, the student is made familiar with the various approaches and styles of watercolor; the importance of transparent washes, their effects and possibilities. Materials, color; moisture and the importance of light and dark to show form are studied.
- †232 **WATERCOLOR II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 231.* A continuation of Art 231, with emphasis on more painting experience in various styles and techniques in watercolor, such as an addition of opaque paints and the use of collage to extend the painting experience. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †237 **ETCHING I (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 201.* An introduction to the intaglio etching process as a fine art, with emphasis on traditional methods in the practice of engraving, the timed etch in line and aquatint, soft ground, lift, drypoint, and mezzotint and their printing in value and color. Extra supplies may be required.
- †238 **ETCHING II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 237.* An advanced course in intaglio etching as a fine art, with emphasis on contemporary methods of color printing. Extra supplies may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †241 **SILKSCREEN I (2-3).** *Two-three lecture-critique hours and two-three lab hours per week.* Introduction to serigraphy; making the frame, mixing the ink, developing the stencil processes of paper, glue, varnish and tusch methods, as well as the photo-emulsion process. Extra supplies may be required.
- †242 **SILKSCREEN II (2-3).** *Two-three lecture-critique hours and two-three lab hours per week. Prerequisite: Art 241.* Advanced silkscreening problems designed to encourage student experimentation in utilizing serigraphic techniques for visual presentation. Extra supplies may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †301 **DESIGN (3).** *Three lecture-critique hours and three lab hours per week.* Development of problems dealing with two-dimensional design, such as repeat pattern, collage, mosaic, shape, texture and line studies. Exploration of media and techniques is encouraged.
- †305 **THREE-DIMENSIONAL DESIGN (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 301.* Volume line and space studies using paper, wire, wood, string and plaster of paris construction. Mobiles, stables and similar objects are created.
- †310 **LETTERING (3).** *Three lecture-critique hours per week.* Development of proficiency in the freehand and mechanical lettering of the three main alphabetical types—Gothic, Roman, and Text—with variations of these types. Emphasis is on letter proportions, character of style and proper spacing of letters and words.
- †328 **RENDERING TECHNIQUES (3).** *Three lecture-critique hours and three lab hours per week. Prerequisites: Art 201, 202 and Art 301.* Illustration techniques and tools of the commercial artist; professional procedure in developing rendering; development of an illustration from a pencil rough to a finished comprehensive. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †336 **PORTFOLIO (1).** *Three lab hours per week. Prerequisite: Sophomore standing.* Preparation of art and course work for a portfolio. The instructor will analyze, evaluate and suggest to the student the quality of work necessary for portfolio presentation to art schools, colleges, universities and agencies. Instruction in portfolio organization, selection of work, matting, labeling and defining the objective of the art work.
- †350 **VISUAL PERCEPTION (3).** *Three lecture-critique hours per week.* A basic composition class using 35mm slide film as the medium. The course will cover the uses of the 35mm camera, different film types, metering, filtering, and other creative controls of color slide photography. Students will be required to produce a color slide portfolio. Extra supplies may be required.
- †351 **PHOTOGRAPHY I (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 350, 201, or 301 or concurrent enrollment.* Introduction to basic black and white photographic skills and equipment. Precise methods of negative developing, printing, and finishing the fine photograph. Extensive darkroom work. Portfolio is produced. Extra supplies may be required.

†**352 PHOTOGRAPHY II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 351.* For students who have basic black and white camera and darkroom skills. Refinement of visual and technical skills. Advanced exposure and development techniques applied to fine printmaking. Portfolio is produced. Extra supply charges may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**353 PHOTOGRAPHY III (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 351.* The broader aspects of technical perfection and visual awareness. Contemporary and creative forms of photography presentations are explored, with emphasis on experimental techniques. Extra supplies may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**354 COLOR PHOTOGRAPHY I (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 351.* Introduction to the use of color materials as an expressive media. Access to color processor. Mastery of the technical aspect of color balance and exposure will be emphasized. Extra supplies may be required.

†**355 COLOR PHOTOGRAPHY II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 354.* Continuation of Art 354, with emphasis on more refined control of color materials and more cohesive portfolio. Extra supplies may be required. (To increase competency may be repeated for a maximum of 12 units of credit.)

†**405 SCULPTURE I (3).** *Three lecture-critique hours and three lab hours per week.* Beginning clay modeling. Projects deal with both abstract and human forms. Nude models are used. Analysis of form for realistic expression is stressed in dealing with the human form. Extra supplies may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**406 SCULPTURE II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 405 or equivalent.* Introduction to armature building, construction, mold making, casting, removal process. Realistic and abstract approaches, abstract stressed. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**411 CERAMICS I (3).** *Three lecture-critique hours and three lab hours per week.* Elementary clay construction including pinch, coil and slab; methods of ornamentation, glazing and firing; introduction to the potter's wheel. Extra supplies are required.

†**412 CERAMICS II (3).** *Three lecture-critique hours and three lab hours per week. Prerequisite: Art 411.* Continuation and advanced study of topics introduced in Art 411. Extra supplies are required. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**416 GLASS BLOWING (3).** *Three lecture-critique hours and three lab hours per week.* An introduction to the study of glass blowing. Extra supplies may be required. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†**642 COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†**680 SELECTED TOPICS IN ART (1-3).** *Hours by arrangement.* Selected topics in Art not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†**690 SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Astronomy

†**100 INTRODUCTION TO ASTRONOMY (3).** *Two lecture and one recitation hour per week.* Survey of astronomy satisfying science requirements in state colleges and universities. Includes descriptive material on the solar system, stars, galaxies and life in the universe, together with an introduction to the methods employed by astronomers in gathering information.

†**101 ASTRONOMY LABORATORY (1).** *Three lab hours per week. Prerequisite: Math. 110 or equivalent with grade C or better and completion of or concurrent enrollment in Astr. 100.* Use of planetarium for constellation identification, coordinate systems and basic astronomical measurements of planets, stars and spectra. Occasional telescopic observations and visits to observatories. With Astr. 100, satisfies lab science requirements for U.C. and California State Universities. Extra supplies may be required.

†**110 THEORIES OF THE UNIVERSE (3).** *Three lecture hours per week. Prerequisite: Astro. 100.* Current topics, theories and problems of modern astronomy, including the origin and evolution of the solar system, the stars and the universe, and the phenomenon of life in the universe. Readings from current journals. Occasional observation sessions.

†**680 SELECTED TOPICS IN ASTRONOMY (1-3).** *Hours by arrangement.* Selected topics in Astronomy not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†**690 SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally receive credit for only one Special Project per semester.)

Biology

†**100 INTRODUCTION TO THE LIFE SCIENCES (3).** *Three lecture hours per week.* Fundamental principles of life. The awareness of plant and animal interrelations and interdependencies. Man's role in the world of living things is examined in relation to contemporary problems. (This course is intended for non-science majors with no previous experience in the biological sciences.)

†**101 INTRODUCTION TO ENVIRONMENTAL BIOLOGY (3).** *Three lecture hours per week.* A study of mankind's relationship to his environment, including the dynamics of population growth; management of renewable and non-renewable resources, alternative energy sources, and current problems caused by man's interactions with his environment.

†**102 ESSENTIALS OF CONSERVATION (3).** *Three lecture hours per week.* Consideration of the national resources of the U.S., including forests, grasslands, wildlife, water, marine, soils, minerals, and recreational problems and practices in resource management.

- †110 **GENERAL PRINCIPLES OF BIOLOGY (4).** *Three lecture hours and three lab hours per week.* A study of the principles of the biological sciences. Topics include: origin and evolution of life, cellular nature of living things, genetics, ecology, life cycles, and natural history. One or two field trips may be required. Extra supplies may be required.
- †111 **GENERAL NATURE STUDY (4).** *Two lecture and six lab/field hours per week.* Introduction to common flora and fauna of Bay Area biotic communities with emphasis upon methods of locating, identifying, preserving and displaying selected species. Basic principles of biology, ecology, conservation and nature photography will be applied as they relate to adaptation, life cycles, habits, habitats and interrelationships. Lab to include methods of interpretation and emphasis upon internship co-op experience with local groups with a nature study orientation applied to education and recreation programs.
- †125 **PHYSICAL ANTHROPOLOGY (3).** *Three lecture hours per week.* Man's place in nature. Topics include man's evolution, genetics and racial variation. Evolutionary basis of man's behavior and social systems.
- †130 **THE HUMAN MACHINE (3).** *Three lecture hours per week.* *Prerequisite: Biology 100 or 110.* An introductory study of human anatomy and physiology, including the functional relationships of cells to each body system. Recommended for students in the Vocational Nursing and Medical Assisting programs.
- †131 **THE HUMAN MACHINE LAB (1).** *Three lab hours per week.* *Prerequisite: Concurrent enrollment in or completion of Biology 130 with grade C or better.* An introductory lab study of human anatomy and physiology with emphasis on the relationships of structures to the functions of each body system. Recommended for pre-LVN and RN students and as preparation for Biology 411-412, 250-260.
- †140 **ANIMALS AND MAN (3).** *Three lecture hours per week.* Introduction to animals around us and their relationship to man. Major emphasis on animals as prey, servants, companions and bearers of disease. General education course for non-science majors.
- †145 **PLANTS AND MAN (3).** *Three lecture hours per week.* Basic principles of the living state as seen in plants. Plant structure and function; plant genetics and evolution; economic and cultural importance of plants to man. One or two field trips may be required.
- †150 **INTRODUCTION TO MARINE BIOLOGY (4).** *Three lecture and three lab/field hours per week.* *Recommended: One college-level biology course.* Introduction to physical oceanography, marine animals, marine plants and marine ecology. Major emphasis is given to the natural history of marine forms, including their taxonomy, morphology and physiology. Bays, estuaries and oceans are described as habitats. Extra supplies may be required.
- †160 **HUMAN GENETICS (3).** *Three lecture hours per week.* *Prerequisite: One course in the biological sciences.* Introduction to the principles of heredity in plants and animals with specific reference to inheritance and biochemical genetics. The importance of heredity in evolutionary concepts. The implications of genetic engineering as discussed in contemporary journals will be emphasized.
- †180 **INTRODUCTION TO FORESTRY (3).** *Three lecture hours per week.* Study of the forest as a biological community; scientific and economic basis of forestry, including topics from ecology, dendrology, entomology, pathology, silviculture, mensuration, utilization and economics. Careers in forestry. Field trip may be required.
- †184 **WILDLIFE BIOLOGY (3).** *Three lecture hours per week plus one field trip.* Study of wildlife species, with emphasis on mammals of the Pacific states: their characteristics, life histories, ecology and economic importance. Introduction to basic wildlife management practices.
- †200 **GENERAL ECOLOGY (4).** *Three lecture and three lab/field hours per week.* *Prerequisite: High school biology or equivalent with grade C or better.* Introduction to the principles of ecology and field methodology. Topics include diversity and distribution of flora and fauna, interrelationships of organisms and behavioral evolution, energy flow relationships to ecosystems and population dynamics. General emphasis upon global communities and specific emphasis upon local habitats and species.
- †210 **GENERAL ZOOLOGY (5).** *Three lecture and six lab hours per week.* *Prerequisite: High school biology or equivalent with grade C or better.* Introduction to the principles of animal biology. Topics include: molecular basis of life, structure, function and behavior as seen in invertebrates and selected chordates, ecology, zoogeography, and animal evolution. Extra supplies may be required.
- †220 **GENERAL BOTANY (5).** *Three lecture and six lab hours per week.* *Prerequisite: High school biology or equivalent with grade C or better.* Principles of biology as illustrated by plants with emphasis on structure, physiology and reproduction in green plants. Extra supplies may be required.
- †230 **INTRODUCTION TO CELL BIOLOGY (4).** *Three lecture and three lab hours per week.* *Prerequisite: Chemistry 210 or Chemistry 410-420.* Evaluation and analysis of the living cell and its component parts. The metabolism of the cell and bioenergetics involved are examined as they relate to cellular development, growth, and reproduction. (Recommended for all Life Science and Medical Science majors.) Extra supplies may be required.
- †240 **GENERAL MICROBIOLOGY (5).** *Three lecture and six lab hours per week.* *Prerequisite: Chemistry 210 or Chemistry 410, 420, college-level Biology course. Bio. 230 recommended.* Introduction to the morphology, physiology, and genetics of microorganisms, particularly of bacteria and viruses. Aspects of environmental and applied microbiology. Laboratory work includes the isolation of bacteria from natural habitats, methods of culture and identification, techniques used to demonstrate microbial properties. (Recommended for majors requiring a 5-unit course in microbiology/bacteriology: life sciences, biochemistry, nutrition, pre-dentistry, pre-medical, agriculture, environmental science, sanitary engineering.)
- †243 **PRINCIPLES OF MICROBIOLOGY (5).** *Three lecture and six lab hours per week.* *Prerequisite: Chemistry 210 or Chemistry 410 with grade C or better.* Basic concepts of structure and function of microorganisms with emphasis on bacteria and viruses and their role in disease in humans. Aspects of immunological response, and control and prevention of infectious diseases. Laboratory work includes isolation, cultivation and identification of bacteria. (Recommended for majors in physical therapy, occupational therapy, nursing, and other health-related professions.)
- †250 **ANATOMY (4).** *Three lecture and three lab hours per week.* *Prerequisite: High school biology or equivalent with grade C or better.* Structure of the human body. Laboratory study and dissection of the human male and female. (Primarily intended for students of nursing, physiotherapy, physical education and other related fields. Elective for pre-dental, pre-medical and pre-veterinary students.) Extra supplies may be required. (Fall only.)

- †260 **INTRODUCTORY PHYSIOLOGY (5).** *Three lecture and six lab hours per week. Prerequisite: One course selected from Biology 210, 250, or 230. A knowledge of elementary chemistry is recommended.* Functions of the organs and systems of the human body. Intended for students of nursing, physiotherapy, physical education, psychology and other related fields. Elective for pre-dental, pre-medical and pre-veterinary students. Extra supplies may be required. (Spring only.)
- †265-266 **ANATOMY/PHYSIOLOGY I-II (4-5).** *Intended for students of physical therapy, occupational therapy, nursing, biology, and other health-related professions. Elective for pre-dental, pre-medical and pre-veterinary students.*
- 265 — *Two lecture and six lab hours per week. Prerequisite: Biol 110 or 130 with grade of C, or one year of high school biology with grade B or better. Elem. Chem (Chem 192), or high school chemistry with grade C or better is recommended. Completion of or concurrent enrollment in MEDA 110 is also recommended.* Comprehensive study of structures and associated functions of the body's organ systems, including cell structure and function, epithelium, connective tissue, integumentary, skeletal, muscular, nervous, and endocrine systems.
- 266 — *Three lecture and six lab hours per week. Prerequisite: Biol 265 with grade C or better.* Continued study of structures and associated functions of the organ systems of the body, including lymphatic, cardiovascular, respiratory, urinary, and reproductive systems; pregnancy and human development.
- 425 **ALLIED HEALTH BACTERIOLOGY (2).** *Two lecture hours per week. Prerequisite: Enrollment in the Licensed Vocational Nursing Program. Recommended for Medical Assistants.* Introduction to microbiology with emphasis on morphology, physiology, transmission and control of pathogenic forms. (Spring only.)
- †644 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN BIOLOGY (1-3).** *Hours by arrangement.* The topic of this course will be different each semester. It is intended to be a course covering a subject of relevance, but is not intended to be a permanent offering of the Division.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- †131 **RADIO STUDIO TECHNIQUES I (4).** *Two lecture hours and six lab hours per week by arrangement.* Study of the basic practices and procedures in radio broadcasting. The proper use of microphones, operation of audio mixing consoles, tape recorders and other common broadcast equipment, with emphasis on combo- and engineering-announcer types of programs.
- †132 **RADIO STUDIO TECHNIQUES II (3).** *One lecture hour and six lab hours per week by arrangement. Prerequisite: Bcst. 131 or equivalent, plus demonstration of acceptable operational ability.* Continuation of Bcst. 131. Advanced students may operate the radio broadcast station KCSM-FM as part of their laboratory assignment.
- †135 **ADVANCED RADIO OPERATIONS (3).** *One lecture hour and six lab hours per week by arrangement. Prerequisite: Bcst. 132 or equivalent, plus demonstration of operational ability.* Instruction in the area of radio broadcast production/operations, including assuming responsibility for remote broadcasts, recording out-of-studio activities and events, compiling and producing weekly station promotional materials and assisting students in Bcst. 195 in producing weekly programs.
- †192 **BROADCAST TIME SALES (3).** *Three lecture hours per week.* Introductory course acquaints the student with fundamentals of time sales, its significance to the station and other departments, its relationship to clients and agencies. Knowledge of all promotional materials.
- 194 **RADIO AND TELEVISION NEWS EDITING AND WRITING (3).** *Three lecture hours per week. Prerequisites: OFAD 100 or equivalent.* Wire copy, rewriting, oral writing style, putting the newscast together for air, good taste in reporting, libel and slander laws, use of the tape recorder and the "beeper" telephone and writing for still pictures and films.
- †195 **PROJECTS IN RADIO (3).** *One lecture hour and six lab hours per week to be arranged. Prerequisite: Bcst. 115 or equivalent, plus demonstration of operational ability.* Instruction in the area of broadcast production, with major emphasis on researching a given subject or area, producing a series of half-hour or quarter-hour programs on the subject or area. Particular emphasis is placed on writing and the final vocal delivery involved in the series. Programs may be aired on KCSM-FM.
- †231 **TELEVISION STUDIO TECHNIQUES I (3).** *One lecture hour and six lab hours per week.* Study of the equipment used in a television studio, with emphasis on lighting, camera operation, audio control, video switching and production work.
- †232 **TELEVISION STUDIO TECHNIQUES II (4).** *Two lecture hours and six lab hours per week.* Continuation of Bcst. 231. Operation of studio equipment with additional training in producing, directing and writing. Designed to improve proficiency on video equipment.
- †241 **PROJECTS IN TELEVISION I (4).** *Two lecture hours and six lab hours per week. Prerequisites: Bcst. 231 and 232 or 301 and 302.* By end of semester, students must pass proficiency test on equipment, terminology and manipulative skills. Introduction to television production with supervised activity in the planning of program material and program production. Emphasis on studio operation, remote production and editing. Completed programs may air on KCSM-TV.
- †242 **PROJECTS IN TELEVISION II (4).** *Two lecture hours and six lab hours per week. Prerequisites: Minimum grade of B in Bcst. 241.* Continued activity in productions, remote productions, and editing. Completed programs may be aired on KCSM-TV.

Broadcasting Arts

(Formerly Telecommunications)

- †110 **INTRODUCTION TO BROADCASTING (3).** *Three lecture hours per week.* Introduction to the radio and television broadcasting industry: its nature, organization, history, operation, regulation, programming and business procedure.
- †115 **BROADCAST ANNOUNCING (3).** *Three lecture hours per week.* Introduction to the basics of announcing skills, effective speaking and critical listening. Practice in analysis and evaluation of speeches, reading typical radio copy, speaking ad lib, announcing and microphone techniques, developed through regular use of the studio facilities.

†243 **PROJECTS IN TELEVISION III (4).** *Two lecture hours and six lab hours per week. Prerequisites: Bcst. 231 and 232 or 301 and 302.* Advanced activity in television operations and production. Programs suitable for televising are produced for KCSM-TV.

†301 **RADIO AND TELEVISION TECHNICAL OPERATIONS I (3).** *Two lecture hours and five lab hours per week by arrangement.* Construction, installation and maintenance of equipment used in KCSM-FM and KCSM-TV and related studio equipment, including lighting, audio and video console equipment.

302 **RADIO AND TELEVISION TECHNICAL OPERATIONS II (3).** *Prerequisite: Bcst. 301. Two lecture and five lab hours per week by arrangement.* Advanced instruction in the subjects introduced in Bcst. 301, with additional emphasis on intercommunications equipment, video tape recorders, and FM and TV transmitters.

†642 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 **SELECTED TOPICS IN BROADCASTING (1-3)** *Hours by arrangement.* Selected topics in Broadcasting not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine and Performing Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Building Inspection

680 **SELECTED TOPICS IN BUILDING INSPECTION (1-3).** The topic of this course will be different each semester. It is intended to be a course covering a subject of relevance, which may be offered as a seminar, lecture, or lecture/lab class.

700 **TECHNIQUES OF INSPECTION (3).** *Three lecture hours per week.* Organization and methods of inspecting soils, excavations, foundations, wood framing, masonry, concrete and steel structures.

710 **BUILDING CODE INTERPRETATION (3).** *Three lecture hours per week.* Building regulations which pertain to types of construction, areas of construction, height and separation laws, exits of buildings, fire resistance, flame spread and sprinkler systems.

720 **ELECTRICAL WIRING INSPECTION (3).** *Three lecture hours per week.* Electrical wiring for building inspection, covering single-family dwellings, multifamily dwellings, commercial locations (Wiring plans for a store building), industrial locations (Power installations), specialized and hazardous locations.

730 **PLUMBING INSPECTION (3).** *Three lecture hours per week.* Building regulations which pertain to drainage systems, vents and venting, plumbing, water systems, building sewers and gas piping.

740 **MECHANICAL CODE (3).** *Three lecture hours per week.* Building regulations which pertain to mechanical codes of construction, heating equipment, floor furnaces, wall furnaces, unit heaters, venting, ducts, ventilation systems, refrigeration systems and equipment.

750 **NON-STRUCTURAL PLAN CHECK (3).** *Three lecture hours per week.* Study of occupancy requirements, types of construction, fire safety and State of California residential insulation requirements.

760 **CALIFORNIA ENERGY REGULATIONS (3).** *Three lecture hours per week.* Residential and non-residential building methods of compliance with state, federal and local energy regulations. Insulation, weatherstripping, climate-control systems, water heating, lighting, depletable and non-depletable energy as related to energy regulations. Appliance regulations.

770 **CONTRACTOR'S LICENSE AND LAW (3).** (Formerly Trade and Industrial 740) *Three lecture hours per week. Prerequisite: Experience in the construction field.* An introduction to the legal requirements for a contractor's license and a study of his/her obligations to clients.

Business

Students graduating with a major in the field of business must meet the following subject requirements: *Mathematics*—A score of at least 28 on the CSM Math Placement Test I, or completion of Bus. 810 with a grade of C or better. It is recommended that Bus. 810 be completed by the end of the second semester. (Not required for A.A. in Business Administration Option #1 or for A.A. or certificate in Accounting.) *Bus. 100*—Introduction to Business.

†100 **INTRODUCTION TO BUSINESS (3).** *Three lecture hours per week.* An introductory survey of the nature, organization and structure of the American free enterprise system. A basic orientation course in business designed to develop a realization of the role of business in the economy and as an aid in selecting a field of vocational specialization. (Required of all students majoring in Career Business Programs. Satisfies Mgmt 100 requirement for Management Certificate Program and AA degree.)

†101 **HUMAN RELATIONS I (3).** *Three lecture hours per week.* Application of psychological principles to problems of selfmanagement and personal growth essential for successful living, including interpersonal relationships on the job.

†102 **HUMAN RELATIONS II (3).** *Three lecture hours per week. Prerequisite: Bus. 101.* The study of human behavior and the necessity of taking positive action to achieve better interpersonal relationships. Discussion topics center around personal growth and communication problems in groups and organizations, such as business, community, social group, school and home.

†115 **BUSINESS MATHEMATICS (3).** *Three lecture hours per week. Prerequisite: A score of at least 28 on the CSM Math Placement Test I, or completion of Bus. 810 with a grade of C or better.* A study of mathematics as applied to business, with emphasis on calculations involving interest, discount, negotiable instruments, financial statements and ratios, inventory pricing, depreciation, payroll, income tax, central tendency and correlation.

†123 **ECONOMIC-BUSINESS STATISTICS (4).** *Four lecture hours per week. Prerequisite: Math 120 or equivalent with grade C or better, or high school preparation including 1-.5 years of algebra with grades of C or better.* Graphic presentation, measures of central tendency, dispersion, index numbers, time series, seasonal indexes. Hypotheses testing, type I and type II error, Chi-square goodness of fit test, contingency tables, regression and correlation analysis.

†129 **MACHINE CALCULATION (1-2).** *Five lecture hours per week for 5.5 weeks (Three 5-week modules per semester). Students may enter at the beginning of any module. Prerequisite: Bus. 810 or equivalent.* Instruction includes electronic display and printing calculators and the touch system of operating the 10-key adding machine. Assignments emphasize actual business situations and problems. The printing calculator is used for the optional second unit practice set.

- †140 **SECURITY INVESTMENTS (3).** *Three lecture hours per week. Prerequisite: Sophomore standing.* Stocks, bonds and investment trusts; investment policies, evaluation, charting—issues and industries.
- †150 **SMALL BUSINESS MANAGEMENT (3).** *Three lecture hours per week. Prerequisite: Bus. 100 or Mgmt. 100.* Examination of the opportunities and hazards of small business operation; designed for business students who plan to establish or supervise a small business. Significant areas of vital interest to the prospective independent businessman are explored, including pre-opening requirements.
- †160 **PUBLIC RELATIONS (3).** *Three lecture hours per week.* Role of public relations in business and industry. The fundamental principles, procedures and tools used in public relations.
- †170 **SALESMANSHIP FUNDAMENTALS (3).** *Three lecture hours per week.* Covers the role and impact of personal selling in the marketing process. Considers principles and techniques employed effectively in the direct sales process.
- †175 **ADVERTISING (3).** *Three lecture hours per week. Not open to first-semester freshmen.* The role of advertising in our economic life, with emphasis on advertising methods and media.
- †180 **MARKETING (3).** *Three lecture hours per week. Prerequisite: Bus. 100 or Mgmt. 100.* Broad study of marketing principles and methods applicable to both consumer and industrial goods and services. Major topics include retailing and wholesaling consumers' goods, marketing industrial goods, marketing policies and practices, and government relationship to marketing.
- †185 **MARKETING RESEARCH (3).** *Three lecture hours per week. Prerequisite: Business 180.* Survey of marketing research and application as a management tool. The approach is essentially practical rather than theoretical.
- †190 **RETAILING (3).** *Three lecture hours per week. Prerequisite: Bus. 100, Bus. 810 or 115.* Retail process emphasized includes merchandise planning and control, buying and receiving, pricing, sale promotion and customer service.
- †201 **BUSINESS LAW I (3).** *Three lecture hours per week.* Introduction to study of law, including sources, agencies and enforcement procedures. Emphasis on ability to understand and review simple contracts and a basic understanding of contract law. Discussion of sales warranties and consumer protection legislation.
- †202 **BUSINESS LAW II (3).** *Three lecture hours per week. Prerequisite: Bus. 201.* Continuation of 201 with business applications of laws of agency, partnerships, corporations, real property, mortgages and security transactions, trusts, wills, bankruptcy and commercial paper.
- †204 **GOVERNMENTAL REGULATORY POWER (3).** *Three lecture hours per week. Prerequisite: Enrollment in or completion of one college English course.* Legal environment of business. Evolution, trend and implications of government regulation of business and the economy. Discussion of sources and constitutional limitations of power within the government, together with specific regulatory powers and their administration.
- †270 **PRINCIPLES OF TRANSPORTATION (3).** *Three lecture hours per week.* Transportation in our economy; the transportation system with emphasis on rail, air, water, motor and pipeline. Development and regulation of the various modes of transportation, theory of rate-making and government controls, selected carrier problems and transportation policies. Class includes field trips to carrier operations.
- †271 **TRAFFIC MANAGEMENT AND PHYSICAL DISTRIBUTION (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Emphasis on management of physical distribution, including the total cost concept, planning and coordinating the functions of transportation, storage, packaging, handling, inventory and location theory.
- †272 **REGULATION OF TRANSPORTATION (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Fundamental principles of laws governing transportation by common carrier. History and development of transport regulation in the United States. Emphasis on Interstate Commerce Act (I.C.A.), Civil Aeronautics Board (C.A.B.) and Federal Aviation Administration (F.A.A.) practices and procedures (including regulation and deregulation).
- †273 **RAILROAD RATES, RULES AND REGULATIONS (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or one year experience in the traffic or transportation field.* Introduction to the basic structure and use of rail carrier tariffs, particularly those published by Pacific Coast Freight Bureau. Particular attention will be given to those sections of the tariff pertaining to governing rules, regulations, rates and routes. Tariff principals will be related to various types of shipments.
- †274 **FREIGHT LOSS, DAMAGE, AND CLAIMS LAW (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Basic principles, procedures, and laws involved in freight loss, damage, and overcharge. Law of bailments, documentation, carrier liability, exceptions to carriers' liability and informal complaints to I.C.C. and P.U.C.
- †275 **INTRASTATE AND INTERSTATE MOTOR CARRIER RATES, RULES AND REGULATIONS (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Basic rules, rates and regulations applicable to intrastate and interstate motor carriers as published in the P.U.C. Tariffs, Western Motor Tariffs and Rocky Mountain Motor Tariff Bureaus.
- †276 **AIR FREIGHT RATES, RULES AND REGULATION (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Historical development of air transportation with special emphasis on air freight. Application of rates, rules and regulations in domestic and international shipment.
- †279 **IMPORT/EXPORT MANAGEMENT (3).** *Three lecture hours per week. Prerequisite: Bus. 270 or equivalent.* Outlines the role of international business transactions; with emphasis on international sales importing and exporting to and from the United States; documentation and paper work and international transportation; rates, rules and regulations. The role of governments in import/export will also be addressed.
- †301 **MICRO/BEGINNING TEXT EDITING (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* An introduction to text editing on the IBM PC. Emphasis on preparing and editing business documents using insert, delete, copy and move functions, formatting and printing. Basic personal computer operations and essential disk operating system commands. Keyboarding recommended. See schedule of classes for current software being used.
- †302 **MICRO/ADVANCED TEXT EDITING (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Bus. 301 Increased text editing proficiency on the IBM PC. Emphasis on advanced keyboard manipulation, printing formats, merging files, and spelling checker. Keyboarding required. See schedule of classes for current software being used.

- †311 **MICRO/BEGINNING SPREADSHEET (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Fundamentals of electronic spreadsheet construction on the IBM PC. Emphasis on building a worksheet using basic commands which include copying, formatting, identifying ranges, formula functions, and printing. Includes basic personal computer operations and essential disc operating system commands. Keyboarding recommended. See schedule of classes for current software being used.
- †312 **MICRO/ADVANCED SPREADSHEET (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Bus. 311. Advanced spreadsheet applications on the IBM PC using increasingly complex models, utilizing database functions, data query, macros and graph applications, if included. Keyboarding recommended. See schedule of classes for current software being used.
- †321 **MICRO/BEGINNING DATABASE MANAGEMENT (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Introduction to database creation and applications for business on the IBM PC. Students create forms, edit data, search for specific information, and print reports. Includes basic personal computer operations and essential disk operating system commands. Keyboarding recommended. See schedule of classes for current software being used.
- †322 **MICRO/ADVANCED DATABASE MANAGEMENT (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Bus. 321. Advanced database applications on the IBM PC to include data checking, processing and sorting, and producing reports. Keyboarding recommended. See schedule of classes for current software being used.
- †331 **MICRO/ACCOUNTS RECEIVABLE (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Knowledge of the accounting cycle essential. Using accounting software on the IBM PC, students enter transactions, generate financial statements and analyze accounts receivable. Keyboarding recommended. See schedule of classes for current software being used.
- †332 **MICRO/ACCOUNTS PAYABLE, PAYROLL (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Knowledge of the accounting cycle essential. Using accounting software on the IBM PC, students learn computerized payroll procedures, plus integrating the accounts payable to generate financial reports. Keyboarding recommended. See schedule of classes for current software being used.
- †333 **MICRO/INVENTORY CONTROL (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks. (Three 5.5-week modules per semester.)* Prerequisite: Knowledge of the accounting cycle essential. Using accounting software on the IBM PC, students learn microcomputer procedures for maintaining and controlling inventory. Keyboarding recommended. See schedule of classes for current software being used.
- †340 **MICRO/INTEGRATED SOFTWARE PROGRAMS (2).** *Three lecture hours plus three lab hours per week by arrangement for 11 weeks.* Explore the many aspects of an integrated program on the IBM PC. General topics may include spreadsheet, database, graphics, text editing and telecommunications. Keyboarding recommended. See schedule of classes for current software being used.
- †350 **MICRO/TELECOMMUNICATIONS (1).** *Three lecture hours plus three lab hours per week by arrangement for 5.5 weeks.* Using word processing and telecommunications software to transmit and receive data using a modem and telephone lines. Electronic mail, networking, protocols, and information sources will be included.
- †401 **BUSINESS COMMUNICATIONS (3).** *Three lecture hours per week.* Prerequisites: Beginning typing (3 units) or equivalent. The focus of this course is to identify, explain and develop the communications skills and tools that contribute to effective verbal and written communications and to their effective use.
- †641 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN BUSINESS (1-3).** *Hours by arrangement.* Selected topics in Business not covered by regular catalog offerings. Course content and unit credit to be determined by the Business Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS IN BUSINESS (1-2).** *Hours by arrangement.* Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- 810 BUSINESS ARITHMETIC (3).** *Three lecture hours per week.* Prerequisite: A score below 28 on the CSM Math Placement Test I. (See Business Division requirement for Business Mathematics.) Fundamental arithmetic operations including the basic processes, fractions, decimals and percentages as applied to ordinary problems of business.

Career and Personal Development

- †112 **CAREER AND LIFE PLANNING VOYAGE (2).** (Credit/No credit.) (Telecourse) For those undecided about career goals, or changing their career direction. Stresses the significance of clearly defined values and the development of strategies and goals for life work.
- 132 JOB SEARCH STRATEGY (1).** (Credit/No credit.) *Two lecture hours per week for 8 weeks.* Designed to help the student develop practical job search skills. Emphasis on developing the knowledge and skills required to write a resumé, successful employment interview techniques. A plan of action will be developed as a means of becoming a successful job applicant.
- 133 CAREER CHOICES (1).** (Credit/No credit.) *Eighteen lecture plus 6 lab hours by arrangement.* An open-entry, individualized career exploration course designed basically for the mature student who prefers to work independently. Emphasis is on collecting career information which will assist in making career decisions. Course work may be completed at the student's own pace, may include a variety of tests to appraise aptitudes, interests and special abilities.
- †137 **LIFE AND CAREER PLANNING (3).** *Three lecture hours per week.* To provide students with a comprehensive approach to life and career planning. Career decisions are an integral part of an individual's growth and development. This course stresses the significance of clearly defined values and the development of strategies and goals for life work and career choices.

140 PEER COUNSELING (3). *Three lecture hours per week.* An orientation and training course to develop counseling helping skill. The importance of group interaction, personal and interpersonal growth and understanding and emphatic communication skills will be emphasized. Students will be given the opportunity to work as peer counselors both on and off campus.

410 COLLEGE AND CAREER AWARENESS (2). *Two lecture hours a week. Open to all students but strongly recommended for entering freshmen enrolled in general courses with an "undecided" major, or for students who wish to verify their career and educational choice.* Acquaintance with campus facilities and activities, improvement of study habits and skills, educational planning toward a realistic, meaningful goal. Career planning to discover potential talents by means of tests measuring new interests and aptitudes.

430 CAREER EXPLORATION (1). (Credit/No credit.) *Three lecture hours plus 1 lab hour per week for 6 weeks by arrangement.* Designed for those who wish to decide a college major, set career goals, or change careers. Self-assessment of interests, values, skills, and personality characteristics using a variety of tests and exercises. Assistance in exploration of majors and careers, effective decision making and career planning.

680 SELECTED TOPICS IN CAREER & PERSONAL DEVELOPMENT (1-3) *Hours by arrangement.* Selected topics in Career/Personal Development not covered by regular catalog offerings. Course content and unit credit to be determined in relation to community-student need, and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

808 COLLEGE RE-ENTRY (1-3). (Credit/No credit.) *Three lecture hours per week for 6 weeks for one unit of credit.* Designed for adults whose education has been interrupted. Areas covered include analysis of present abilities and interests, investigation of new directions and objectives, investigation of career opportunities, development of college-level study skills, guidance and counseling for meeting new goals. (To increase competency, may be repeated for a maximum of 3 units of credit.)

810 BASIC SKILLS (1-3). (Open entry). *Hours by arrangement.* Students will be administered a series of diagnostic inventories. After completion of assigned inventories, students receive individualized self-paced program plans which assist them in improving their basic skills in areas such as spelling, vocabulary development, basic math functions, grammar, reading comprehension and study skills.

Chemistry

†100 SURVEY OF CHEMISTRY (3). *Three lecture hours per week. (Not open to students who have had or are taking Chem. 210.)* General survey of the more important concepts and application of chemistry for non-science majors.

†101 CHEMISTRY OF FOOD ADDITIVES (1). *Three lecture hours per week for six weeks.* General survey of major food components from the standpoint of their chemical structures. The nature of food additives and their postulated metabolic impact. Chemical nature of carbohydrates, proteins, fats and vitamins as found in various foods and as utilized by the body.

†105 CHEMISTRY OF DRUGS (1). *Three lecture hours per week for six weeks.* The structure and mode of action of selected drugs and pharmaceuticals.

†192 ELEMENTARY CHEMISTRY (4). *Three lecture and three lab hours per week. Prerequisites: Math. 110 or one year of high school algebra. Concurrent enrollment in geometry or intermediate algebra strongly recommended.* Chemical nomenclature and formula writing, and mathematical review, including logarithms and exercises in calculation relating to chemistry. (Provides preparation for students who do not have adequate preparation for Chem. 210.) Extra supplies may be required.

†210-220 GENERAL CHEMISTRY I AND II (5-5). *Three lecture and six lab hours per week. Prerequisites: 210—Chem. 192 or high school chemistry with lab with grade C or better and two years of high school mathematics: high school physics recommended; 220—Chem. 210 with grade C or better. Intended for students majoring in science fields and chemical engineering.*

210— Basic principles of atomic and molecular structure and bonding. Chemical reactions and equations, solutions, gas laws, stoichiometry and related calculations. Extra supplies may be required.

220— Descriptive chemistry of the elements and qualitative analysis. Introduction to nuclear chemistry and detailed treatment of electrochemistry, thermodynamics, coordination compounds, equilibrium and kinetics. Extra supplies may be required.

†224-225 ENGINEERING CHEMISTRY I AND II (4-4). *Three lecture and three lab hours per week. Prerequisites: Chem. 192 or high school chemistry with grade C or better and high school mathematics through trigonometry (Concurrent enrollment in trigonometry acceptable); high school physics recommended. 225—Chem. 224 with grade C or better.*

224— Mole concept and stoichiometry, solutions, gas laws, phase changes, thermo-chemistry, and related calculations. Extensive coverage of atomic theory, intermolecular and intramolecular bonding, with emphasis on applications to materials science. Extra supplies may be required.

225— Detailed treatment of thermodynamics, equilibrium, electrochemistry, kinetics, chemistry of complexes and introduction to nuclear chemistry. Extra supplies may be required.

†231 ORGANIC CHEMISTRY I (5). *Three lecture, one recitation, and five lab hours per week. Prerequisite: Chem. 220 or Chem. 225 with grade C or better.* Introduction to basic concepts of structure and reactivity of organic compounds; reactions of major functional groups; reaction mechanisms; synthesis. Principles and practice of laboratory techniques; methods of separation, purification and synthesis. Theory and practice of instrumental methods including spectroscopy. Designed as first semester of one-year organic course, or one-semester overview. Extra supplies may be required.

†232 ORGANIC CHEMISTRY II (5). *Three lecture, one recitation and five lab hours per week. Prerequisite: Chem. 231 with grade C or better.* More rigorous treatment of mechanisms, reactions, and synthesis; structure determination using classical and spectroscopic methods. Laboratory will be implementation of techniques and skills taught in Chem. 231, including identification of unknown compounds and mixtures. Extra supplies may be required.

†250 QUANTITATIVE ANALYSIS (4). *Two lecture and six lab hours per week. Prerequisite: Chem. 220 with grade C or better.* Theory, calculations and practice of common analytical procedures. Includes gravimetric, volumetric methods; also colorimetric, potentiometric and other instrumental procedures. Extra supplies may be required. (Spring only.)

- +260 INTRODUCTION TO PHYSICAL CHEMISTRY (4).** *Three lecture and three lab hours per week. Prerequisites: Chem. 210-220, Chem. 250.* Properties of matter, solutions, equilibrium, hydrogen ion concentration, thermochemistry and reaction velocity. Extra supplies may be required.
- +410-420 HEALTH SCIENCE CHEMISTRY I AND II (4-4).** *Three lecture and three lab hours per week. Prerequisites: 410—high school algebra; 420—410 with grade C or better.*
- +410—** An introduction to chemistry for the applied sciences, beginning with scientific measurement and metric system, followed by chemical bonding, solution chemistry, acids and bases, redox reactions, and general aspects of organic chemistry. Students who have received credit for Chem. 210 prior to completing Chem. 410 cannot receive credit for Chem. 410. Extra supplies may be required.
- +420—** Completes the sequences, concentrating on organic and biochemistry with special emphasis on the chemistry of carbohydrates, lipids, proteins, vitamins and their respective metabolism. Students who have received credit for Chem. 220 cannot receive credit for Chem. 420. Extra supplies may be required.
- +680 SELECTED TOPICS IN CHEMISTRY (1-3).** *Hours by arrangement.* Selected topics in Chemistry not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class. Extra supplies may be required.
- +690 SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally receive credit for only one Special Project per semester.)
- ## Computer and Information Science
- +100 COMPUTERS AND SOCIETY (2) (Telecourse).** *Two 30-minute television programs per week for 13 weeks plus three 2-hour on-campus meetings.* "The New Literacy" is an up-to-date survey of electronic data processing and computer hardware and software systems. Introduction to the terminology of computer science, surveys the applications of computers, and prepares students to understand and utilize computers in both their personal and professional lives.
- 105 COMPUTER OPERATIONS (4).** *Three lecture and three lab hours per week. Prerequisite: CIS 110 with grade of C or better is highly recommended.* Students will become proficient in the operation of a medium-sized computer system, related input/output devices, and in responding to typical system messages.
- +110 INTRODUCTION TO COMPUTER AND INFORMATION SCIENCE (3).** *Three lecture hours per week plus one lab hour per week by arrangement.* Introduction to computer terminology, concepts, hardware, software, and applications, to programming in BASIC, and to on-line use of computer systems.
- +115 INTRODUCTION TO PROGRAM DESIGN (3).** *Three lecture hours per week. Prerequisite: Concurrent enrollment in CIS 116.* An introduction to design of computer programs. Emphasis is on top-down design, structured programming, and modularity. Topics include: algorithm development, tools for program design (pseudo-code, structure charts, HIPO charts, flowcharts, decision tables), data and control structures, functions and procedures, documentation, and program checkout. Pascal will be used in classroom examples and laboratory exercises.
- +116 OPEN COMPUTER LAB (1). (Credit/No credit.)** *Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 115.* Use of on-line terminals to complete lab assignments for CIS 115.
- +120 BUSINESS COMPUTER SYSTEMS AND APPLICATIONS (3).** *Three lecture hours per week. Prerequisite: CIS 110 with grade C or better.* A survey of typical business applications as done on mainframe computer equipment. Includes each application's general and detailed objectives, flow and control of data from source transaction through file/database updating and reporting, and managerial implications.
- +150 DATA COMMUNICATIONS (3).** *Three lecture hours per week. Prerequisite: CIS 110 or 115/116 with grade C or better.* Basic principles of data communications concepts. Overview of common protocols and key elements needed to configure network systems. Discussions also include the use of data codes and their implications.
- +210 COBOL PROGRAMMING I (3).** *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 211; CIS 115/116 with grade C or better.* Emphasis is on structured programming techniques and on basic language elements and syntax used for typical business applications. Also included are debugging techniques, use of reference manuals, and program documentation standards. Students design, code, test, and run COBOL programs.
- +211 OPEN COMPUTER LAB (1). (Credit/No credit.)** *Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 210.* Students use on-line terminals to complete lab assignments for CIS 210. Lab supplies required.
- +212 COBOL PROGRAMMING II (3).** *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 213; CIS 210 with grade of C or better.* Emphasis is on processing magnetic disk and tape files. Students write integrated sets of programs for typical business systems using the team project approach.
- +213 OPEN COMPUTER LAB (1). (Credit/No credit.)** *Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 212.* Students use on-line terminals to complete lab assignments for CIS 212.
- +220 RPG II PROGRAMMING (3).** *Three lecture hours per week. Prerequisite: Concurrent enrollment in CIS 221.* Emphasis is on typical business problems involving punched card, printer, magnetic tape, and disk files. Introduction to small system hardware and processing techniques. Students write and test RPG II programs.
- +221 OPEN COMPUTER LAB (1). (Credit/No credit.)** *Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 220.* Students use on-line terminals to complete lab assignments for CIS 220.
- +230 BASIC PROGRAMMING (3).** *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 231; Math. 110 with grade of C or better, or high school preparation including one year of elementary algebra with grade C or better.* Topics include introduction to programming; BASIC syntax for I/O, assignment and transfer of control statements; techniques for writing interactive programs; program documentation; file processing; string manipulation; use of functions and subroutines; matrix operations; and a variety of elementary applications. Students design, code, test and run BASIC programs.
- +231 OPEN COMPUTER LAB (1). (Credit/No credit.)** *Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 230.* Students use on-line terminals to complete lab assignments for CIS 230.

232 ADVANCED BASIC PROGRAMMING (3). *Three lecture hours per week. Prerequisite: CIS 230/231 with grade C or better; concurrent enrollment in CIS 233.* Continuation of style and structured programming in BASIC; advanced file processing, including sequential and random access; advanced control structures and I/O; introduction to graphics; advanced string handling; additional topics in data structures, simulation and information retrieval.

233 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 232.* Use of on-line terminals to complete lab assignments for CIS 232.

240 FORTRAN PROGRAMMING (3). *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 241; Math 130 with grade C or better, or high school preparation including one semester of Trigonometry with grade C or better.* An introduction to FORTRAN and its use in the solution of problems which can be modeled algebraically. Topics include introduction to programming; algorithm development; representation of data; the syntax of specification, assignment, control and I/O statements; arrays; and subprograms. Students design, code, test and run FORTRAN programs.

241 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 240.* Students use on-line terminals to complete lab assignments for CIS 240.

250 PASCAL PROGRAMMING (3). *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 251; Math 120 and CIS 115/116; or Math 120 and knowledge of a programming language; or Math 220.* An introduction to Pascal, a language which emphasizes the concepts of structured programming. Topics include data types, input/output, control structures, functions and procedures, recursion, arrays, records and pointers. Students design, code, test, and run Pascal programs.

251 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 250.* Students use on-line terminals to complete lab assignments for CIS 250.

290 ASSEMBLY LANGUAGE PROGRAMMING (3). *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 291; knowledge of a programming language.* Topics include computer organization, data representation, data structures, machine and assembly language programming, addressing techniques, subroutine linkage, assembly process, assembly directives, and macro definition and use. Students design, code, test, and run assembly language programs.

291 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 290.* Students use on-line terminals to complete lab assignments for CIS 290.

300 COMPUTER ORGANIZATION (3). *Three lecture hours per week. Prerequisites: Knowledge of a programming language; concurrent enrollment in CIS 301.* Includes data representation, machine and assembly language programming, addressing techniques, subroutine linkage, indexing, and I/O programming. Students design, code, test and run assembly language programs. Specific assembly language will vary.

301 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 300.* Use of on-line terminals to complete lab assignments for CIS 300.

+306 OPERATING SYSTEMS CONCEPTS (3). *Three lecture hours per week. Prerequisite: CIS 300/301 with grade C or better; concurrent enrollment in CIS 307.* The operating system as a manager of resources on personal, mini and mainframe computers. Topics include file systems, memory management, resource allocation, virtual machines, protection, and process communication. Lab assignments will use commands and utility programs from common operating systems, such as CP/M, MS-DOS, UNIX, OS, and CMS.

+307 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 306.* Use of on-line terminals to complete lab assignments for CIS 306.

+310 OPERATING SYSTEMS CONCEPTS AND JCL (3). *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 311; CIS 110 with grade of C or better.* Emphasis is on OS, with survey of DOS/VSE. Topics include job/task/data management, control flow, and virtual storage. Students will write and test JCL for various I/O devices, file-to-file utility programs, and soft/merge.

+311 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 310.* Students use on-line terminals to complete lab assignments for CIS 310.

+320 SYSTEMS ANALYSIS AND DESIGN (3). *Three lecture hours per week. Prerequisite: Knowledge of a programming language. Completion of or concurrent enrollment in CIS 212 is strongly recommended.* The analysis of manual and computer-based systems, and design of computer-based systems from inception to implementation and evaluation. Topics include: data gathering, problem definition, cost/benefit analysis, I/O design, oral and written management presentations, and hardware and software alternatives. Also included is an introduction to database concepts. Students will analyze and design a system for a typical business application.

+330 NUMERICAL METHODS (3). *Three lecture hours per week. Prerequisites: Concurrent enrollment in CIS 331; CIS 240, and completion of or concurrent enrollment in Math. 242 or Math. 261.* Study of numerical methods, using FORTRAN. Topics include solutions of equations and of systems of equations, errors and instabilities, numerical differentiation and integration, and interpolation. Students will write and test FORTRAN programs as part of the assigned work.

+331 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisites: Concurrent enrollment in CIS 330.* Students use on-line terminals to complete lab assignments for CIS 330.

+350 FUNDAMENTALS OF DATA STRUCTURES (3). *Three lecture hours per week. Prerequisite: CIS 115/116 and CIS 250/251 with grades C or better; concurrent enrollment in CIS 351.* Topics include arrays, stacks, queues, linked lists, trees and tree traversals, graphs, internal sorting, file structures, and application of these techniques. Pascal will be used in classroom examples and for laboratory exercises.

+351 OPEN COMPUTER LAB (1). *(Credit/No credit.) Three lab hours per week. Prerequisite: Concurrent enrollment in CIS 350.* Use of on-line terminals to complete lab assignments for CIS 350.

+360 INTRODUCTION TO DATABASE MANAGEMENT (3). *Three lecture hours per week. Prerequisites: CIS 212/213 or CIS 350/351 with grades of C or better; concurrent enrollment in CIS 361.* Principles of database design, implementation and management. Review of data management access methods. Topics include conceptual and logical database design process, including relational, network, and hierarchical models. Case study approach. Specific database management system used will vary.

- †361 **OPEN COMPUTER LAB (1).** (Credit/No credit.) *Three lab hours per week.* Prerequisite: Concurrent enrollment in CIS 360. Use of on-line terminals to complete lab assignments for CIS 360.
- †644 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN COMPUTER AND INFORMATION SCIENCE (1-3).** *Hours by arrangement.* Selected topics in Computer and Information Science not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement.* Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- †695 **COMPUTER AND INFORMATION SCIENCE FIELD PROJECTS (2-4).** *Hours by arrangement.* Prerequisite: Completion of a course in any programming language, or equivalent. Directed individual study in field projects arranged between the student and the instructor.
- Consumer Arts & Science**
- †110 **BEGINNING FASHION CONSTRUCTION (3).** *Two lecture and three lab hours per week.* Selection and alteration of patterns for individual figure problems; fabric preparation and care properties, with emphasis on various construction techniques for specialized fabrics.
- †113 **TEXTILES (3).** *Three lecture hours per week.* Study of natural and chemical fibers; yarns, fabric construction and finishes. Care, cost and labeling as related to consumer use.
- †116 **ADVANCED CONSTRUCTION TAILORING (3).** *Two lecture and three lab hours per week.* The use of custom details, couturier and tailoring techniques in construction of suit or coat. Consideration also given to organization and speed techniques.
- †117 **FASHION IMAGE (2).** *Two lecture hours per week.* Analysis of figure types and problems, coordination of fashionable styles, colors, textures and accessories; individualized assistance for developing a creative wardrobe on a budget.
- †118 **FASHION DESIGN (3).** *Two lecture and three lab hours per week.* The construction and use of flat pattern as a method of creating a design for the individual with consideration to fabric performance.
- †151 **FASHION MERCHANDISING (3).** *Three lecture hours per week.* Structure of ready-to-wear apparel industry, including the functions and policies of the various types of retail stores as they relate to the promotion of fashion merchandising; consideration of the various factors which affect the merchandising of fashion apparel.
- †152 **FASHION DISPLAY (3).** *Two lecture and three lab hours per week.* Study of the elements of fashion which make for success in merchandising. Store windows, interior display, sales promotion activities and techniques in displaying fashion.
- †154 **FASHION APPAREL AND ACCESSORIES (3).** *Three lecture hours per week.* A consideration of the apparel needs of various groups, and of the many forces (economic, sociological; psychological and technological) which influence the consumer and the fashion market. Evolution of fashion apparel, materials, styles, legislation and manufacturing.
- 155 **SALES DEMONSTRATION TECHNIQUES (2).** *Two lecture hours per week.* Development of techniques for demonstrating fabrics, equipment, clothing, foods and other subjects of promotional and educational use.
- †301 **FOODS—SELECTION AND PREPARATION (3).** *Two lecture and three lab hours per week.* A study of scientific principles of selection, storage and preparation of food. Presentation and economy are emphasized. Extra supplies may be required.
- †302 **FOODS—MEAL MANAGEMENT (3).** *Two lecture hours and three lab hours per week.* Food buying, meal preparation and service. Emphasis on kitchen equipment and organization, quick meals, economical meals, and foreign cookery. Extra supplies may be required.
- †310 **NUTRITION (3).** *Three lecture hours per week.* Basic concepts of nutrition and its relationship to health of people of all ages, with application to the selection of foods to meet nutritional needs of the individual. (May be used to waive Hsci 113.)
- 320 **FOODS—DIET CONTROL (2).** (Grade option.) *Two lecture hours per week.* Prerequisite: CA&S 310 or equivalent. Modification of normal diet to restore and maintain health with use of latest nutritional principles.
- †412 **CONSUMER BUYING PROBLEMS (3).** *Three lecture hours per week.* Study of problems facing the consumer; relationship of quality and cost to food, clothing, housing; resource management, legislation and agencies protecting the consumer.
- †450 **INTERIOR FURNISHINGS (3).** *Two lecture and three lab hours per week.* Selection of furniture, wall treatments, floor coverings and materials from an artistic and practical standpoint. Demonstration techniques include construction of draperies, bedspreads and slip covers.
- †642 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †666 **CAREERS IN CONSUMER ARTS & SCIENCES (1).** *One lecture hour per week.* Introduction to the range of subject matter to be selected in two- and four-year programs in Consumer Arts & Science.
- †680 **SELECTED TOPICS IN CONSUMER ARTS & SCIENCE (1-3).** *Hours by arrangement.* Selected topics in Consumer Arts & Science not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine and Performing Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement.* Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Cooperative Education

641 THROUGH 649 CAREER COOPERATIVE WORK EXPERIENCE EDUCATION (1-4). Alternate semester (1-8). (Grade Option.) Available in each major field of study.

Occupational Cooperative Work Experience Education (1-4). Work must be in a field related to a career goal or major, supplemented by individual counseling from an instructor-coordinator. There are two basic programs: (1) parallel plan, concurrent school and work; and (2) alternate semester, a semester of school only, followed by a semester of work only. Student may be eligible for up to 4 units of credit per semester and the course may be repeated for 4 semesters to earn up to 16 units. Seventy-five hours of work (approximately five hours per week) is equivalent to one unit of credit. Enrollment in 7 units (of which Co-op may be four of the seven) is mandatory. **Alternate Semester (1-8).** Students in the alternate semester program may earn up to 8 units of Co-op credit per semester. May be repeated for credit up to a grand total of 16 units. Students must have earned at least 7 units of other course work before re-enrolling under the alternate plan.

Transferability. A maximum of 12 units may be transferred to California State Universities. Check with your counselor for current information on transferring Co-op credit to the California State Universities and University of California systems. Occupational Cooperative Work Experience is in a field related to a career goal and major, supplemented by individual counseling from an instructor-coordinator. There are two basic programs: (1) parallel plan, part-time work; and (2) alternating work and school each semester.

For Veterans Only: The parallel plan qualifies for "institutional course" pay rates; the alternate plan qualifies for "Cooperative course" pay rates, as designated by the Veterans Administration. Students who are interested should contact the Co-op Office, 574-6171, Building 5, Room 128.

Cosmetology

The courses described below are open only to those students accepted in the Cosmetology Program. A grade of C or better is necessary for progression in sequence. Upon successful completion of the program with a C or better, including satisfactory performance on a comprehensive "mock board" examination including both theory and practical performance, the candidate receives a Certificate in Cosmetology and is eligible to write the California Board of Cosmetology examination.

642 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

680 SELECTED TOPICS IN COSMETOLOGY (1-3). Hours by arrangement. Selected topics in Cosmetology not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine and Performing Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

712 FUNDAMENTALS OF COSMETOLOGY I. (Variable to 9).

722 FUNDAMENTALS OF COSMETOLOGY II. (Variable to 9). Twenty hours per week. Five lecture hours and 15 lab hours per week. Cosm. 712 and 722 may be taken concurrently. Prerequisite: Completion of the twelfth grade recommended. Tenth grade completion or equivalent required by California Board of Cosmetology. Admission to and registration in the Cosmetology program. All subjects covered in Cosm. 712 and 722 are required for licensing as a Cosmetologist by the California State Board of Cosmetology. (May be repeated for a maximum of 18 units.)

732 ADVANCED COSMETOLOGY I. (Variable to 9).

742 ADVANCED COSMETOLOGY II. (Variable to 9). Twenty hours per week. Five lecture hours and 15 lab hours per week for a maximum of 9 units. Prerequisite: A minimum of 10 units with a grade C or better in Cosmetology 712 and 722. Cosm. 732 and 742 must be taken concurrently. Continuation of Cosmetology 712-722. Cosm. 732 and 742 are required for licensing as a Cosmetologist. (May be repeated for a maximum of 30 units.)

750 BRUSH-UP (Variable to 10 units). Lecture and lab hours per week by arrangement for a total of 400 hours per year. Prerequisite: Cosmetology license, or Cosmetology 732 and 742 with a grade C or better. For supplemental training requirements or out-of-state requirements. Course requirements must be met satisfactorily prior to state examination. (May be repeated for credit.)

754 MANICURING (Variable to 10). Five lecture hours and 15 lab hours per week. Prerequisite: Enrollment in Cosmetology curriculum. Training in theory and practice in the art of manicuring and pedicuring in preparation for a licensure by the California State Board of Cosmetology, in that field only. (Total of 350 hours training. An additional 50 hours may be added for deficiencies.)

760 COSMETOLOGY INSTRUCTION PREP (Variable to 18). Lecture and lab hours per week by arrangement for a total of 600 hours. Prerequisite: Satisfactory completion of an approved program of Cosmetology training with a minimum of 1600 hours. California Cosmetologist license and approval of department chairman required. A preparatory course of teaching techniques designed to qualify the student for the California State Board of Cosmetology Instructor examination. Requires the student to complete a 600-hour instructor training certificate program. Up to 150 hours may be added to the training, if necessary, to correct deficiencies.

791 ADVANCED HAIR DESIGN WORKSHOP I (1.5). Two lecture, three lab hours per week for nine weeks. Prerequisite: California Cosmetologist license or completion of 600 hours of Cosmetology with grade C or better.

Dance

The classes listed below are identical to Physical Education classes with the same title. Dance Classes may be used to satisfy the P.E. requirement for graduation.

+121 CONTEMPORARY MODERN DANCE I (1.5). Three lab hours per week. Fundamentals of contemporary dance technique, body alignment, and basic locomotive movements. Modern dance styles are studied in relation to the significance of a dancer's training.

+130 JAZZ DANCE I (1.5). Three lab hours per week. Beginning techniques in jazz-stage, jazz movements, fast jazz, jazz rock and blues, plus various jazz combinations.

†132 **JAZZ DANCE II (1.5).** *Three lab hours per week. Prerequisite: Dance 130.* Continuation of Dance 130 with more complex routines and refining of basic skills.

†141 **BEGINNING BALLET I (1.5).** *Three lab hours per week.* Beginning study of ballet techniques and style, barre, center floor and dance variations. Modern ballet works are explored.

†143 **INTERMEDIATE BALLET II (1.5).** *Three lab hours per week. Prerequisite: Dance 141.* Continuation of Dance 141, concentrating on barre, center floor and dance variations. Classic ballet works are explored.

†148 **BEGINNING BALLET AND MODERN DANCE (1).** *Two lab hours per week.* Movement skills, rhythmic structure of dance, qualities of movement, special design and appreciation of dance. Modern ballet and modern dance styles are emphasized in the creation of individual compositions.

†360 **MOVEMENT AND BODY AWARENESS (1).** *Two lab hours per week.* A course designed to build a concept of movement for modern daily living; to become aware and perceive the body as an instrument of self-image on purposive movements; and to recognize individual capabilities and limitations.

†380 **DANCE AND MOVEMENT FOR THEATRE (2).** *Four lab hours per week.* Movement and body awareness activities for the theatre environment. Dance technique, locomotor movements and various improvisation experiences resulting in choreographic movement studies.

†411 **DANCE PRODUCTION I (1).** *Two lab hours plus two hours by arrangement per week. Prerequisite: Dance 148.* Choreographic principles of dance composition and stage presentation. Types of dance include primitive medieval, expressionism, cerebralism, jazz, improvisation, impressionism, formal ballet, modern ballet, Broadway musical, Americana and folk dances.

†412 **DANCE PRODUCTION II (2).** *Two lab hours per week, plus additional hours by arrangement for production. Prerequisite: Dance 411.* A public stage dance performance, with the creation of new works by students directed toward large groups, trios, duets and solos. Participation in the technical and business aspects of student production.

†642 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 **SELECTED TOPICS IN DANCE (1-3).** *Hours by arrangement.* Selected topics in dance not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine & Performing Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

680 SELECTED TOPICS IN DENTAL ASSISTING (1-3). *Hours by arrangement.* Selected topics in Dental Assisting not covered by regular catalog offering. Course content and unit credit to be determined by the Business Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

The courses described below are open only to those students accepted in the Dental Assisting Program. A grade C or better is necessary for progression in sequence. Upon completion of the program, the candidate receives a Certificate in Dental Assisting and is eligible to write the National Certification Examination and the Registered Dental Assistant examination. The program is open to part-time students.

711 OFFICE PROCEDURES I (3). *Two lecture and three lab hours per week. Prerequisite: None.* Dental patient records and history. Patient psychology, public relations, office management responsibilities, telephone and written communications, office manual, recall system, office billing, dental jurisprudence and malpractice. (Fall only.)

712 OFFICE PROCEDURES II (2). *Two lecture and three lab hours for nine weeks.* Appointment control, daily production records and bookkeeping systems, case presentation. Collection methods, pre-paid dental insurance, expenses and disbursements, office machines, payroll and banking procedures. Employment. (Spring only.)

713 OFFICE PROCEDURES III (1). *Two lecture hours per week for eight weeks.* Continuation of Dental Assisting 712. (Spring only.)

721 DENTAL MATERIALS I (3). *Two lecture and 3 lab hours per week.* A presentation of safety procedures necessary in the dental laboratory, and its equipment. Physical properties, with study in dental cements, restoratives, impression materials and gypsum products, designed to develop skills necessary for manipulation both for the dental operator and laboratory. The study of the principles of prosthodontics. (Fall only.)

722 DENTAL MATERIALS II (2). *One lecture hour and 3 lab hours per week.* A continuation of Dental Assisting 721 with a study in dental casting and prosthetic procedures. (Spring only.)

731 DENTAL SCIENCE I (3). *Three lecture hours per week. Prerequisite: None.* Basic introduction to the hard and soft tissues of the oral cavity, tooth morphology, oral embryology, oral histology. Pathological disturbances, pharmacology with introduction to oral health principles including nutrition.

732 DENTAL SCIENCE II (3). *Three lecture hours per week.* Further study in the hard and soft tissues of the oral cavity, anatomy of the head and neck. Introduction to the body systems, blood supply of the head and neck and innervation of the teeth. (Spring only.)

735 COMMUNICATION IN ALLIED HEALTH PROFESSIONS (1). *One lecture hour per week.* To prepare allied health students to work and communicate effectively with patients, other auxiliaries, practitioners and other health professionals. (Fall only.)

Dental Assisting

(One-Year Certificate Program)

641 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

741 CHAIRSIDE PROCEDURES I (3.5). Two lecture and ten lab hours per week in preparation for D.A. 751; two lecture and three lab hours per week for duration of D.A. 751. Introduction to clinical chairside procedures to be performed at the University of California and the University of the Pacific Schools of Dentistry. Beginning clinical application of chairside assisting techniques. Preparation of the patient an operator area. Study of instrumentation, dental armamentarium, operative and fixed prosthodontic procedures, microbiology, sterilization procedures, dental dental office emergencies and public health dentistry. (Fall only.)

742 CHAIRSIDE PROCEDURES II (3). Two lecture and three lab hours per week for duration of D.A. 752; two lecture and one and one-half lab hours per week for duration of Cooperative Education enrollment, plus 6 hours lecture and 6 hours lab by arrangement. Further study in chairside procedures. Emphasis is placed on the student's individual development. Study of dental specialties; instrumentation, application, procedure and patient instruction. Introduction to intra-oral functions. DA and RDA levels. Coronal Polish by arrangement. (Spring only.)

751 DENTAL CLINIC I (1.5). (Credit/No credit.) Seven lab hours per week for twelve weeks. Prerequisite: Completion of or concurrent enrollment in 721, 731, and 741. Transfer of chairside theory to practical experience at local dental schools and community health centers. (Fall only.)

752 DENTAL CLINIC II (1). (Credit/No credit.) Seven lab hours per week for nine weeks. Prerequisite: D. A. 721, 722, 731, 732, 741, 742, 751 or concurrent enrollment in D.A. 722, 732, 742, 752, 762. Continuation of applying chairside theory to practical experience at local dental schools and community health centers. (Spring only.)

761 DENTAL RADIOLOGY I (2). One lecture and three lab hours per week. Extra supplies may be required. Prerequisite: None. Study of radiation; history, terminology, legislation, characteristics, effects of exposure, protection and monitoring, types of dental film, developing and processing procedures. Exposing techniques using the parallel technology; mounting and filing of X-ray and identification and correction of faulty films. Extra supplies may be required. (Fall only.)

762 DENTAL RADIOLOGY II (2). One lecture and three lab hours per week for ten weeks. Prerequisite: D.A. 761. Continuation of D.A. 761. Designed to provide further depth in the areas of dental radiography. Emphasis is placed on the student's individual development. Study of pedodontic, occlusal and edentulous exposures. The bisection of the angle technique, normal structures, anatomical landmarks and extra oral films. Continued practice in exposing, developing and processing, mounting and evaluation of films. (Spring only.)

Drafting Technology

(Also see Manufacturing & Industrial Technology.)

Equipment required in all Drafting Technology courses.

102 (Formerly Drafting 712) APPLIED DRAFTING MATHEMATICS II (3) Three lecture hours per week. Prerequisite: Manu 101 or equivalent with grade C or better. Includes applied algebra, trigonometry, and the use of electronic calculators.

120 PRINCIPLES OF TECHNICAL DRAWING (3). Two lecture and four lab hours per week. Basic mechanical drawing with instruction surveying the field of graphic communications; technical sketching, visualization, descriptive geometry, orthographic projection, geometric construction, pictorial drawing methods, sectional views, auxiliary views, developments, dimensionings, fasteners, welding, electromechanical, piping, tooling, structural and architectural draft principles.

†201-202 TECHNICAL DRAFTING I AND II (7-7). Four lecture and nine lab hours per week. Prerequisites: 201—Concurrent enrollment in Manu 101. 202—Concurrent enrollment in D.T. 102, a grade of C or better in D.T. 201, and completion of Manu 101.

201—Multi-view drawing, lettering, geometric shape, description, sections, descriptive geometry, sketching, dimensioning, reproduction processes, charts and graphs.

202—Working drawing, threads and fasteners, gears, tolerancing, pictorial, projections, intersections, developments and assembly drawings.

†301-302 ADVANCED TECHNICAL DRAFTING I AND II (7-7). Four lecture and nine lab hours per week. Prerequisite: grade C or better in D.T. 201, 202.

301—Electrical and electronic drafting, logic diagrams, P.C. designs, hydraulics and pipings.

302—Cams, assembly drawing, geometric and true positional tolerances, welding, jigs and fixture design and structural drawings.

†400 BASIC TECHNICAL DESIGN (3). Three lecture hours per week. Prerequisites: Mfg. 120, concurrent enrollment in D.T. 301. Application of the materials covered in Mfg. 120 to the solution of design problems. Topics include problems of producibility, value engineering reliability, computer aided drafting, mechanics, and resumes.

†649 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN DRAFTING TECHNOLOGY (1-3). Hours by arrangement. Selected topics in Drafting Technology not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

721-722 BASIC TECHNICAL DRAFTING I AND II (3-3). Two lecture and four lab hours per week. Prerequisites: 721—None; 722—D.T. 721 or D.T. 120.

721—Sketches, lettering, orthographic projection, geometric constructions, sections, auxiliary views, shop processes.

722—Continued practice in preparation of working drawings including tolerancing, assembly drawings, and the use of engineering change notices.

731-732 TECHNICAL DRAFTING I AND II (3-3). Two lecture and four lab hours per week. Prerequisites: D.T. 731—D.T. 721, 120; 732—721, 722, 731.

731—Projections, points, lines, planes, revolutions, intersections, surfaces and sheet metal practices.

732—Weldments gearing, geometric/true position tolerancing, tool design.

740 ELECTRONICS DRAFTING (3). Two lecture and four lab hours per week. Prerequisites: D.T. 120 or equivalent. Electronics 110 or equivalent. Techniques of preparing the various types of electronic drawings used in industry, including P.C. layout and design.

ADMISSIONS AND REGISTRATION
COLLEGE OF SAN MATEO
3700 W. HILLSDALE BLVD.
SAN MATEO, CALIFORNIA 94403

Economics

- †100 **PRINCIPLES OF MACRO ECONOMICS (3).** *Three lecture hours per week.* The American economy; the price system; the role of business, labor and government; the money and banking system; trends of national income and factors in its determination; problems and policies for stabilization and growth.
- †102 **PRINCIPLES OF MICRO ECONOMICS (3).** *Three lecture hours per week.* Supply, demand and price determination in a market economy; business firm's costs, revenues and price policies under conditions of competition through monopoly; role of government in cases of market failure; determination of wages, rent, interest and profits; international trade and finance; comparative economic systems of other nations.
- †108 **SURVEY OF ECONOMIC PROBLEMS (3).** *Three lecture hours per week.* A non-theoretical consideration of the major economic problems which confront the citizen today. Recommended for the general student interested in aspects of consumer economics and current economic problems, and for business and economics majors who desire an introduction to theory courses (Economics 100 and 102).
- †230 **ECONOMIC HISTORY OF THE UNITED STATES (3).** *Three lecture hours per week.* Origin and development of the American economy from colonial times to the present. Includes industrial growth, land and resource use, transportation, money and banking, trade patterns, the rise of organized labor, the economic role of government. (With History 201 or 202, fulfills American Institutions requirement.)
- †680 **SELECTED TOPICS IN ECONOMICS (1-3).** *Hours by arrangement.* Selected topics in Economics, not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS IN ECONOMICS (1-2).** *Hours by arrangement.* *Prerequisite:* 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Electronics Technology

Extra supplies/lab fee may be required in all Electronics Technology courses.

- †110 **FUNDAMENTALS OF ELECTRONICS (3).** *Two lecture and three lab hours per week.* Introduction to reading simple schematic diagrams and construction of elementary electrical/electronics circuits; making measurements with multimeter and oscilloscopes; using DC power supplies and AC power sources; basic digital principles. Emphasizes laboratory experiments and techniques.
- 115 **ELECTRONICS SOLDERING TECHNIQUES (1).** *One lecture hour and three lab hours per week for eight weeks.* Soldering techniques and skills are applied to wire, components and printed circuits. Proper choice, use and care of hand tools will be covered. Emphasis on neatness as well as workmanship will be stressed.
- †200 **PASSIVE CIRCUITS AND DEVICES (5).** *Three lecture and six lab hours per week.* *Prerequisite:* One year of high school algebra with grade of C or better. Study of the circuit action of significant combinations of resistance, capacitance, and inductance. Experiments and procedures parallel the lecture material presented. The use of basic electronic measuring equipment is stressed.
- †230 **APPLIED ELECTRONIC MATHEMATICS (3).** *Three lecture hours per week.* *Prerequisite:* one year of high school algebra with a grade of C or better. Basic applications of algebra to the solution of problems involving direct-current circuits; elements of trigonometry, logarithms, complex numbers and vector methods as applied to alternating current circuits and high-transmission lines.
- †250 **ACTIVE ELECTRONIC DEVICES & CIRCUITS (5).** *Three lecture hours and six lab hours per week.* *Prerequisite:* E.T. 200 with grade C or better. Study of the characteristics of active electronic devices such as bi-polar and field-effect transistors, thyristors and vacuum devices. Application of these devices in simple electronic circuits.
- †252 **INSTRUMENTS AND SYSTEMS MEASUREMENTS (2).** *One lecture hour, three lab hours per week.* *Prerequisite:* E.T. 200 or equivalent qualification, concurrent enrollment in E.T. 250. A study of measuring equipment and techniques as applied to electronic devices, linear circuits, audio and other electronic systems.
- †260 **DIGITAL LOGIC CIRCUITS I (3).** *Two lecture hours, three lab hours per week.* *Prerequisites:* E.T. 110 or equivalent qualification. A study of theory and operation of basic gate, flip-flop, counter, and memory ICs using both TTL and CMOS hardware. These devices are then used to implement common digital applications circuits.
- †270 **INTRODUCTION TO ELECTRONICS SOLDER ASSEMBLY (1).** *One lecture, three lab hours per week for 8 weeks.* Familiarization and development of skills in solder assembly techniques.
- †280 **ELECTRICAL/MECHANICAL ASSEMBLY TECHNOLOGY I (2).** *One lecture hour, three lab hours per week.* *Prerequisite:* Concurrent enrollment in E.T. 250 or equivalent background. Basic hand skills required of electronics technicians. Familiarization with fabrication and assembly techniques typical of the electronics industry, with emphasis on quality of workmanship.
- †300 **ANALYSIS LINEAR CIRCUITS (4).** *Two lecture hours, six lab hours per week.* *Prerequisite:* E.T. 250 with grade C or better. Review of single stage transistor amplifiers and frequency response, multi-stage directcoupled amplifiers, negative feedback and amplifiers, operational amplifiers (adders), multipliers, active filters, equalizer tone controls, power amplifiers, complementary and quasi-complementary analysis.
- †302 **MODULATION/DEMODULATION AND SIGNAL PROCESSING SYSTEMS (3).** *Two lecture hours, three lab hours per week.* *Prerequisites:* E.T. 252 or equivalent qualifications. Study of the signal processing functions relative to modulation and demodulation of intelligence signals as used in audio and video communications systems.
- †310 **INTRODUCTION TO MICROPROCESSORS (3).** *Two lecture hours, three lab hours per week.* *Prerequisite:* E.T. 260 with grade C or better or equivalent qualification. A study of the 8-bit microprocessor. The CPU instructional set, basic system hardware, chip select systems, memory, and direct I/O are the topics covered. Assembly language programming and software control of hardware are stressed.
- †330 **ELEC/MECH ASSEMBLY TECH II (2).** *One lecture hour, three lab hours per week.* *Prerequisite:* Successful completion of E.T. 280 with grade C or better or equivalent industrial experience. Familiarization with industrial prototyping techniques. To provide instruction in printed circuit layout including artwork, photography and fabrication.

350 ADVANCED CIRCUIT APPLICATIONS (4). Two lecture hours, six lab hours per week. Prerequisite: E.T. 300 with grade C or better or equivalent qualifications. Analysis of circuits including power supplies, RF amplifiers, oscillators, non-sine waves and sine waves. FM-AM modulation and integrated circuit applications.

360 MICROCOMPUTER INTERFACING (3). Two lecture hours, three lab hours per week. Prerequisite: E.T. 260 and 310 with grade C or better or equivalent qualification. A study of microprocessor support devices and applications. Programmable support chips, serial and parallel data communications, microprocessor controlled A-to-D and D-to-A conversion, CRT display systems, and speech and fiber optics are the main topics covered.

362 RADIO-FREQUENCY COMMUNICATION (4). Three lecture hours, three lab hours per week. Prerequisite: E.T. 302 or equivalent qualification. Study of radio frequency/microwave transmission and reception principles and techniques, including transmission lines and antennas.

380 PRODUCT DEVELOPMENT (2). One lecture hour, three lab hours per week. Prerequisite: Successful completion of E.T. 280 with grade C or better and E.T. 330 or equivalent industrial experience. The student is acquainted with RF prototyping techniques and the various phases of product development and packaging.

647 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

666 CAREER EXPLORATION (1). Two lecture hours per week for the first 8 weeks of the semester. Introduces students to the industrial field of electronics technology and provides guidance for academic planning in the preparation for future electronics employment.

680 SELECTED TOPICS IN ELECTRONICS TECHNOLOGY (1-3). Hours by arrangement. Selected topics in Electronics Technology not covered by regular catalog offerings. Course content and unit credit to be determined by the Electronics/CWETA Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

710 DC AND AC ELECTRONICS FUNDAMENTALS (4). Three lecture and three lab hours per week. Prerequisites: E.T. 110 or previous electronics experience. Theory and practice for advanced study in electronics technology. DC and AC circuit actions of various combinations of resistance, capacitance and inductance.

720 ACTIVE CIRCUITS AND DEVICES (4). Three lecture and three lab hours per week. Prerequisite: E.T. 710 with grade C or better. Theory and practice in the use of steady-state circuit action of active devices. Significant characteristics and corresponding circuits of solid state devices—resistors, capacitors and/or inductors.

730 APPLIED LINEAR AMPLIFIER ANALYSES (4). Three lecture and three lab hours per week. Prerequisite: E.T. 720 with grade C or better. Review of single stage transistor amplifiers and frequency response, multistage direct coupled amplifiers, negative feedback and amplifiers, operational amplifiers (adders), multipliers, active filters, equalizer tone controls; and power amplifiers, complementary and quasi-complementary analysis.

740 APPLIED ELECTRONICS CIRCUIT ANALYSIS (4). Three lecture and three lab hours per week. Prerequisite: E.T. 730 with grade C or better. Analyses of circuits including power supplier, RF amplifiers, oscillators, non-sine waves and sine waves. FM-AM modulation and integrated circuit applications.

760 MICROWAVE PRINCIPLES (3). Three lecture hours per week. Prerequisites: E.T. 730, or equivalent. Study of transmission lines, active and passive microwave devices and their applications that operate in the microwave region.

Engineering

111 PLANE SURVEYING (3). Two lecture and three lab hours per week. Prerequisite: Math. 130 with a grade of C or better. Theory of measurements in surveying, measurement of distance, differential leveling and measurements of angles and directions, stadia techniques and topographic mapping; field astronomy, and theory of state plane coordinate systems. Extra supplies may be required.

150 STATICS (3). Three lecture hours per week. Prerequisite: Concurrent enrollment in Math 241 or 260. The analysis of forces and their effects on rigid body structures by both analytical and graphical methods in two and three dimensions. (Spring only.)

160 STRENGTH OF MATERIALS (3). Three lecture hours per week. Prerequisite: Arch. 150. Analysis of stresses and deformations caused by forces acting on simple structures; selection of beams, columns and joint configurations in the process of design. Introduction to statically indeterminate structures. (Fall only.)

200 DESCRIPTIVE GEOMETRY (2). Two lecture and four lab hours per week. Prerequisites: Math. 130 and one year of high school mechanical drawing or Draft. 120. Fundamental principles of descriptive geometry and their application to engineering problems. Mathematical methods, vectors, truss and space-force polygons. Extra supplies may be required.

220 ENGINEERING GRAPHICS (2). Two lecture and four lab hours per week. Prerequisites: Engr. 200; Math. 260 or Math. 241 (may be taken concurrently.) Graphic mathematics, data representation, nomography and graphical calculus. Engineering sketches and working drawings. Introduction to engineering design principles and documentation by means of a student-designed apparatus. Extra supplies may be required.

230 ENGINEERING STATICS (3). Three lecture hours per week. Prerequisites: Physics 250, Engr 200, Math 261 and concurrent enrollment in Math 262. Plane and space force systems; vector algebra, equilibrium problems covering structures, machines, distributed force systems, friction, moments of inertia, and virtual work.

260 CIRCUITS AND DEVICES (3). Three lecture hours per week. Prerequisites: Math 262 and concurrent enrollment in Math 263, Physics 260 or equivalent. Introduction to circuits, natural and forced response, network theorems; characteristics and circuit models of electronic devices and transistor amplifiers.

270 MATERIALS SCIENCE (3). Two lecture and three lab hours per week. Prerequisites: Math 260 or 241 and Chem. 210 or Chem. 224. Recommended: Physics 250. Introduction to mechanics of solids, atomic and crystal structure, chemical and physical properties, phases of micro structures, solid state transformations, mechanical and thermal treatment alloys. Structure and properties of semiconductors, aggregate materials and polymers. Extra supplies may be required.

†644 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†666 CAREERS IN ENGINEERING (1). (Credit/No credit.) Two lecture hours per week for eight weeks. An intensive introduction to the problems faced by a beginning engineering student; academic and professional requirements, opportunities, available areas of specialization, alternatives.

†680 SELECTED TOPICS IN ENGINEERING (1-3). Hours by arrangement. Selected topics in Engineering not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

English

(Also see Literature and Reading.)

English Placement Test—Required of all entering freshmen. Students transferring to College of San Mateo with credit in College English (a course equivalent to English 100, Interpretation and Composition) will not be required to take the test. It is designed to determine the entrant's ability in reading, the mechanics of writing, and composition. It is used (in addition to other information) to determine placement of students in English 100 and other college transfer courses in English.

The English Program

The English program consists of transfer and nontransfer courses in composition, film, language, literature, reading and speech. Entering students should enroll first in one of the following courses in composition:

Transfer Course

English 100

Non-Transfer Courses

English 800 or
English 801

The English requirement may be completed with an additional three units chosen from the following courses:

Transfer courses

English 110,
120, 130,
or 140
Film 451, 452
461, 462
Speech 100
Speech 120

Non-Transfer Courses

English 311
English 312
English 313
English 314
English 802
English 860
English 880
Speech 801
Speech 811
Speech 812
Speech 825

Note that English 100 is prerequisite for English 110, 120, 130, and 140. English 800 or English 801 is prerequisite for English 802. English 800 with grade C or better is prerequisite for English 100 except for students who placed in English 100 on the placement test. Reading courses may be taken concurrently with any of the other courses in the English/Literature program.

Other English/Literature transfer courses are those numbered below 800; other English/Literature non-transfer courses are those numbered 800 or above.

†100 COMPOSITION (3). Three lecture hours per week. Prerequisite: Engl. 800 with grade C or better, or appropriate score on placement test. Practice in writing based on a study of significant essays, poetry, fiction, drama, song lyrics, films, etc.

†110 INTRODUCTION TO LITERATURE (3). Three lecture hours per week. Prerequisite: Engl. 100. Study of literary types: fiction, drama, and poetry. Reading analysis and discussion of selected works; written reports; oral reading, lectures.

†120 INTRODUCTION TO POETRY (3). Three lecture hours per week. Prerequisite: Engl. 100. Reading, analysis, and discussion of selected poetry; written reports; oral reading; lectures.

†130 INTRODUCTION TO FICTION (3). Three lecture hours per week. Prerequisite: Engl. 100. The short story and novel. Reading, analysis and discussion of selected works; written reports; oral readings; lectures.

†140 INTRODUCTION TO DRAMA (3). Three lecture hours per week. Prerequisite: Engl. 100. Reading, analysis, and discussion of selected dramatic works; written reports; oral readings; lectures.

†161 CREATIVE WRITING I (3). Three lecture hours per week. Prerequisite: Engl. 110, 120, 130 or 140. The craft of writing short stories, sketches, and poetry. Members of the class may contribute to College of San Mateo's literary magazine, **Unicorn**.

†162 CREATIVE WRITING II (3). Three lecture hours per week. Prerequisite: Engl. 161. Further instruction in the craft of writing short stories, sketches, and poetry. Members of the class may contribute to College of San Mateo's literary magazine, **Unicorn**. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†165 ADVANCED COMPOSITION (3). Three lecture hours per week. Prerequisite: Eligibility for Engl. 100. Designed for students who already have some experience with writing both formal and informal essays and want to go further into the techniques of essay and article writing, with particular emphasis on the use of certain devices of fiction: scene-by-scene narration, details, point of view, and dialogue.

†195 TERM PAPER (1). (Credit/No Credit.) Two lecture hours per week for eight weeks. A short course designed to assist the student who has never had the experience of writing a documented or "research" paper. Emphasizes the process and techniques involved in the actual production of a term paper.

†200 ENGLISH LANGUAGE AND LINGUISTICS (3). Three lecture hours per week. Prerequisite: Engl. 100. Study of historical changes in language from the view of traditional and modern grammatical systems, including an analysis of linguistic concepts. (Spring only)

†210 WORD STUDY (3). Three lecture hours per week. Prerequisite: Engl. 100. Vocabulary course including principles of semantics. Some specific topics covered include etymology, dialects, roots, and combining forms.

†311 ENGLISH FOR NON-NATIVE SPEAKERS I (1-5). Five lecture hours per week. Prerequisite: Diagnostic test. Study of English grammar and composition, drill in oral and written vocabulary, sentence structure, and English idiom.

312 ENGLISH FOR NON-NATIVE SPEAKERS II (1-5). *Five lecture hours per week. Prerequisite: Engl. 311 or result of placement test and/or placement by foreign student advisor or LES counselor.* Continuation of English 311. Work in spoken skills with an increased emphasis on reading and writing. Open entry until mid-term.

313 ENGLISH FOR NON-NATIVE SPEAKERS III (1-5). *Five lecture hours per week. Prerequisite: Placement test, successful completion of English 312 or recommendation of LES instructor or counselor.* Practice in listening, speaking, reading and writing. Emphasis on reading and writing. Work with mechanical operations such as spelling, punctuation, sentence structure. Short written compositions weekly. Vocabulary acquisition is an important feature of the course.

314 ENGLISH FOR LIMITED ENGLISH SPEAKERS IV (1-5). *Five lecture hours per week. Prerequisite: CELT placement test or successful completion of English 313 or recommendation of LES instructor or counselor.* Advanced composition for LES student. Successful completion should indicate that the student is capable of succeeding in regular college classes, at least as far as competence in reading and writing pertain to courses taken.

411 (A/11 AND A/11X) INTERMEDIATE COMPOSITION (4). *Three lecture hours and two hours of writing practicum per week. Prerequisite: Engl. 801 or appropriate score on placement test.* Practice in writing based on the reading and study of essays short stories, and poems. Note: The student will receive one unit of credit for the practicum work; the other three units will appear on the transcript as credit for either English 100 or English 800, depending upon the level of achievement as a writer at the end of the semester.

420 WRITING FOR INDUSTRY (3). *Three lecture hours per week.* Training in writing for students in Aeronautics, Electronics Technology, Computer & Information Science, Drafting, Engineering, Welding Technology, Nursing, Machine Tool Technology and other occupational fields. Three units will appear on the transcript as credit for Engl. 100, 800 or 801, depending on original placement and demonstrated ability to write at appropriate technical level of mastery.

430 WRITING FOR CAREERS: LAW ENFORCEMENT PERSONNEL (3). *Three lecture hours per week.* Training in writing for students in Administration of Justice major. Three units will appear on the transcript as credit for English 100, English 800, or English 801 depending on original placement and demonstrated ability to write at appropriate level of mastery.

+643 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index "Cooperative Education.")

+680 SELECTED TOPICS IN ENGLISH (1-3). *Hours by arrangement.* Selected topics in English not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

800 WRITING DEVELOPMENT (3). *Three lecture hours per week. Prerequisites: English 801 or appropriate score on placement test.* Intensive review of basic skills necessary for college-level composition. Practice in writing to develop and refine specific, overall composition skills. Development of specific reading skills to reinforce the process of writing expository essays. Designed mainly to prepare students to meet competency standards required for entrance into English 100.

801 BASIC READING AND COMPOSITION (3). *Three lecture hours per week.* Practice in reading and writing based on a study of essays, poetry, fiction, drama, song lyrics, films, etc.

802 READING-INTERPRETATION (3). *Three lecture hours per week. Prerequisite: English 801 or English 800.* Study of fiction, drama and poetry. Reading, class discussion; oral readings; lectures; written reports.

811 INTERMEDIATE READING, INTERPRETING, AND COMPOSITION (4). *Three lecture hours and two hours of writing practicum per week. Prerequisite: Appropriate score on placement test.* Practice in writing based on the reading and study of essays, short stories and poems. Note: The student will receive one unit of credit for the practicum work; the other three units will appear on the transcript as credit for either English 800 or English 801, depending upon the level of achievement as a writer at the end of the semester.

860 VOCABULARY (3). *Three lecture hours per week.* The use of the dictionary, with emphasis on contemporary usage and practical application of vocabulary skills in the mastery of other subjects. Designed to increase and improve the student's word stock.

875 (Formerly 880) ENGLISH GRAMMAR (3). *Three lecture hours per week.* Study of basic grammar, including such topics as sentence structure, diction, agreement, punctuation, and troublesome verbs.

880 SELECTED TOPICS IN ENGLISH (1-3). *Hours by arrangement.* Selected topics in English not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

Ethnic Studies

+101 INTRODUCTION TO ETHNIC STUDIES I (3). *Three lecture hours per week.* A study of the historical and cultural presence of Native Americans and La Raza in the United States, with special emphasis on their contributions to California's social, political and economic institutions. The roots of these groups studied from California and nationwide perspectives. Provides the student with a general background on two of California's oldest ethnic groups, and stimulates dialogue related to contemporary issues in California's institutional processes. (Satisfies State and Local Government requirement.)

+102 INTRODUCTION TO ETHNIC STUDIES II (3). *Three lecture hours per week.* A study of the historical and cultural presence of Blacks and Asians in the United States, with special emphasis on their contributions to California's social, political, and economic institutions. Their roots in California will be studied and compared from a national perspective. Provides the student with a general background on these two California groups and stimulates dialogue related to contemporary issues in California's institutional processes. (Satisfies State and Local Government requirement.)

- †150 **SOCIAL DYNAMICS OF PEOPLE OF COLOR (3).** *Three lecture hours per week.* Social structure and dynamics of Third World institutions, with emphasis upon development and effectiveness of these institutions among Third World communities in the United States. Concentrations include the family, education, religion and business.
- †151 **PATTERNS OF PREJUDICE AND RACISM I (3).** *Three lecture hours per week.* Problems of prejudice and racism reviewed from a social-psychological perspective. Topics include how and when prejudiced attitudes are developed and their behavioral manifestations. Examples of sex, national, political, and racial prejudice and discrimination are presented.
- †152 **PATTERNS OF PREJUDICE AND RACISM II (3).** *Three lecture hours per week.* Prejudice and racism analyzed according to international implications. Topics include imperialism, colonialism, nationalism, and genocide, with special concentration on contemporary issues such as those found in the Middle East, South Africa, Ireland.
- †160 **PSYCHOLOGY OF PEOPLE OF COLOR (3).** *Three lecture hours per week.* The development of psychological theories that provide viable alternative methods of analyzing the ideational and behavioral mechanisms operative among Third World persons. Exploration of methods of treatment of the major mental illnesses affecting each culture.
- †261 **AFRICAN-AMERICAN CULTURE I (3).** *Three lecture hours per week.* Discusses the relevance of African culture to the study of African-American life, including the African diaspora and its impact on contemporary African-American cultural institutions.
- †262 **AFRICAN-AMERICAN CULTURE II (3).** *Three lecture hours per week.* Explores the emergence of modern Black social movements in the United States, their leaders and philosophies, and contemporary issues including the Black consciousness movement, Pan-Africanism, counter-cultural forms of expression, and social problems.
- †267 **AFRO-AMERICAN LANGUAGE (3).** *Three lecture hours per week.* Examination of the development of African-American language as a product of cultural contact. Linguistic roots of the language spoken by Black Americans. Innovative teaching methods for Black children and adults are utilized.
- †288 **THE HISTORY OF BLACKS IN FILM (3).** *Three lecture hours per week.* Contributions of Blacks in the film industry and their historical relationship to the industry. Extensive use of films, supplemented by lecture and presentations by Black persons involved in the film industry.
- †290 **CRIME AND THE BLACK COMMUNITY (3).** *Three lecture hours per week.* Explores nature and extent of crime among Blacks in the U.S. Seeks to understand crime, suggest methods of control, and predict criminality within the Black community. Topics covered: crimes against person, property, conviction rates among Blacks, and application of penal codes.
- †350 **NATIVE AMERICAN WAY OF LIFE I (3).** *Three lecture hours per week.* Course concentrates on the teachings and writings of Carlos Castaneda, who presents the Yaqui way of life through an old Yaqui Indian. Ancient Indian philosophies are taught and discussed, including views on the universe, nature, dignity, and self-esteem. First eight weeks concentrate on *The Teachings of Don Juan* and *A Separate Reality*. Second eight weeks use *Journey to Ixtlan* and *Tales of Power* as primary sources.
- †351 **NATIVE AMERICAN WAY OF LIFE II (3).** *Three lecture hours per week.* Course offers advanced study of ancient ceremonial knowledge of the Brown and Red peoples of America. The material covered is comparable to advanced religions and philosophies of Eastern Asiatic cultures, i.e., Zen Buddhism, Judeo-Christian, Hinduism. Focus on the concept of power and the modern pragmatic American mind as compared to the mystical reality of Native America.
- †425 **THE HISTORY OF ASIAN PEOPLE IN THE UNITED STATES (3).** *Three lecture hours per week.* Asian-American history from 1840 to the present, with special attention to the contemporary issues and problems that are prevalent in Asian-American communities.
- †510 **AFRICAN LITERATURE (3).** *Three lecture hours per week.* Survey of works of contemporary African writers. An introduction course about the peoples and cultures of Africa through their literature, myths, legends, proverbs, and oral tradition as expressed by contemporary authors.
- †585 **THIRD WORLD CINEMA (1).** *(Credit/No credit.) Three lecture hours per week for six weeks.* An overview of the history of film by and about third world peoples and their contributions to the development of cinema. Focus on films by and about African people in various parts of the world.
- †680 **SELECTED TOPICS IN ETHNIC STUDIES (1-3).** *Hours by arrangement.* Selected topics in Ethnic Studies not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS IN ETHNIC STUDIES (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Film

- †451 **FILM HISTORY I (3).** *Three lecture hours per week.* A survey of the evolution of the motion picture from the earliest efforts of European and American filmmakers through post-World War II productions. Emphasis on film appreciation, on the language of film, and on analysis for full film enjoyment.
- †452 **FILM HISTORY II (3).** *Three lecture hours per week. Prerequisite: Film 451.* Further study of the evolution of the motion picture. Emphasis on film appreciation, on the language of film, and on analysis for full film enjoyment.
- †461 **FILMMAKING I (4).** *Three lecture and six lab hours per week.* Introduction of film theory, aesthetics, and 8mm production; includes screenplay writing and pre-production as well as crew work on and super-8mm motion picture productions.
- †462 **FILMMAKING II (4).** *Three lecture and six lab hours per week. Prerequisite: Film 461.* Advanced theory, aesthetics, critical writing and 8mm production. Students will work on a production crew as well as writing and producing their own motion pictures. (To increase competency, may be repeated for a maximum of 16 units of credit.)

880 SELECTED TOPICS IN FILMMAKING (1-3). *Hours by arrangement.* Selected topics in Filmmaking not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

Fire Science Technology

†649 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in the field of fire protection and suppression, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN FIRE SCIENCE (1-3). Selected topics in Fire Science not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally receive credit for only one Special Project per semester.)

†700 FIRE FIGHTING TACTICS (3). *Three lecture hours per week.* Study of facts and probabilities, the firefighter's own situation, decision and plan of operation in combating a variety of emergency fire problems.

†705 FIRE SCIENCE HYDRAULICS (3). *Three lecture hours per week.* Basic mathematics, principles of hydraulics, calculations of engine and nozzle pressures, discharge, fire streams, friction loss and pump operation and characteristics. Application of formulas to hydraulics and water supply problems.

†710 COMPANY ADMINISTRATION (3). *Three lecture hours per week.* Introduction to fire service organization, with emphasis on company officers in relation to planning, responsibility, organizing and supervision necessary to meet the needs of the fire service agency.

†712 PERSONNEL ADMINISTRATION (3). *Three lecture hours per week.* Organization and administration of fire service personnel; analysis, classification and description of jobs; incentives; evaluation; placement activities; training, safety, medical, grievances, discipline and employee benefits.

†715 INTRODUCTION TO FIRE TECHNOLOGY (3). *Three lecture hours per week.* Introduction to and history of fire protection, as well as specific fire protection functions; basic fire chemistry and physics. Career opportunities in fire protection and related fields.

†720 FUNDAMENTALS OF FIRE PREVENTION (3). *Three lecture hours per week.* Fundamentals of fire prevention techniques, procedures, regulation and enforcement; discussions of hazards in ordinary and special occupancies; organization and functions of fire prevention bureaus.

†725 FIRE DEPARTMENT APPARATUS AND EQUIPMENT (3). *Three lecture hours per week.* Operation, care and maintenance, specifications, capabilities and effective utilization of fire service apparatus and related equipment.

†730 FIRE BEHAVIOR AND CONTROL (3). *Three lecture hours per week.* Designed to give a comprehensive understanding of the fundamentals of fire behavior and methods of control. Subject material includes an in-depth study of fire chemistry and physics of fire; fire characteristics of materials; extinguishing agents and fire control techniques.

†732 HAZARDOUS MATERIALS (3). *Three lecture hours per week.* Handling, identification and fire fighting practices involving explosive and radioactive materials in storage and transit.

†740 BUILDING CONSTRUCTION FOR FIRE PROTECTION (3). *Three lecture hours per week.* Fundamentals of building construction as it relates to fire protection, with emphasis on code requirements, utilization of building materials and their fire resistive qualities.

†745 FIRE PROTECTION EQUIPMENT AND SYSTEMS (3). *Three lecture hours per week.* A study of water supply systems, portable and fixed fire extinguishing equipment, sprinkler systems, protection systems for special hazards, and fire detection and alarm systems.

†750 RELATED CODES AND ORDINANCES (3). *Three lecture hours per week.* Familiarization and interpretation of national, state, and local laws and ordinances which influence the field of fire prevention and safety.

†755 RESCUE PRACTICES (3). *Three lecture hours per week.* Fundamentals of rescue practices, use of emergency tools and equipment, vehicle extrication, emergency care of accident victims, cardiopulmonary resuscitation, and emergency first aid.

†756 CLIFF RESCUE (1). *One lecture hour per week.* Rescue Problems and techniques involving cliffside emergencies. Utilization of specialized emergency rescue tools and equipment under a wide variety of conditions.

757 AUTO EXTRICATION (1). *One lecture hour per week.* Instruction in the basic knowledge and skills needed to extricate a victim safely from a vehicle involved in an accident.

758 CONFINED FLAMMABLE LIQUIDS (1). *One lecture hour per week.* To provide basic knowledge and practical experience in extinguishing confined flammable liquid fires and use of special agent extinguishing systems.

†760 FIRE INVESTIGATION (3). *Three lecture hours per week.* Introduction to arson and incendiary fires, arson laws and types of incendiary fires, methods of determining fire cause, recognizing and preserving evidence, interviewing and detaining witnesses; procedures in handling juveniles; court procedure and giving court testimony.

†771 FIRE SERVICE TRAINING I (3). *Three lecture hours per week. Prerequisites: F.S. 710, 712, 715.* Designed for fire company officers who conduct in-service training programs. Identification of training needs, use of occupational analysis, identifying course objectives and content, establishing levels of instruction, constructing student performance goals, constructing manipulative lesson plans, preparing supplementary instruction sheets, and teaching manipulative skills.

†772 FIRE SERVICE TRAINING II (3). *Three lecture hours per week.* Fundamentals of establishing levels of technical instruction, constructing student performance goals, constructing technical lesson plans, teaching technical subjects, and use of visual teaching aids.

†**781 BASIC FIRE ACADEMY I (5).** *Four lecture and three lab hours per week.* Designed for pre-service instruction in fire service organizations, fire control, equipment operations and procedures, extinguishers and protective equipment, care and use of hose, nozzles and fittings.

†**782 BASIC FIRE ACADEMY II (5).** *Four lecture and three lab hours per week.* Lecture and manipulative instruction in basic and advanced hose evolutions, fire service ladders, salvage and overhaul procedures and emergency medical care.

†**785-786 EMERGENCY MEDICAL TECHNICIAN I-FS (2.5-2.5).** *Two lecture and one lab hour per week.* Prerequisites: 785—None; 786—Fire 785. Completion of both F.S. 785 and 786 is required to obtain EMT-IFS certification. Designed to prepare the student to render pre-hospital basic life support services under field emergency conditions. Includes cardiopulmonary resuscitation and preparation of victims for transport to an acute care hospital.

Foreign Language

Students who expect to transfer to a four-year institution are strongly advised to study a foreign language at the College. Please see individual listing for offerings in French, German, Japanese, and Spanish.

French

Language Laboratory and Listening Requirement— Students enrolled in certain courses in foreign language are required to make use of the language laboratory as prescribed by each department. Imitation, response and independent practice are integral features of the study of a foreign language at the College.

†**110 ELEMENTARY FRENCH (5).** *Five lecture hours and two lab hours per week.* Conversation in the language, dictation, reading, study of the fundamentals of grammar, and the writing of simple French exercises.

†**111 ELEMENTARY FRENCH I (3).** *May be offered either for eight weeks on a daily basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week.* Approximately half of the semester's work in French 110 is covered in this course.

†**112 ELEMENTARY FRENCH II (3).** *May be offered either for eight weeks on a daily basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week.* Prerequisite: French 111 or equivalent. Approximately the second half of the semester's work in French 110 is covered. French 111 and 112 are equivalent to French 110.

†**120 ADVANCED ELEMENTARY FRENCH (5).** *Five lecture hours and two lab hours per week.* Prerequisite: Completion of French 110 or French 112, with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in French. Conversation, dictation, further study of grammar and sentence structure; study of cognates, derivatives and idioms; reading of short studies.

†**121 ADVANCED ELEMENTARY FRENCH I (3).** *May be offered either for eight weeks on a daily basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week.* Prerequisite: French 110 or 112. Approximately the first half of the semester's work in French 120 is covered.

†**122 ADVANCED ELEMENTARY FRENCH II (3).** *May be offered either for eight weeks on a daily basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week.* Prerequisite: French 121 or equivalent. Approximately the second half of the semester's work in French 120 is covered. French 121 and 122 are equivalent to French 120.

†**130 INTERMEDIATE FRENCH (5).** *Five lecture hours and one lab hour per week.* Prerequisite: Completion of French 110 and 120 with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in French. Concurrent enrollment in French 201 is recommended. Reading of short stories, plays or novels; review of grammar, conversation, composition, dictation.

†**131 INTERMEDIATE FRENCH I (3).** *May be offered either for eight weeks on a daily basis plus one lab hour, or in a semester-long program for three lecture hours and one half hour lab per week.* Prerequisite: French 120 or 122. Approximately the first half of the semester's work in French 130 is covered.

†**132 INTERMEDIATE FRENCH II (3).** *May be offered either for eight weeks on a daily basis plus one lab hour, beginning at mid-term, or in a semester-long program for three lecture hours and one-half hour lab per week.* Prerequisite: French 131 or equivalent. Approximately the second half of the semester's work in French 130 is covered. French 131 and French 132 are equivalent to French 130.

†**140 ADVANCED INTERMEDIATE FRENCH (3).** *Three lecture hours and one lab hour per week.* Prerequisite: Completion of French 130 with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in French. Concurrent enrollment in French 201 or 202 recommended. Reading of selections from French literature and reading of a contemporary novel; further practice of conversation and composition; continued review of principles of grammar; analysis of idioms.

†**161 READING IN FRENCH LITERATURE I (3).** *Three lecture hours and two lab hours per week, or one hour recording and one hour outside reading.* Prerequisite: Completion of French 140 with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in French. Concurrent enrollment in French 202 recommended. Reading and discussion of works of French literature. Continued review of principles of grammar.

†**162 READING IN FRENCH LITERATURE II (3).** *Three lecture hours and two lab hours per week, or one hour recording and one hour outside reading.* Prerequisite: French 161. Further reading and discussion of works of French literature. Continued review of principles of grammar.

†**201 FRENCH CONVERSATION I (2).** *Two lecture hours and one lab hour per week.* Prerequisite: French 130 or French 140, or concurrent enrollment in French 130 or equivalent. (Native speakers not eligible.) Practice in conversation based on French customs and culture. (To increase competency, may be repeated for a maximum of 8 units of credit.) (Fall only.)

†**202 FRENCH CONVERSATION II (2).** *Two lecture hours and one lab hour per week.* Prerequisite: French 201 or French 140 or 161, or equivalent. (Native speakers not eligible.) Further practice in conversation based on French customs and culture. (To increase competency, may be repeated for a maximum of 8 units of credit.) (Spring only.)

†**620 INDIVIDUAL READING IN FRENCH (1-2).** *Conference periods for oral reports. Time to be arranged. A minimum of three hours of reading per unit of credit is required weekly.* Prerequisites: Current enrollment in or completion of French 162. Reading of French classics, contemporary literature or recent periodicals. (To

increase competency, may be repeated for a maximum of 8 units of credit.)

†680 SELECTED TOPICS IN FRENCH (1-3). *Hours by arrangement.* Selected topics in French not covered by regular catalog offering. Course content and unit credit to be determined by the director of the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in specific field or topic, directed by an instructor and supervised by the Language Arts Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

801 CONVERSATIONAL FRENCH I, ELEMENTARY (2). (Credit/No credit.) *Three lecture hours per week.* A practical course in the French language approach by way of conversation. Intensive drill in the patterns and idioms of daily speech is supported with sufficient grammar to give flexibility in the spoken language. May be considered an excellent preparatory course for students who have not taken a foreign language before. (This course will not fulfill language requirements at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

When student demand is light, French 802, 803 and 804 may be offered as 1.5 hour modules.

802 CONVERSATIONAL FRENCH II, ADVANCED ELEMENTARY (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: French 801 or equivalent.* Further work in conversation following the model of French 801. (This course will not fulfill language requirements at California State Universities or at the University of California.)

803 CONVERSATIONAL FRENCH III, INTERMEDIATE (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: French 802 or equivalent.* More advanced work in conversation following the model of French 802. (This course will not fulfill language requirements at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

804 CONVERSATIONAL FRENCH IV, ADVANCED INTERMEDIATE (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: French 803 or equivalent.* Further advanced work in conversation following the model of French 803. (This course will not fulfill language requirements at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

Geography

†100 PHYSICAL GEOGRAPHY (3). *Three lecture hours per week plus field trips.* Basic characteristics of physical features and their interrelationships; environmental systems and their interactions with man. Maps, photos, and the regional concept are the primary tools for this study. (Satisfies the General Education requirement for Physical Science.)

†110 CULTURAL GEOGRAPHY (3). *Three lecture hours per week.* Aerial distribution of the most important parts of man's culture. Emphasis on the way he makes a living; the origin and development of man, population distribution and settlement patterns. (Satisfies Social Science requirement in part.)

†680 SELECTED TOPICS IN GEOGRAPHY (1-3). *Hours by arrangement.* Selected topics in Geography not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS IN GEOGRAPHY (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally receive credit for only one Special Project per semester.)

Geology

†100 SURVEY OF GEOLOGY (3). *Day: Two lecture and one recitation hour per week plus two field trips. Evening: Two lecture and one recitation hour per week plus two Saturday field trips. Not open to students who have taken or are taking Geology 210.* Earthquakes, volcanoes, drifting continents and plate tectonics; erosion of the land by water and glaciers. A sketch of the earth's history and the origin and evolution of life.

†101 GEOLOGY LABORATORY (1). *Three lab hours per week. Prerequisite: Completion of or concurrent enrollment in Geol. 100.* An optional introductory geology laboratory course designed to be taken concurrently with or following Geol. 100. Identification of minerals, rocks, and fossils; seismographs; geologic interpretation of maps and aerial photographs. With Geol. 100, satisfies laboratory science requirement for U.C. and CSU. Extra supplies may be required.

†130 ELEMENTARY MINERALOGY (4). *Two lecture and six lab hours per week, plus one four-day field trip, two one-day field trips and one half-day field trip. Recommended: Elementary chemistry.* Basic principles of crystallography, and mineral formation. Laboratory includes mineral identification, work on crystal models and the crystal projections. Extra supplies may be required. (Offered alternate Spring semesters.)

†210 GENERAL GEOLOGY (4). *Three lecture and three lab hours per week plus two field trips.* The work of wind, water, gravity and glaciers; earthquakes, the earth's interior, drifting continents and plate tectonics. Rocks and minerals, and their identification. Interpretation of maps and aerial photographs. Extra supplies may be required.

†220 HISTORICAL GEOLOGY (4). *Three lecture hours and three lab hours per week, plus one week-end field trip and one day-long field trip. Prerequisite: Geology 210 or Geology 100.* Geological history of the earth and the evolution of its animal and plant inhabitants within the framework of plate tectonics. Geologic map interpretation and use of fossils in dating rocks. Extra supplies may be required.

†680 SELECTED TOPICS IN GEOLOGY (1-3). *Hours by arrangement.* Selected topics in Geology not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

German

Language Laboratory and Listening Requirement— Students enrolled in certain courses in foreign language are required to make use of the language laboratory as prescribed by each department. Imitation, response and independent practice are integral features of the study of a foreign language at the College.

- †110 **ELEMENTARY GERMAN (5)**. Five lecture hours and 2 lab hours per week. Study and practice (both oral and written) of basic forms and patterns of German, development of a satisfactory pronunciation, the learning and using of vocabulary of high frequency and the reading of simple German text. The student is required to make extensive use of the listening facilities in the College library and of the language laboratory.
- †111 **ELEMENTARY GERMAN I (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week. Approximately half of the semester's work in German 110 covered in this course. Recommended for those students without any background in foreign language study.
- †112 **ELEMENTARY GERMAN II (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week. Prerequisite: German 111 or equivalent. Approximately the second half of the semester's work in German 110 is covered. German 111 and 112 are equivalent to German 110.
- †120 **ADVANCED ELEMENTARY GERMAN (5)**. Five lecture hours and two lab hours per week. Prerequisite: German 110 with a passing grade, or completion of German 112 with a passing grade; or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in German. Continuation of work begun in German 110 with continued practice in listening, speaking, reading (of more difficult textual material), and writing. (See "Language Laboratory Requirement" above.)
- †121 **ADVANCED ELEMENTARY GERMAN I (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week. Prerequisite: German 110 or 112. Approximately the first half of the semester's work in German 120 is covered.
- †122 **ADVANCED ELEMENTARY GERMAN II (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week. Prerequisite: German 121 or equivalent. Approximately the second half of the semester's work in German 120 is covered. German 121 and 122 are equivalent to German 120.
- †130 **INTERMEDIATE GERMAN (5)**. Five lecture hours and one lab hour per week. Prerequisite: German 120 with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in German. Reading of modern writers, advanced grammar and syntax; study of idioms; study of vocabulary through cognates, derivatives, and word building.
- †131 **INTERMEDIATE GERMAN I (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week. Prerequisite: German 120 or 122. Approximately the first half of the semester's work in German 130 is covered.
- †132 **INTERMEDIATE GERMAN II (3)**. May be offered either for eight weeks on a daily basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week. Prerequisite: German 131 or equivalent. Approximately the second half of the semester's work in German 130 is covered. German 131 and 132 are equivalent to German 130.
- †140 **ADVANCED INTERMEDIATE GERMAN (3)**. Three lecture hours and one lab hour per week. Prerequisite: German 130 with a passing grade, or assignment by the Foreign Language Department on the basis of the Foreign Language Placement Test in German. More time and attention are devoted to reading; texts are by German authors, beginning with Goethe to recent times. Study of word families, derivatives, compounds, idioms; practice of patterns; aural practice.
- †161 **READINGS IN GERMAN LITERATURE I (3)**. Three lecture hours per week. Prerequisite: German 140. Oral and written composition, class reading of works of German literature, extensive collateral reading of varied types of German literature, and study of a review of grammar. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †162 **READINGS IN GERMAN LITERATURE II (3)**. Three lecture hours per week. Prerequisite: German 161. Continuation of oral and written composition, class reading of works of German literature, extensive collateral reading of varied types of German literature, and study of a review of grammar. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †201 **GERMAN CONVERSATION I (2)**. Two lecture hours and one lab hour per week. Prerequisite: Successful completion of two semesters of college-level work in German. Native speakers not eligible. Conversation based upon German customs, manners, mores, history, newspapers, periodicals, plays, and short stories. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †202 **GERMAN CONVERSATION II (2)**. Two lecture hours and one lab hour per week. Prerequisite: Successful completion of three semesters of college-level work in German. Native speakers not eligible. Further conversation based upon German customs, manners, mores, history, newspapers, periodicals, plays and short stories. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †620 **INDIVIDUAL READINGS—GERMAN (1-2)**. One conference period per week or oral report. Prerequisite: Evaluation of previous preparation, usually at least German 140. Minimum requirements: 54 hours of reading for each unit granted. Credits are based on the reading accomplished by each student. Modern books or recent periodicals. The student's preference largely determines the choice of the reading material. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †680 **SELECTED TOPICS IN GERMAN (1-3)**. Hours by arrangement. Selected topics in German not covered by regular catalog offerings. Course content and unit credit to be determined by the Director of the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS (1-2)**. Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

801 CONVERSATIONAL GERMAN I, ELEMENTARY (2). (Credit/No credit.) Three lecture hours per week. A practical course in the German language approached by way of conversation. Intensive drill in the patterns and idioms of daily speech is supported with sufficient grammar to give flexibility in the spoken language. May be considered an excellent preparatory course for students who have not taken a foreign language before. (This course will not fulfill language requirement at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

When student demand is light, German 802, 803 and 804 may be offered as 1.5 hour modules.

802 CONVERSATIONAL GERMAN II, ADVANCED ELEMENTARY (2). (Credit/No credit.) Three lecture hours per week. Prerequisite: German 801 or equivalent. Further work in conversation following the model of German 801. (This course will not fulfill language requirement at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

803 CONVERSATIONAL GERMAN III, INTERMEDIATE (2). (Credit/No credit.) Three lecture hours per week. Prerequisite: German 802 or equivalent. More advanced work in German following the model of German 802. (This course will not fulfill language requirement at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

804 CONVERSATIONAL GERMAN IV, ADVANCED INTERMEDIATE (2). (Credit/No credit.) Three lecture hours per week. Prerequisite: German 803 or equivalent. Further advanced work in conversation following the model of German 803. (This course will not fulfill requirement at California State Universities or at the University of California.) (To increase competency, may be repeated for a maximum of 8 units of credit.)

Health Science

+100 GENERAL HEALTH SCIENCE (2). Two lecture hours per week. Health Science 100 or equivalent required for A.A. Degree (minimum 2 units.) Two units of Health Science 101-114 are equivalent to Health Science 100. A survey of today's most prevalent health problems, including such topics as heart disease, cancer, venereal disease, birth control, drug abuse, emotional disorders, etc. Discussions focus primarily on prevention, detection, and treatment of personal health problems and their social implications (This course satisfies the California Teaching Credential requirement.)

+101 HEREDITY AND BIRTH DEFECTS (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) A study of the principles of human genetics, cell division, and prenatal development, with emphasis on the causes, prevention, and treatment of the most common hereditary and environment-induced birth defects.

+102 HUMAN REPRODUCTION (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Emphasis is on the biological aspects of human reproduction and birth control. Also includes such topics as predetermination of sex, ethical and legal aspects of abortion, and population dynamics. (This course partially satisfies the California Teaching Credential requirement.)

+103 DRUGS AND ALCOHOL (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Study of the general categories of drugs; discussion of the beneficial and harmful effects that various drugs have upon the individual and society. (This course partially satisfies the California Teaching Credential requirement.)

+105 COMMUNICABLE DISEASE (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Study of some of the most prevalent and debilitating communicable diseases. Causes, social implications, methods of detection, treatment and prevention are emphasized.

+106 EMOTIONAL HEALTH (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Concepts of personality development, emotional health and emotional disorders, with emphasis on the positive aspects of developing and maintaining emotional stability.

+109 ENVIRONMENTAL HEALTH (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Principles of ecology and critical appraisal of man's effect on the environment. Discussion of many types of environmental hazards and pollutants, with emphasis on how they affect man's health.

+111 HEART DISEASE AND CANCER (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) Study of the two leading causes of death in the U.S. today, taking into account their causes, danger signals, methods of prevention, detection and treatment.

+112 CURRENT HEALTH ISSUES (1). Two lecture hours per week for eight weeks. (Two units of Health Science 101-114 are equivalent to Health Science 100.) An objective look at the medical, legal, and ethical aspects of the most provocative, controversial health issues making today's news headlines.

+113 SELECTED TOPICS IN NUTRITION (1). Two lecture hours per week for eight weeks. (Two units of Hsci 101-114 are equivalent to Hsci 100.) A practical study of the principles of nutrition that promote positive aspects of total well-being. A major focus will deal with the concept of nutritional understanding with emphasis on the following: role of essential nutrients; identification of affordable sources of essential nutrients; selection of diet; evaluation of nutritional claims; responding to new information; role of nutrition in weight control.

+114 FITNESS (1). Two lecture hours per week for eight weeks. (Two units of Hsci. 101-114 are equivalent to Hsci. 100.) Recommended: Hsci. 113. A practical study of the principles of exercises as a contributing factor to total fitness. The course provides tools for the student to effect positive changes in his/her understanding and performance of fitness.

+115 CANCER (2). (Grade option.) Two lecture hours per week. An in-depth current look at the various medical and biological aspects of cancer to include: causes, methods of diagnosis, treatment, and possible prevention and cures. (This course will satisfy one unit of the Health Science General Education requirement for the A.A.-/A.S. degree.)

+116 HOLISTIC HEALTH (2). Two lecture hours per week. A practical survey course designed to elevate the student's personal awareness of those forces within and around him which variously enhance or undermine the experience of well-being. Includes direct experience of a variety of health-promoting techniques (yoga, massage, breathing exercises, visualization, etc.) as well as information regarding such healing practices as acupuncture, biofeedback, and chiropractic. (Will satisfy 1 unit of the Health Science General Education requirement for an A.A. Degree.)

- †646 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN HEALTH SCIENCE (1-3)** *Hours by arrangement.* Selected topics in Health Science not covered by regular catalog offerings. Course content and unit credit to be determined by the Physical Education Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- ## History
- (See also Humanities)
- †100 **HISTORY OF WESTERN CIVILIZATION I (3).** *Three lecture hours per week.* The rise and decline of the civilization of the ancient world, the rise of Christianity, the growth and decline of Medieval society, the Renaissance, the Reformation and the opening of the modern world. (Hist. 100-102 (6 units) fulfills American Institutions requirement.)
- †101 **HISTORY OF WESTERN CIVILIZATION II (3).** *Three lecture hours per week. Prerequisite: None.* The rise of modern Europe: the Enlightenment, the French Revolution and the growth of Liberalism. The emergence of modern society, economic problems of industrialization, development of modern ideologies, the World Wars, and international experiments of the 20th Century. (History 101-102 (six units) fulfills American Institutions requirement.)
- †102 **HISTORY OF AMERICAN CIVILIZATION (3).** *Three lecture hours per week.* The colonial settlement of North America, the Enlightenment, the age of revolution and the growth of democracy, the problems of industrialization, the emergence of modern society, the effects of the expansion of the 19th and 20th Centuries upon the culture of America, and the role of the United States in the modern world. (History 100 or 101 plus 102 (six units) fulfills American Institutions requirement.)
- †110 **HISTORY OF ENGLAND (3).** *Three lecture hours per week.* A survey course, including in its scope the more important political, constitutional, economic, social and cultural phases of the history of the English people.
- †201 **UNITED STATES HISTORY I (3).** *Three lecture hours per week.* A survey of English colonization along the Atlantic Coast, the westward expansion of the colonists, the Revolution, the formation of the Constitution, the Federalist and Jeffersonian systems, the age of Andrew Jackson, the slavery issue and Civil War. Economic, political, social and cultural developments of the period are included. (Hist. 201-202 (6 units) fulfills American Institutions requirement.)
- †202 **UNITED STATES HISTORY II (3).** *Three lecture hours per week.* Continues the work of Hist. 201; explores the Reconstruction period, industrial expansion, social and economic development, and the foreign policies of the U.S. to the present. (History 201-202 (6 units) fulfills American Institutions requirement.)
- †230 **ECONOMIC HISTORY OF THE UNITED STATES. (3)** *Three lecture hours per week.* Origin and development of the American economy from colonial times to the present. Includes the basis for industrial growth, land and resource use, the transportation revolution, the development of money and banking machinery, changing trade patterns, the rise of organized labor, the economic role of government. (With History 201 or 202, fulfills American Institutions requirement.)
- †242 **THE AFRO-AMERICAN IN U.S. HISTORY (3).** *Three lecture hours per week. Recommended: History 201.* Social, economic and political facts as they relate to the Afro-American. Race relations are analyzed, with special emphasis on the History of the Afro-American. (With History 201 or 202, fulfills American Institutions requirement.)
- †260 **WOMEN IN AMERICAN HISTORY (3).** *Three lecture per week.* A survey of the role played by American women from colonial times to the present. The part played by American women of different racial and local origins is explored in depth. Attitudes of women, as well as attitudes about women in America. (With History 201 or 202, fulfills American Institutions requirement.)
- †270 **CIVIL WAR AND RECONSTRUCTION (3).** *Three lecture hours per week. Recommended: History 201 or 202.* Survey and analysis of the political, social and economic problems of the North and South during the antebellum, Civil War and Reconstruction eras. (With History 201 or 202, fulfills American Institutions requirement.)
- †290 **THE AMERICAN LABOR MOVEMENT (3).** *Three lecture hours per week.* A survey of the history, structure, and institutions of the organized labor movement in the United States, covering developments from the colonial era to the present, with the greatest emphasis on trends since the Civil War. Particular attention paid to labor's role in California and the Bay Area. (With History 201 or 202, fulfills American Institutions requirement.)
- †310 **CALIFORNIA HISTORY (3).** *Three lecture hours per week.* A survey of major topics in California's rapid growth, including the Indian culture; discovery and Spanish colonization; the mission-ranchero era; the American take-over; the Gold Rush and the vigilante eras; the constitutional, political, and economic growth of the State; and contemporary social and economic problems as the most populous state in the Union. (Satisfies the requirement in California State and Local Government.)
- †315 **HISTORY OF SAN MATEO COUNTY (3).** *Three lecture hours per week.* Survey of the county's development to the present. The natural setting; discovery and exploration; mission-ranchero era; establishment of county government; advent of railroads; lumbering; industry; growth of Bayside and Coastside communities; and the Peninsula's relation to the state and the nation. (Satisfies the requirement in California State and Local Government.)
- †350 **THE AMERICAN WEST (3).** *Three lecture hours per week.* The movement of Americans west of the Mississippi River, with an emphasis on fur trading, cattle raising, farming, mining, railroads, community buildings, Indian problems, and the character and image of the West and Westerners. (With History 201 or 202, fulfills American Institutions requirement.)
- †360 **THE SOUTH IN AMERICAN HISTORY (3).** *Three lecture hours per week.* A survey course designed to acquaint the student with the 15 former slave states. Introduces the student to history from the Colonial period through the National period, the Civil War and Reconstruction; Populism and the "New South"; the 20th Century; Southern industrialization; the New Deal; the revolution of the Civil Rights Movement; and the election of Jimmy Carter. (With History 201 or 202, fulfills American Institutions requirement.)

+425 HISTORY OF MEXICO (3). (Telecourse.) Beginning with human origins in Mexico 10,000 years ago, traces the rise of Mexican Pre-Colombian civilizations. Covers the violence of the conquest, the merging of traditions in colonial times, and the struggles of the years since independence.

+680 SELECTED TOPICS IN HISTORY (1-3). *Hours by arrangement.* Selected topics in History not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

+690 SPECIAL PROJECTS IN HISTORY (1-2). *Hours by arrangement.* *Prerequisite:* 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

810 AMERICAN HISTORY AND WORLD AFFAIRS (3). *Three lecture hours per week.* A study of current issues, events and institutional changes in the United States through the analysis of their geographic and historical context, and their relation to events and people at home and abroad. Lecture, films, library, and small discussion groups. (Fulfills American Institutions requirement for students working toward the Associate in Arts degree and not planning to transfer to a four-year institution.) (May be repeated for a maximum of 12 units of credit.)

Home Economics

(See Consumer Arts & Science)

Horticulture

+649 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

+680 SELECTED TOPICS IN HORTICULTURE (1-3). *Hours by arrangement.* Selected topics in Horticulture not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Science Division in relation to community-student need and/or available staff. May be offered as seminar, lecture or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2). *Hours by arrangement.* *Prerequisite:* 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Horticulture — Ornamental

+701-702 GENERAL ORNAMENTAL HORTICULTURE I AND II (3-3). *Three lecture hours per week.*

701 — Soils, manures and fertilizers, lawn establishment and turf management.

702 — Plant propagation, pruning, choice of plant tools and machinery, insecticides, fungicides and weed killers.

+705 SOILS AND PLANT GROWING (3). *Three lecture hours per week.* Fundamental principles and soils, soil management, fertility and plant nutrition. Soil types, origins, characteristics; biological relationships. Commercial and natural fertilizers; soil conditioners; growing media, crop rotation, and watering.

+706 PLANT PROPAGATION (3). *Three lecture hours per week.* Principles and practices of propagating plants for sale for landscape use, including laboratory work in making cuttings, grafting and budding, potting, canning. Visits to wholesale and retail nurseries. Seedage, cuttage, layerage, plant breeding and improvement.

+709 PRINCIPLES OF LANDSCAPING (3). *Three lecture hours per week.* Introduction to principles of residential landscaping with emphasis on fundamental design and construction considerations.

+711-712 LANDSCAPE TREES AND SHRUBS I AND II (3-3). *Three lecture hours per week.*

711 — Trees: Tree classification, description, nomenclature, morphology. The study in class of trees commonly used in California parks and gardens. Emphasis on plant identification.

712 — Shrubs: The study of shrubs and ground covers commonly used in California.

+721-722 LANDSCAPE CONSTRUCTION I AND II (3-3). *Three lecture hours per week.*

721 — Study of irrigation systems. Emphasis on piping, fittings, equipment design, installation and maintenance.

722 — Emphasis on installation of lawns, decks, patios, paths, etc. Includes contractors' license requirements and estimating.

+731 ARBORICULTURE: SHRUBS AND FRUIT (3). *Three lecture hours per week.* Principles and practices of arboriculture emphasizing care and maintenance of landscape trees. The study of the training and management of fruit trees, bush fruits and ornamental shrubs.

+741-742 GLASSHOUSE MANAGEMENT I AND II (3-3). *Three lecture hours per week.*

741 — Study of greenhouses, lathhouses and nurseries and the materials used in their construction. Interior layouts. Ventilation, humidity and temperature control.

742 — The propagation, and culture of roses, carnations, chrysanthemums, orchids, potted plants and other glasshouse crops. Pest and disease control.

+771-772 PEST CONTROL: ENTOMOLOGY I AND II (3-3). *Three lecture hours per week.* Study of the common insect and mite pests which attack horticultural plants in the Bay Area. Identification, classification, life cycles and the latest methods of control.

+773-774 PEST CONTROL: PLANT DISEASES I AND II (3-3). *Three lecture hours per week.* Study of the common disease-causing fungi, bacteria, physiological, nematode and virus pests which attack horticultural plants in the Bay Area. Identification, classification, life cycle and the latest methods of control.

+775 PEST CONTROL: INSECTICIDES, FUNGICIDES, EQUIPMENT (3). *Three lecture hours per week.* History and development of pesticides, pest control equipment, insecticides, fungicides, disinfectants and nematocides. Soil fumigants, composition, formulation, uses, compatibilities. California Agriculture Code and Pest-control Operator's License examination.

+776 PEST CONTROL: WEEDS AND RODENTS (3). *Three lecture hours per week.* Identification, dissemination methods and control of principal garden, lawn and turf weeds, and weedy grasses. Herbicides, their characteristics and uses; brush control. Chief rodent and other animal pests of landscaped areas, and control methods.

Horticulture — Environmental

†311-312 PLANT AND LANDSCAPE I AND II (3-3). *Two lecture and three lab hours per week.*

311 — Growth habits, cultural requirements and landscape uses of ornamental trees adapted to the climates of California. Proper plant and maintenance techniques. (Fall only.)

312 — Growth habits, cultural requirements and landscape; uses of ornamental shrubs and ground covers adapted to the climates of California. Proper planting and maintenance technique. (Spring only.)

†315 LANDSCAPE MANAGEMENT (3). *Two lecture and three lab hours per week.* Maintenance and management of turf areas, including golf courses, athletic fields, parks and residential areas. Cultural requirements of trees, shrubs, vines, annuals and ground cover. Operation of landscape maintenance equipment. (Fall only.)

†320 INTRODUCTORY PLANT SCIENCE (3). *Two lecture and three lab hours per week.* Introduction to scientific principles of higher plant structure, function, and reproduction to serve as a basis for further practical course work in the field of Horticulture.

†327 PLANT GROWING (3). *Two lecture and three lab hours per week.* The study of plant propagation, nursery practice and greenhouses. Soil, plant and fertilizer relationships. Practical experience in growing plants in the greenhouse.

†330 INSECTS, WEEDS AND DISEASES CONTROL (3). *Two lecture and three lab hours per week.* Symptoms, identification and methods of control of the principal diseases, pests and weeds important in California landscape industry. Chemical, biological and cultural control and prevention. (Spring only.)

†340 GARDEN DESIGN (4). *Two lecture and six lab hours per week.* Introductory graphics, drafting, environmental planning and design for the garden landscape. (Fall only.)

†341 LANDSCAPE DESIGN (3). *Two lecture and three lab hours per week.* *Prerequisite:* Horticulture 340 or equivalent. Advanced graphics techniques, environmental planning and design, planting, structures, engineering, materials, and history of the landscape. (Spring only.)

†342 LANDSCAPE CONSTRUCTION (3). *Two lecture and three lab hours per week.* Planting and construction techniques; design, installation and maintenance of sprinkler systems; cost finding and estimating for the landscape trades, including legal aspects of contracting. (Assists students in preparing for Landscape Contractor's License Examination — C27.) (Spring only.)

†411 BASIC FLORISTRY (3). *Two lecture and three lab hours per week.* *Extra supplies may be required.* The study of floral design using flowers and foliage as related to the florist's style of arrangement. The student is taught the history of floral design, the care and conditioning of cut flowers and foliage.

†412 ADVANCED FLORISTRY (3). *Two lecture and three lab hours per week.* *Prerequisites:* Hort. 411 or equivalent. *Extra supplies may be required.* An advanced study of commercial floral designs, including corsages, wedding bouquets, party decor and funeral tributes. Emphasis on the development of individual creative design skills.

†413 INTERMEDIATE FLORISTRY (3). *Two lecture and three lab hours per week.* *Extra supplies may be required.* Instruction in designing floral arrangements of various periods of floral design: garland making, floral frescos and wedding work, with emphasis on the use of authentic materials.

†415 RETAIL FLORISTRY AND NURSERY MGMT (3). *Two lecture and three lab hours per week.* Practical course of procedures used in the operation of retail nursery and florist shop. Emphasis on the evaluation of nursery stock and cut flowers and on marketing, shop records, shipping, buying, employee relations and quality control of flowers, plants and floral pieces.

†416 COMMERCIAL FLORISTRY DISPLAY (3). *Two lecture and three lab hours per week.* *Extra supplies may be required.* Instruction in designing and building, party decorations, scenes and window displays. Designing with fresh flowers, fruits, and vegetables for conventions, weddings, and banquets.

†420 DRY AND SILK FLOWER DESIGNS (3). *Two lecture and three lab hours per week.* *Prerequisite:* Hort. 411 or equivalent. *Extra supplies may be required.* Study and practice in commercial methods of flower arranging with special emphasis on the development of original design skills, and in the use of dry and silk flowers in various combinations.

Humanities

(See also History and Philosophy)

†101 INTRODUCTION TO HUMANITIES: GREECE THROUGH REFORMATION (3). *Three lecture hours per week.* The History and Philosophy Departments explore the major cultural and intellectual movements of Western Civilization from Greece through the Reformation. The development of literature, art, architecture, and music are considered, along with their relationship to mythological, religious, and scientific attitudes toward man, nature and God.

†102 INTRODUCTION TO HUMANITIES: SINCE THE REFORMATION TO PRESENT (3). *Three lecture hours per week.* The History and Philosophy Departments explore the major cultural and intellectual movements of Western Civilization from the Reformation to the present. The development of literature, art, architecture, and music are considered, along with their relationship to mythological, religious, and scientific attitudes toward man, nature and God.

†105 THE ART OF BEING HUMAN (3). (Telecourse) Interdisciplinary introduction to humanities as an overall approach to living. Consists of various modules, each representing a major theme, problem, or aspect of human existence. Each motif explored through art, music, philosophy, drama, and religion.

†111 HUMANS AND THEIR PLACE IN THE COSMOS: CLASSICAL CIVILIZATIONS (3). *Three lecture hours per week.* The development of consciousness as reflected in changing attitudes and concepts toward the hero, the gods, nature, society and self. Examples drawn from Greek literature and philosophy will focus on the heroic struggle of the individual to come to terms with the demands of tradition, and with an evolving consciousness of the self, in order to find meaning in suffering, to reckon with the ambiguities of both fate and freedom. Parallels will be drawn with contemporary views.

†112 HUMANS AND THEIR ARTISTIC CREATIONS — THE MIDDLE AGES AND RENAISSANCE (3). *Three lecture hours per week.* The development of art and architecture from the early centuries to the end of the Middle Ages. Course includes: rise of Christianity, church vs. state, Medievalism, the Renaissance, and Counter-Reformation.

†113 HUMANS AND NATURE: THE IMPACT OF THE NEW SCIENCE, 17th TO 19th CENTURIES (3). *Three lecture hours per week.* The development of modern science and the impact of the New Science on life and culture in the 17th through 19th Centuries are examined from a humanistic perspective. Specific topics include new conceptions of human destiny; the new scientific method and "reality"; the social and ecological effects of industrialization; the impact of technologically advanced Europe on the rest

- † of the world; literary, artistic, philosophical, and political reactions to the new scientific culture; and the limitations of the scientific values and world view.
- † **114 HUMANS AND COMMUNICATION: LITERATURE AND FILM AS COMMUNICATION IN THE 20th CENTURY (3).** *Three lecture hours per week.* Human communication through drama, literature and film in the 20th Century. The impact of literature and film on contemporary life. Central to the course will be an exploration of the attempt to the 20th Century "rebel" to survive the breakdown of traditional forms and to reconstruct a meaningful set of values based on humanistic traditions developed in the past.
- † **125 TECHNOLOGY, CONTEMPORARY SOCIETY, AND HUMAN VALUES (3).** *Three lecture hours per week.* A humanistic and critical analysis of the impact of contemporary technology on the environment, economic and political systems, warfare, education, medicine, philosophy, behavior control, and human relations. Reasons for the rise of technological civilization in the West, the phenomenology of modern technology, and the problem of control are examined.
- † **127 SCIENCE AND ART I: PREHISTORY TO RENAISSANCE (3).** *Three lecture hours per week.* Changing ideas of nature and the cosmos, from prehistory to the age of Newton. The development of scientific concepts of nature and their effect on man's perceptions of the world, as reflected in changing styles of art, music, literature, and philosophy. Social and cultural values which influenced and were influenced by scientific and artistic events of the time. Completion of Hum. 127 and 128 will satisfy 3 units of Natural Science and 3 units of Humanities credit. Either course taken alone will satisfy 3 units of Humanities credit only.
- † **128 SCIENCE AND ART II: RENAISSANCE TO 20TH CENTURY (3).** *Three lecture hours per week.* Changing ideas of nature and the cosmos, from the Scientific Revolution to the 20th Century. The development of scientific concepts of nature and their effect on man's perceptions of the world, as reflected in changing styles of art, music, literature, and philosophy. Social and cultural values which influenced and were influenced by scientific and artistic events of the time. Completion of Hum. 127 and 128 will satisfy 3 units of Natural Science and 3 units of Humanities credit. Either course taken alone will satisfy 3 units of Humanities credit only.
- † **130 COMPARATIVE MYTHOLOGY: AFRICAN AND NATIVE AMERICAN VIEWS (3).** *Three lecture hours per week.* Comparative study of African and Native American mythologies and world views. Analysis of myths, folk tales, art and rituals as they express beliefs about the nature of man and the cosmos.
- † **131 CULTURAL ACHIEVEMENTS OF AFRICAN AMERICANS (3).** *Three lecture hours per week.* Introduction to Black aesthetics with concentration on the religious, philosophical, literary, musical and art forms of Africa and African-America. Explores the relationship that philosophy, myth, religion and socio-political traditions have had on each other by examining the arts, literature, film, music and other creative forces.
- † **132 NATIVE NORTH AMERICAN, MEXICAN AND LATIN AMERICAN CULTURES (3).** *Three lecture hours per week.* Cultures of the New World: Native North American, Mexican and Latin American cultures studied through their religious, mythological, artistic and folk traditions. Includes contemporary adaptations and developments.
- † **133 CULTURAL ACHIEVEMENTS OF ASIAN AMERICANS (3).** *Three lecture hours per week.* To develop an awareness and understanding of asian cultures through study of the heritage in religion, family, literature, music, arts, crafts and foods. Will include guest lecturers, tours, demonstrations and hands-on experiences.
- † **136 CREATIVE WOMEN IN MODERN TIMES (3).** *Three lecture hours per week.* Explores the works and projects created by women in the western world from the Renaissance to the present. The achievements of women in statecraft, philosophy, the visual arts, music, photography and film making with major emphasis on the 19th and 20th Centuries.
- † **140 CULTURAL HERITAGE OF SAN FRANCISCO AND ITS ENVIRONS (3).** *Three lecture hours per week.* Survey of the history, art, architecture, music, literature, and geography of San Francisco and its environs. Course covers early California as well as the present, but the major emphasis is upon the decades from the Gold Rush to the end of the 19th Century. San Francisco tours are part of the course.
- † **680 SELECTED TOPICS IN HUMANITIES (1-3).** *Hours by arrangement.* Selected topics in humanities not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- † **690 SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field (Note: Students normally may receive credit for only one Special Project per semester.)

Japanese

Language Laboratory and Listening Requirements — Students enrolled in certain courses in foreign language are required to make use of the language laboratory as prescribed by each department. Imitation, response and independent practice are integral features of a foreign language at the College.

- † **110 ELEMENTARY JAPANESE (5).** *Five lecture hours and one lab hour per week.* Principles of basic patterns of study of the writing system. Emphasis is given to oral expression, reading, and written forms of Japanese.
- † **111 ELEMENTARY JAPANESE I (3).** *Three lecture hours plus one lab hour per week.* Approximately half of the semester's work in Japanese 110 is covered in this course.
- † **112 ELEMENTARY JAPANESE II (3).** *Three lecture hours plus one lab hour per week. Prerequisite: Japanese 111 or equivalent.* Approximately the second half of the semester's work in Japanese 110 is covered. Japanese 111 and 112 are equivalent to Japanese 110.
- † **120 ADVANCED ELEMENTARY JAPANESE (5).** *Five lecture hours plus one lab hour per week. Prerequisite: Japanese 110 or 112 or equivalent.* Further study of basic patterns of Japanese.
- † **121 ADVANCED ELEMENTARY JAPANESE (3).** *Three lecture hours plus one lab hour per week. Prerequisite: Japanese 110 or 112.* Approximately half of the semester's work in Japanese 120 is covered in this course.
- † **122 ADVANCED ELEMENTARY JAPANESE II (3).** *Three lecture hours plus one lab hour per week. Prerequisite: Japanese 121 or equivalent.* Approximately the second half of the semester's work in Japanese 120 is covered. (Japanese 121 and 122 are equivalent to Japanese 120.)

Journalism

- †110 **INTRODUCTION TO JOURNALISM (3).** *Three lecture hours per week.* A study of the historical background and modern functioning of the press (newspaper, radio, magazine, television) in a democratic society, and the values and shortcomings of each. The rights and duties of journalists, and the legal limits of the liberty of the press are studied.
- †120 **NEWSWRITING (4).** *Three lecture and two lab hours per week. Prerequisite: Journalism 110.* Techniques of news gathering, judging news values, and writing the news story. For practical experience, the students write for the college paper, *The San Matean*, thus preparing them for future newspaper work.
- †300 **NEWSPAPER PRODUCTION (2).** *Four lecture hours per week.* Production of the student newspaper, *The San Matean*. Discussion and criticism of staff organization and newspaper content. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †310 **MAGAZINE PRODUCTION (2).** *Four lecture hours per week.* Production of the student magazine, *Unicorn*. Discussion of techniques of publishing and production, especially applied to school publications. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †643 **COOPERATIVE EDUCATION (1-4) (Grade option.)** Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN JOURNALISM (1-3)** *Hours by arrangement.* Selected topics in Journalism not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field (Note: Students normally may receive credit for only one Special Project per semester.)

Library Studies

- †100 **INTRODUCTION TO LIBRARY STUDIES (1).** *(Open entry/open exit) Three lab hours per week.* A self-paced course in the use and mastery of standard library tools and resources. Provides practical "hands-on" introduction to library organization, access tools (card catalogs and indexes), reference materials; outlines research strategies.

Life Science

(See Biology)

Literature

- †101 **CONTEMPORARY LITERATURE (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of selected fiction, poetry and drama of the 20th Century. Lectures, discussions, related reading, writing of critical papers. (Spring only.)
- †105 **THE BIBLE AS LITERATURE. (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of the significant writings of the Old and New Testaments and of the Apocrypha.
- †111 **THE SHORT STORY (2).** *Two lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of short stories. Class discussion and reports, lectures.
- †113 **THE NOVEL (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of novels of late 19th and 20th Centuries and of various aspects of literary criticism. Reading, discussion, and critical papers.
- †115 **INTRODUCTION TO POETRY (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Lectures concerning the various elements of and approaches to poetry. Intensive and extensive reading, discussion, critical papers, tests.
- †143 **MODERN DRAMA (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study, from a theatrical as well as a literary point of view, of the outstanding masterpieces of the modern theatre. Lectures; discussion; recordings by professional actors.
- †151 **SHAKESPEARE (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Emphasis upon Shakespeare's poetic and dramatic growth as a writer through a study of representative plays and poems. Reading, discussion, critical papers, tests.
- †153 **SHAKESPEARE (1-3) (Credit/No credit.)** *Prerequisite: Engl 110, 120, 130, or 140, or equivalent.* Offered in three 1.0 unit modules per semester. Emphasis on Shakespeare's poetic and dramatic skills and techniques through a study of representative plays and poems. Reading, discussion, critical papers, tests.
- †200 **MAJOR FIGURES IN AMERICAN LITERATURE (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of the writings of some of the major figures in American literature. Intensive reading, lectures, discussion, papers. (To increase competency, may be repeated for a maximum of 12 units of credit.)
- †201 **AMERICAN LITERATURE I (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of American literature from the beginning through the period of Mark Twain. Lectures reading, analysis and discussion of selected works, papers.
- †202 **AMERICAN LITERATURE II (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of American literature since Mark Twain. Lectures, reading, analysis and discussion of selected works, papers.
- †231 **SURVEY OF ENGLISH LITERATURE I (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of the typical works of major English writers from Chaucer to the end of the 18th Century. Lectures, discussions, records. (Recommended for English majors.)
- †232 **SURVEY OF ENGLISH LITERATURE II (3).** *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of the typical works of major English writers of the 19th and 20th Centuries. Lectures, discussions, recordings. (Recommended for English majors.)

+251 WOMEN AND LITERATURE (3). *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Survey of images of women in literature from 1600 to present. Study of selected women writers. Reading, discussion, and critical papers.

+301 WORLD LITERATURE MASTERPIECES I (3). *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of various works of European literature from the classical period to the 17th Century. Reading, analysis and discussion of selected works; written reports; lectures.

+302 WORLD LITERATURE MASTERPIECES II (3). *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* Study of various works of European literature from the 17th Century to the present, with emphasis on European prose. Readings, analysis and discussion of selected works; written reports, oral readings and lectures.

+430 MYTHOLOGY AND FOLKLORE (3). *Three lecture hours per week. Prerequisite: Engl 110, 120, 130, or 140 or equivalent.* A survey of major gods and heroes, recurring mythological themes, and relationships between man and his gods, primarily in the Greek and Roman cultures.

+643 COOPERATIVE EDUCATION (1-4). *(Grade option.)* Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

+680 SELECTED TOPICS IN LITERATURE (1-3). *Hours by arrangement.* Selected topics in English not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Machine Tool Technology

(Also see Manufacturing & Industrial Technology.)

+102 ADVANCED APPLIED MATHEMATICS FOR MACHINE TOOL TECHNOLOGY (3). *Three lecture hours per week. Prerequisites: Manu 101.* Continuation of Manu 101. Students will work with ratio and proportion, indexing, gearing, thread measurement and calculation, charts and graphs, trigonometry. During latter part of semester, concentration on problem solving abilities and coordinate mathematics used in numerical-control programming.

510 MACHINE SHOP THEORY (3). *Three lecture hours per week. Prerequisite: concurrent enrollment in Mach 511.* Basic theory of metal removal with emphasis on lathe, mill operation with introduction to other processes.

511 MACHINE SHOP PRACTICE (2). *Six lab hours per week. Prerequisite: concurrent enrollment in Mach 510.* Machine operations and other laboratory activities with emphasis on the use of mill, lathe set-ups, layout, precision measurement. Machine maintenance.

610 ADVANCED MACHINE TOOL TECHNOLOGY (3). *Three lecture hours per week. Prerequisite: Mach 510, 511, and concurrent enrollment in Mach 611.* Advanced theory of metal removal with emphasis on metallurgy, threads, fits, industrial standards, mathematics, tool design.

611 ADVANCED MACHINE TOOL PRACTICE (4). *Twelve lab hours per week. Prerequisites: Mach 510, 511, and concurrent enrollment in Mach 610.* Advanced application of lab processes with emphasis on precision measurements, thread cutting, indexing, and tooling for the lathe and mill.

649 COOPERATIVE EDUCATION (1-4). *(Grade option.)* Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

680 SELECTED TOPICS IN MACHINE TOOL TECHNOLOGY (1-3). *Hours by arrangement.* Selected topics in Machine Tool Technology not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

700 NUMERICAL CONTROL MACHINE (3). *Three lecture hours per week. Prerequisite: Mach 101, 102, 230, 510, 610, 611, equivalent training or journeyman machinist.* Advanced applied mathematics for machine tool technology. Continuation of Mach 101 with emphasis on geometry, trigonometry, principles and practices of manual programming, absolute, incremental, coding system. Recommended for Mach majors or those with prior experience.

750 MACHINE TOOL THEORY AND PRACTICE I (2). *One lecture and three lab hours per week.* Survey of machine tool processes. Recommended for the engineer, draftsman, technician and machinist trainee. Subjects covered: bench work, measurement, threads, cutting tools, lathe, mills, grinding, saws and others. Lab supplies required.

755-760 MACHINE TOOL THEORY AND PRACTICE II AND III (2-2) *One lecture and three lab hours per week. Prerequisite: Mach 750.* Intermediate and advanced studies in machine tool. Allows student to develop skill in individual areas of interest—tool and cutter grinding, E.D.M., tool design, numerical control programming, thread cutting and others. Lab supplies required.

Management

+100 INTRODUCTION TO BUSINESS MANAGEMENT (3). *Three lecture hours per week.* Survey of business principles and practices, problems and procedures, background of American business, organization, ownership, financing, production and distribution of goods. (Satisfies Bus. 100 requirements for A.A. degree in Business and is required for Management Certificate and A.A. degree.)

- †105 **FINANCIAL MANAGEMENT (3).** *Three lecture hours per week.* Designed to acquaint the beginning student with many of the concepts of financial management (analysis of accounting statements, acquisition of funds, use of leverage, time value of money, management of cash, etc.). Planning, analysis and control fundamentals for decision-making.
- †110 **REPORT WRITING (3).** *Three lecture hours per week.* A study of the principles of effective communication in a variety of business and industrial applications; clarity, accuracy and logic are emphasized in the presentation of written, verbal and statistical materials.
- †120 **MANAGEMENT COMMUNICATIONS (3).** *Three lecture hours per week.* The communication process—both verbal and written. Lectures, discussion, case studies and oral presentations on such topics as the relationship between communication and the organizational climate, perception, motivation and the causes and patterns of mis-communication.
- †125 **GROUP COMMUNICATIONS DYNAMICS (3).** *Three lecture hours per week. Prerequisite: Mgmt. 120.* Development of understanding and skill in interpersonal communication in business and industrial groups. Students work in problem-solving groups for experimental learning. Group process theory discussed.
- †130 **LABOR RELATIONS FOR MANAGEMENT (3).** *Three lecture hours per week.* Employer and union policies affecting the labor market, emphasizing: wage systems, living conditions, productivity, unemployment, union organizations and collective bargaining. Industrial conflicts from the point of view of wage earner, employer and government.
- †135 **PLANNING, BUDGETING AND CONTROL FOR SUPERVISORS (3).** *Three lecture hours per week.* Planning, budgeting and control for supervisors and managers project planning, work breakdown, project goals, scheduling systems (Gantt charts, PERT, CPM), cost estimating and cost curve displays; initiating action; performance reporting; corrective action techniques.
- †140 **BUSINESS AND INDUSTRIAL ECONOMICS (3).** *Three lecture hours per week. (Econ. 100 and 102 may be substituted.)* Supply and demand concepts and their operation in the market place. The overall effect of GNP, population trends, savings, investment, full employment and inflation, production decision making, revenue estimating and profit maximization.
- †200 **MATERIALS MANAGEMENT (3).** *Three lecture hours per week.* Planning and scheduling, material and inventory planning, flow control, mechanical tabulation, identification systems. Designed to show how large and small businesses plan and control production in order to achieve competitive pricing of goods and services.
- †205 **MOTION STUDY AND METHODS ANALYSIS (3).** *Three lecture hours per week.* Techniques for finding the most economical way of doing a manual task and for measuring labor accomplishment. Application of time and motion study to lower cost production through better methods, procedure, tooling, product design and the elimination of wasteful practices.
- †210 **INDUSTRIAL ENGINEERING METHODS (3).** *Three lecture hours per week.* Overall view of manufacturing management. Fundamentals of organization, capital costs and budgets, motion and time study, industrial statistics, operations, research.
- †215 **MANAGEMENT OF HUMAN RESOURCES (3).** *Three lecture hours per week.* An introductory course designed for line supervision to develop understanding of the personnel function as it relates to industry; selection and placement; wage and salary procedures; training and evaluation.
- †220 **ORGANIZATIONAL BEHAVIOR (3).** *Three lecture hours per week.* Individual motivation, interpersonal communication, organizational influence, group dynamics, and decision-making in the organization; the relationship between culture, structure and technology; leadership and the managing of organization conflict.
- †225 **OFFICE MANAGEMENT (3).** *Three lecture hours per week.* Organization and planning of office services, office environment and equipment; human relations and behavioral concepts; new dimensions of information management. Review and update preparatory to Certified Administrative Manager examination.
- †230 **SALES MANAGEMENT (3).** *Three lecture hours per week.* Organization of the sales force; operating a sales force including selecting, training, compensating, supervising and stimulation. Planning sales force activities; operations including forecasting, budgeting, establishing territories, and quotas. Analysis of sales operations and evaluation of productivity.
- †235 **TECHNIQUES OF SUPERVISION (3).** *Three lecture hours per week.* Role of the manager, understanding and motivating employees, leadership, communications, problem solving and decision making, employee training, performance evaluation, labor relations, supervising different types of workers, delegation, improving work methods and reducing costs, planning and managing time.
- †240 **ORGANIZATIONAL LEADERSHIP (3).** *Three lecture hours per week.* Introduction to the motivational aspects of leadership. Examines how individuals react to different styles of leadership. Students will examine their own management practices and beliefs, and gain insights into how these might be improved.
- †245 **ORGANIZATION FOR MANAGEMENT (3).** *Three lecture hours per week.* A study of the principle functions of modern management such as planning, organizing, staffing, actuating, controlling and decision-making.
- †300 **PRINCIPLES OF BANK OPERATIONS (3).** *Three lecture hours per week.* Survey of the fundamentals of bank functions and operations, including bookkeeping operations of day-to-day activity, bank services related to loans, savings, trusts. Federal reserve system as related to bank operations.
- †301 **CONSUMER LENDING (3).** *Three lecture hours per week.* Study of the broad field of installment credit and lending from the standpoint of both the public relations and profit position.
- †303 **FINANCIAL STATEMENT ANALYSIS (3).** *Three lecture hours per week. Completion of an accounting course strongly recommended.* Study of financial statement analysis: balance sheet, profit and loss statement, analysis of working capital changes and inventories, relating balance sheet accounts to sales.
- †305 **MONEY AND BANKING (3)** *Three lecture hours per week. Prerequisites: Mgmt. 300, Econ. 100, or related banking experience as approved by Division Director and Instructor.* Coverage of money creation, monetary theory, mechanisms and effectiveness of Federal Reserve policies, flow of funds accounting, capital markets, banking regulations, international financial relationships.
- †320 **FUNDAMENTALS OF PRODUCTION AND INVENTORY CONTROL (3)** *Three lecture hours per week.* Fundamentals of production and inventory control. Review of manufacturing management and control from a computer-oriented systems approach. Includes capacity management and master scheduling, materials control, priority and capacity planning and control, systems design, and materials management.

- †324 **MATERIALS REQUIREMENTS PLANNING (3).** *Three lecture hours per week.* Introduction to theory and use of the materials requirements planning approach to manufacturing and materials managements. Covers the principles of materials requirements planning, development of the supporting data bases, computer functions involved, and various integrated systems.
- †328 **COMPUTERIZED MANUFACTURING SYSTEMS (3).** *Three lecture hours per week.* Theory and concepts of designing and development of manufacturing systems as implemented in an integrated computer-oriented approach. Presents the theory of a manufacturing system by introducing the student to general systems design techniques and their application to manufacturing and materials control.
- †332 **MATERIALS MANAGEMENT (3).** *Three lecture hours per week.* The role of materials management in the modern computerized manufacturing systems environment. Role of management in successfully applying the theory and practices of modern materials and manufacturing systems.
- †336 **PURCHASING MANAGEMENT (3).** *Three lecture hours per week.* Overviews of the definition and technology relating to purchasing and production control. Course also studies its relationship to Materials Requirements Planning as to planning, scheduling, and implementation of plans.
- †340 **DISTRIBUTION MANAGEMENT (3).** *Three lecture hours per week.* Problems and opportunities for practicing and future managers. Traditional functional areas are examined, including transportation, warehousing, inventory control, material handling, industrial packaging, order processing, and location analysis. Introduction to the make up of the total physical distribution plant.
- †641 **COOPERATIVE EDUCATION (1-4) (Grade option.)** Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")
- †680 **SELECTED TOPICS IN MANAGEMENT (1-3).** *Hours by arrangement.* Selected topics in management not covered by regular catalog offerings. Course content and unit credit to be determined by the Business Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- †120 **INDUSTRIAL MATERIALS AND PROCESSES (3).** *Three lecture hours per week.* The study of metals common to industry and related industrial manufacturing processes. This includes the removing, shaping and joining of metals as well as the processing of plastics, rubber, glass and some exotic materials currently used in local industries.
- †200 **MACHINE SHOP FOR MANUFACTURING TECHNOLOGY (2).** *One lecture and three lab hours per week.* A survey course for the manufacturing technology student who requires a generalized experience in machine tools. Subjects covered: bench work, measurement, threads, cutting tools, lathe, mill, grinding, saws and others. (Lab supplies required.)
- 210 **INTRODUCTION TO TECHNOLOGY (1).** *Two lecture hours per week for eight weeks.* A survey course for technology students. The role of technology in economics and social change effected through industrial activities. Will define various employment classification and discuss training requirements. Other topics will include the demographics of employment patterns, interaction of technologies.
- †230 **BLUEPRINT READING (1).** *Two lecture hours per week for eight weeks. Prerequisite: None.* This course is to provide the machinist with the skills needed to read shop drawings. Views, projections, dimensioning, symbols, tolerances, sketching and other related topics are covered.
- 310 **INDUSTRIAL POWER SYSTEMS (3).** *Three lecture hours per week. Prerequisites: Manu 101, 120, 210; Elec 110; Engl 420.* Principles of various control and power transmission systems used in manufacturing processes and machines. Topics include mechanical, electrical, pneumatic, hydraulic, regulation and feedback systems, installation, feedback.
- 320 **METAL FABRICATION AND STRUCTURES (2).** *One lecture hour and three lab hours per week. Prerequisites: Mach 102; Manu 120, 230; Weld 300.* The processes of metal fabrication and the basic principles of sound design for commonly used structural design. Topics include shearing, punching, bending and forming, layout of structures, design of welded and riveted structures.
- 330 **THE MICROPROCESSOR AND INTRODUCTION TO PROGRAMMING (1).** *Three lecture hours per week. Prerequisite: Elec 110.* Study of the construction and application of the industrial microprocessor. Introduction to digital communication central processing unit. Operating systems for manufacturing, machine and assembly languages. Includes analysis of system function, peripherals, testing precautions and keyboarding.
- 760 **COMPUTER AIDED DESIGNS/MANUFACTURING (3).** *Three lecture hours per week. Prerequisites: Draft 120, Mach 102, Manu 230, 610, 611, 700, or equivalent training, or must be a journeyman machinist or qualified student from a compatible major.* Advanced methods of computer aided design and manufacturing technologies. Includes programming of industrial processes through the use of graphic systems. Instruction combines various subjects such as drafting and machine tool technology into a total systems approach.
- 761 **COMPUTER AIDED PROGRAM AND MANUFACTURING (3).** *Nine lab hours per week. Prerequisites: Concurrent enrollment in Manu 760.* Laboratory instruction for the computer systems used in computer aided design and manufacturing systems. Includes use of keyboard, function of peripherals, plotters, digitizers. Laboratory activities also include downloading of program, setup and operation of manufacturing systems.

Manufacturing and Industrial Technology

(Formerly Technology)

- †100 **SCIENCE FOR TECHNOLOGY (3).** *Three lecture hours per week.* Study of applied physics phenomena as related to simple devices including forces, stress, moments acceleration, velocity, friction, energy and basic thermodynamics.
- †101 **APPLIED TECHNICAL MATHEMATICS I (3).** *Three lecture hours per week.* Required of all Manufacturing/Industrial Technology, Drafting, Machine Tool Technology, and Welding Technology students. Includes applied arithmetic, measurements, fractions, geometry, and algebra.

765 INTRODUCTION TO FLEXIBLE MANUFACTURING SYSTEMS (3). Three lecture hours per week. Prerequisites: Manu 760, 761, or study in a compatible major. The application of computer technology to the control of automated parts production and assembly systems.

†649 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN MANUFACTURING AND INDUSTRIAL TECHNOLOGY (1-3). Hours by arrangement. Selected topics in Manufacturing and Industrial Technology not covered by regular catalog offerings. Course content and unit credit to be determined by the Manufacturing and Industrial Technology Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). Hours by arrangement. Prerequisite: 3.0 GPA in subject field. Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Mathematics

(See also Business 810, 115)

The normal sequence of mathematics courses at CSM is 110, 115, 120, 130, 220, 260, 261, 262, 263, 275. A student who qualifies for a particular mathematics course is eligible for any course lower in sequence. If the student has not taken a mathematics course during the previous two years, it is strongly recommended that the student enroll in a course below the one for which he/she would normally be eligible.

†110 ELEMENTARY ALGEBRA (5). Day—Five lecture hours per week. Evening—Six lecture hours per week. Elementary algebra through quadratic equations.

†111-112 ELEMENTARY ALGEBRA I AND II (3-3). Three lecture hours per week. A two-semester study of elementary algebra through quadratic equations.

†115 GEOMETRY (5). Day—Five lecture hours per week. Evening—Six lecture hours per week. Prerequisite: Math 110 with grade C or better, or one year of high school algebra with grade C or better. Study of the properties of plane and solid figures, using formal logic and the real number system. Some non-Euclidean, projective and topological elements are included.

†120 INTERMEDIATE ALGEBRA WITH REVIEW (5). Day—Five lecture hours per week. Evening—Six lecture hours per week. Prerequisite: Math 110 with grade C or better, or satisfactory score on the Math Diagnostic Placement Test. Recommended: Math 115 with grade C or better, or one year of high school geometry with grade C or better. A comprehensive review of elementary algebra with certain topics studied in greater depth. Extension of fundamental algebraic concepts and operations, equations in two variables, graphs, systems of equations, exponential and log functions, sequences and series.

†125 ELEMENTARY FINITE MATHEMATICS (3). Three lecture hours per week. Prerequisite: Math 120 with grade C or better, or 1.5 years of algebra and one year geometry with grades C or better. An introduction to finite mathematics including set theory, logic, combinatorial techniques, elementary probability, systems of linear equations, matrices, linear programming, and elements of calculus. A variety of business applications is included.

†130 ANALYTIC TRIGONOMETRY (3). Three lecture hours per week. Prerequisites: Math 115 and Math 120 with grades of C or better, or satisfactory score on the Math Diagnostic Placement Test. Trigonometric functions of real numbers and angles, their graphs and periodicity; reduction formulas; function of multiple angles; identities and equations; radian measure; inverse functions; logarithms; solution of triangles.

†200 ELEMENTARY PROBABILITY AND STATISTICS (4). Day—four lecture hours per week. Evening—five lecture hours per week. Prerequisite: Math. 120 or equivalent with grade C or better, or high school preparation including 1.5 years of algebra with grade C or better. Treatment of use/misuse of data, measures of central tendency and dispersion, probability, sampling distributions, statistical inference, regression and correlation, contingency tables, time series analysis, index numbers.

†219 COLLEGE ALGEBRA WITH TRIGONOMETRY REVIEW (5). Day—five lecture hours per week. Evening—six lecture hours per week. Prerequisite: Math 130 with grade C or better, or satisfactory score on the Math Diagnostic Placement Test. Covers the same course material as Math. 220 but includes a review of Trigonometry.

†220 COLLEGE ALGEBRA (4). Day—Four lecture hours per week. Evening—Five lecture hours per week. Prerequisite: Math. 130 with grade C or better, or satisfactory score on the Math Diagnostic Placement Test. Study of more advanced algebra, including such topics as theory of equations, complex numbers, logarithmic and exponential functions, vectors, matrices, binomial theorem, sequences.

†241-242 APPLIED CALCULUS I AND II (5-3). Day—five lecture hours per week. Evening—six lecture hours per week. Prerequisites 241—Math. 130 with grade C or better, or satisfactory score on the Math Diagnostic Placement Test. 242—three lecture hours per week. Prerequisite: Math. 241 with grade C or better.

241—Selected topics from analytic geometry, plus basic techniques of both differential and integral calculus. (This sequence may not be substituted for the Math. 260 sequence for Mathematics, Physics or Engineering majors.)

242—Further work in differentiation and integration, calculus of functions of several variables, and selected topics from differential equations.

†260-261-262-263 CALCULUS WITH ANALYTIC GEOMETRY I-II-III-IV (4-4-4-4). Day—four lecture hours per week. Evening—five lecture hours per week. Prerequisites: 260—Math. 130 and 219 or 220 with grades of C or better, or satisfactory score on the Math Diagnostic Placement Test. 261, 262, 263—Completion of the previous course in the sequence (or its equivalent) with grade C or better. A four-semester sequence in integrated calculus-analytic geometry in which the topics of analytic geometry will be treated as needed throughout the development of the calculus. Limits and the derivative with applications will be treated within the first semester of the sequence. Lists of topics to be covered each semester are available from the Math/Science Division Office.

†270 LINEAR ALGEBRA (3). Three lecture hours per week. Prerequisite: Math. 261. Vectors and matrices applied to linear equations and linear transformations; real and inner product spaces.

†275 ORDINARY DIFFERENTIAL EQUATIONS (3). Three lecture hours per week. Prerequisite: Math. 263 with grade C or better. When approved by the instructor, may be taken concurrently with Math. 263. Differential equations of first, second and higher order; simultaneous, linear, homogeneous equations; solutions by power series; numerical methods, Fourier series, Laplace transforms, and applications.

†413 **METRICS (1). (Credit/No credit.)** *Three hours per week of individualized instruction.* The metric system and its relationship to the English system.

†414 **TECHNICAL ALGEBRA I (1-3). (Credit/No credit.)** *Three hours per week of individualized instruction.* An informal, intuitive, numerical approach to understanding algebra. Content chosen on the basis of its relevance to basic science and technology. Topics include signed numbers, fractions, equations, graphing, formula rearrangement and system of equations.

†415 **TECHNICAL ALGEBRA II (1-3). (Credit/No credit.)** *Three hours per week of individualized instruction. Prerequisite: Math. 414 or equivalent.* Includes radicals, radical equations, quadratic equations, fractional exponents, logarithmic and exponential formulae and semilog and log-log graphs.

†416 **TECHNICAL TRIGONOMETRY (1-3). (Credit/No credit.)** *Three hours per week of individualized instruction. Prerequisite: Math. 415 or equivalent.* Study of right triangles and trigonometric ratios; vectors, trigonometric ratios of standard-position angles; oblique triangles; applied geometric problems; identities and interpolation; sine wave analysis; complex numbers.

†417 **CALCULATOR USAGE (1-3). (Credit/No credit.)** *Three hours per week of individualized instruction. Prerequisites: for 1 unit — None; for 2 or 3 units, Math. 130 or equivalent.* Hands-on course in calculator usage, principally the pocket-calculator type. Calculators are available or a student may use his own. Designed to cover the capabilities of the machines available. Among the tasks to be mastered are the fundamental operations of real numbers, evaluating selected algebraic, trigonometric, logarithmic and exponential function values and programming techniques.

†680 **SELECTED TOPICS IN MATHEMATICS (1-3).** *Hours by arrangement.* Selected topics in Mathematics not covered by regular catalog offerings. Course content and unit credit to be determined by Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

801 MATHEMATICS WITHOUT FEAR (1). (Credit/No credit.) *Three lecture hours per week for six weeks.* Discussion and lectures aimed at identifying and eliminating fear and anxiety toward mathematics while learning mathematical concepts. Class activities and assignments designed to stimulate questions and evoke answers, and to provide successful experiences in math. Selection of topics is determined cooperatively by instructor and students. Upon completion, students may wish to continue course work in Math 811, 110, or 111.

811 ARITHMETIC REVIEW (1-3). (Credit/No credit.) *Three hours per week of individualized instruction.* Basic arithmetic facts and operations of whole numbers, fractions and decimals with applications. (To increase competency; may be repeated for a total of 3 semester units.)

812 ELEMENTARY ALGEBRA REVIEW (1). (Credit/no credit.) *Three hours per week of individualized instruction. Prerequisite: Elementary algebra.* A review of elementary algebra.

Medical Assisting

100 INTRODUCTION TO MEDICAL OFFICE TRAINING (3). *Three lecture hours per week.* Duties and responsibilities of a medical assistant in a physician's office, clinic, hospital or other medical facility. Emphasis on desirable personality traits and human relationships as well as on medical ethics, specialties in the medical field and office maintenance. (Fall only.)

†110 **BASIC MEDICAL TERMINOLOGY (3).** *Three lecture hours per week.* Development of a medical vocabulary through the study of the principles of word construction and word analysis, with emphasis on spelling and pronunciation. Medical abbreviations and symbols.

111 ADVANCED MEDICAL TERMINOLOGY (3). *Three lecture hours per week. Prerequisite: Meda 110 or equivalent.* Terminology in medical specialties as it relates to body structure, pathological conditions and diseases; operative terms and techniques, laboratory and radiological diagnostic procedures.

120 CLINICAL PROCEDURES (3). *Two lecture and three lab hours per week. Prerequisite: Biol. 130. Extra supplies may be required.* Examination room techniques; sterilization procedures; medical emergencies; laboratory procedures; pharmacology. (Spring only.)

130 MEDICAL ASSISTING REVIEW, CLINICAL (3). *Three lecture hours per week. Prerequisites: Meda 110, 100 and 120 or employment as a medical assistant and/or medical secretary.* Medical terminology and clinical procedures. Comprehensive review of medical terminology and the anatomical systems. Review of the clinical duties peculiar to a medical office, including sterilization techniques, laboratory and X-ray studies and physical examinations. Medical ethics.

†140 **MEDICAL TRANSCRIPTION (2).** *Four lecture hours per week. Prerequisites: intermediate typing or equivalent; Meda 110 (Biology 130 recommended).* Machine transcription of medical reports.

141 MEDICAL TRANSCRIPTION, ADVANCED (3-4). *Two lecture, two lab and one hour per week by arrangement. Prerequisites: Meda 110, 140. Meda 190 and Biol 130 are recommended.* Intensive transcription of hospital-type medical reports including history and physical examinations, surgeries, discharge summaries and radiologic and nuclear medicine reports.

150 MEDICAL OFFICE PROCEDURES (3). *Four lecture hours per week, plus 1 hour by arrangement. Prerequisites: Meda 110, 100. Intermediate Typing or equivalent and enrollment in or completion of one course in college English.* Fundamental office procedures applied to the medical field. Medical office simulations require decision-making in setting priorities, finding information, coping with interruptions, producing under pressure. (Spring only.)

160 MEDICAL INSURANCE PROCEDURES (2). *Two lecture and two lab hours per week. Prerequisites: Meda 100, Intermediate Typing or equivalent.* Blue Cross, Blue Shield, Medi-Cal, Worker's Compensation and other insurance procedures are presented. Coding resources utilized in claims preparation. Billing and bookkeeping methods. (Fall only.)

170 MEDICAL ASSISTING EXTERNSHIP (4). *Two lecture hours per week plus 10 hours per week of supervised training in medical office. Prerequisites: Completion of or enrollment in Medical Assisting 120, 140, 160, 150.* Practical experience, under supervision, in a physician's office or clinic and/or hospital, with weekly seminar.

180 MEDICAL ASSISTING REVIEW, ADMINISTRATIVE (3). *Three lecture hours per week. Prerequisite: Meda 110, 100, 160, 150 or employment as a medical assistant and/or medical secretary.* Clerical office procedures. General review of administrative office duties performed in a medical office, including correspondence, transcription, insurance, telephone, basic bookkeeping, medical ethics and legal aspects.

190 INTRODUCTION TO PHARMACOLOGY (2). *Two lecture hours per week.* Designed for medical assistants, medical transcribers and other allied health personnel. Instruction will include recognition and identification of commonly used drugs, classification of drugs according to action, modes of administration of drugs and care and storage of drugs according to regulations of the Food and Drug Administration. (Fall only.)

Meteorology

†100 ELEMENTARY METEOROLOGY (3). *Three lecture hours per week.* A basic course in descriptive meteorology. It includes the atmosphere's structure, the earth's heat budget, cloud forms and precipitation, pressure systems and wind, and air mass and frontal weather. This course leads to a better understanding of the obvious and subtle ways of the weather.

†110 AVIATION WEATHER (3). *Three lecture hours per week. Prerequisite: Aero. 100.* An introductory course in descriptive meteorology emphasizing applications to aviation. Designed to help the pilot appreciate good weather, recognize marginal and hazardous weather, and make intelligent decisions in flight planning. Prepares student for meteorology portion of FAA examination.

†680 SELECTED TOPICS IN METEOROLOGY (1-3). *Hours by arrangement.* Selected topics in Meteorology not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS IN METEOROLOGY (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Military Science

(Army ROTC classes held at San Jose State University.)

†1a-1b FUNDAMENTALS OF LEADERSHIP THE U.S. DEFENSE ESTABLISHMENT (2-2). *One lecture hour and one leadership lab bi-weekly.* First year basic course. Provides orientation concerning organization, management, and leadership fundamentals in formal organizations. Role of the citizen-soldier; foundations of national power, and causes of conflict are examined. Oral reports and written requirements enhance communicative abilities.

†12a-12b MAP AND AERIAL PHOTOGRAPH READING; APPLIED LEADERSHIP AND MANAGEMENT (2-2). *One lecture hour and one leadership lab bi-weekly. Prerequisite: Military Science 1a-1b.* Second year basic course. The functions, duties, and responsibilities of junior leaders; mission, organization, and composition of the basic military team; study of the basic principles of map and aerial photograph reading to include military geography, map symbols, military grid systems, resection techniques, and use of compass. Instruction in military operations and basic tactics; continuing development of leadership through practical exercises.

Music

†100 FUNDAMENTALS OF MUSIC (3). *Three lecture hours per week.* Designed for the student who wishes to learn how to read music and perform it at sight. Recommended for students with limited musical background who wish to begin the formal study of music theory. Also recommended for education majors.

†101 MUSICIANSHIP I (3). *Three lecture hours per week. Prerequisite: Music 100 or equivalent; concurrent enrollment in Music 131.* Study of notations, keys and intervals. Performance at sight of melodic and rhythmic examples. Dictation of melodic, harmonic and rhythmic examples. Fundamentals of keyboard harmony.

†102 MUSICIANSHIP II (3). *Three lecture hours per week. Prerequisite: Music 101; concurrent enrollment in Music 132.* Continuation and advanced study of topics introduced in Music 101. (Nine units of Musicianship are recommended for students majoring in Music.)

†103 MUSICIANSHIP III (3). *Three lecture hours per week. Prerequisite: Music 101 and 102, or equivalent; concurrent enrollment in Music 133.* Continuation of Music 101-102.

†104 MUSICIANSHIP IV (3). *Three lecture hours per week. Prerequisite: Music 103; concurrent enrollment in Music 134.* Continuation of Music 103.

†131 HARMONY I (3). *Three lecture hours per week. Prerequisite: Music 100, 101 and 102 or equivalents; or concurrent enrollment.* Principles of scale, mode and interval construction; triads in first, second and third inversions; melodic and harmonic rhythm; root progressions and voice leading; seventh chords and secondary dominants; introduction to common harmonic practice through exercises, analysis and creative work.

†132 HARMONY II (3). *Three lecture hours per week. Prerequisite: Music 131.* Continuation and advanced study of topics introduced in Music 131.

†133 HARMONY III (3). *Three lecture hours per week. Prerequisite: Music 131 and 132; concurrent enrollment in Music 103.* Continuation of the study of tonal and formal procedures; the contextual investigations of diminished seventh, neopolitan sixth and augmented sixth chords; tonicization, modulation and sequence; introduction to Impressionism and to 20th Century melody, harmony and form.

†134 HARMONY IV (3). *Three lecture hours per week. Prerequisite: Music 133; concurrent enrollment in Music 104.* Continuation and advanced study of topics introduced in Music 133.

†150 COMPOSERS WORKSHOP (3). *Three lecture hours per week. Prerequisite: Music 131 and 132 or equivalent.* Comprehensive study of the techniques of composing and arranging music in both the serious and popular idioms. Performances of student works. (To increase competency, may be repeated for a maximum of 12 units of credit.)

†170 IMPROVISATION (3). *One lecture and two lab hours per week. Prerequisite: Music 131 or equivalent.* Study of improvisatory styles and techniques and the historical perspective of the practices; rhythmic, harmonic and melodic foundations; and improvisatory ensemble. (To increase competency, may be repeated for a maximum of 12 units of credit.) Applicable to a major in music.

†202 MUSIC LITERATURE AND APPRECIATION (3). *Three lecture hours plus three hours required listening per week.* A survey of the music of Western Civilization, emphasizing the techniques of listening and understanding of the various periods. Text, illustrated lectures, directed listening in the library, attendance at live performances.

- †**270 SURVEY OF BLACK MUSIC (3).** *Three lecture hours per week.* Chronological survey of the various styles and salient elements of the music of the Afro-American, encompassing sociological as well as musical factors.
- †**275 HISTORY OF JAZZ (3).** *Three lecture hours per week.* Study of jazz since 1900, with emphasis on instrumental styles; the development of jazz since 1940 and contemporary trends. Required attendance at four jazz performances.
- †**301 PIANO I (1).** *Three lab hours plus two individual practice hours per week.* Study in the techniques of piano playing. Individual attention, assignments and performance in a class situation.
- †**302 PIANO II (1).** *Three lab hours plus two individual practice hours per week.* *Prerequisite:* Music 301 or equivalent. Continuation of study in the techniques of piano playing. Individual attention, assignments and performance in a class situation.
- †**303 PIANO III (1).** *Three lab hours plus two individual practice hours per week.* *Prerequisite:* Music 302 or equivalent. Continuation of study in the techniques of piano playing. Individual attention, assignments and performance in a class situation.
- †**304 PIANO IV (1).** *Three lab hours plus two individual practice hours per week.* *Prerequisite:* Music 303 or equivalent. Continuation of study in the techniques of piano playing. Individual attention, assignments and performance in a class situation.
- †**320 STUDY OF BRASS INSTRUMENTS (1).** *Three lab hours plus two individual practice hours per week.* Techniques of playing the instrument of the student's choice, with individual and class instruction. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**340 STUDY OF WOODWIND INSTRUMENTS (1).** *Three lab hours plus two individual practice hours per week.* Techniques of playing the instrument of the student's choice, with individual and class instruction. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**360 STRINGED INSTRUMENTS (1).** *Three lab hours plus two individual practice hours per week.* Techniques of playing the violin, viola, cello or string bass, with individual and class instruction. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**371 CLASSICAL GUITAR I (1).** *Three lab hours plus two individual practice hours per week.* Study in the techniques of guitar performance and reading music to a degree which will enable the student to play accompaniments to compositions written for the guitar. Students must supply their own instruments.
- †**372 CLASSICAL GUITAR II (1).** *Three lab hours plus two individual practice hours per week.* *Prerequisite:* Music 371. Continuation of Music 371 with emphasis on solo performances. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**402 VOCAL TECHNIQUES I (1).** *Three lab hours plus two individual practice hours per week.* Elementary vocal problems analyzed and corrected through exercises and songs. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**403 VOCAL TECHNIQUES II (1).** *Three lab hours plus two individual practice hours per week.* *Prerequisite:* Music 402 or equivalent. Advanced songs and recital performance as ability merits. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**430 SYMPHONIC BAND (1).** *Three lecture-critique hours per week.* *Prerequisite:* Music 320, 340, 360 as applicable, or equivalent. *Demonstration of proficiency.* Study and performance of music for concert band. Performance is required. Band does not perform at athletic events. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**440 SYMPHONY ORCHESTRA (1).** *Three lecture-critique hours per week.* *Prerequisite:* Music 320, 340, 360 as applicable, or equivalent. *Demonstration of proficiency.* The study and performance of orchestral literature appropriate for a large orchestra. Each semester is concerned with works differing from the previous semesters, providing a succession of new curriculum. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**445 CHAMBER ORCHESTRA (1).** *Three lecture-critique hours per week.* *Prerequisite:* Music 320, 340, 360 as applicable, or equivalent. *Demonstration of proficiency.* Study and performance of standard and contemporary literature for string and chamber ensembles. Performance is required. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**451 JAZZ WORKSHOP (1).** *Three lecture-critique hours per week.* A workshop for the musician who wishes to learn jazz interpretation and styles. Ensemble experience from "blues" to present-day jazz. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**452 REPERTORY JAZZ BAND (1).** *Three lecture-critique hours per week.* *Demonstration of proficiency.* An evening jazz ensemble for the experienced musician. Provides a creative situation for big band playing and improvisation. Performance is required. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**453 (Formerly 450) JAZZ BAND (2).** *Five lecture-critique hours per week.* *Prerequisite:* Music 451 or equivalent. *Demonstration of proficiency.* Advanced course which includes organization, training procedures, arranging, vocals and other phases of dance band work. Performance is required. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †**460 INSTRUMENTAL ENSEMBLE (1).** *Three lecture-critique hours per week.* An ensemble class to provide group experience for various kinds of instruments in a variety of combinations. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**470 CHOIR (1).** *Three lecture-critique hours per week.* *Prerequisite:* Music 402 or the equivalent. *Demonstration of proficiency.* Study of performance of choral literature for accompanied and unaccompanied choir. Performance is required. (To increase competency, may be repeated for a maximum of 8 units of credit.)
- †**480 CHAMBER CHOIR (1).** *Three lecture-critique hours per week.* *Prerequisite:* concurrent enrollment in Music 470. *Demonstration of proficiency.* An advanced ensemble which specializes in the performance of choral literature appropriate for small choir. Members are selected by audition from the enrollment of the Music 470 Choir. Performance is part of the course. (To increase competency, may be repeated for a maximum of 4 units of credit.)
- †**490 MASTERWORKS CHORALE (1).** *(Credit/No credit.) Three lecture-critique hours per week plus two hours by arrangement.* *Prerequisite:* Music 470 or equivalent. *Demonstration of proficiency.* The study and performance of chorale literature appropriate for a large chorus. Each semester is concerned with works differing from the previous semesters, providing a succession of new curriculum. (To increase competency, may be repeated for a maximum of 4 units of credit.)

†495 **MUSICAL THEATRE (1-3).** *Hours by arrangement. Prerequisite: Demonstration of proficiency. Must not be currently enrolled in Drama 300.* Training in solo and chorus work for staging a musical production. (To increase competency, may be repeated for a maximum of 4 units of credit.)

†496 **MUSICAL RECITALS (.5).** *One lecture hour per week.* A performing and listening course to provide recital experience and acquaintance with performance practices and musical styles. (Music majors are required to complete three semesters.)

†642 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 **SELECTED TOPICS IN MUSIC (1-3).** *Hours by arrangement.* Selected topics in music not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Nursing

NURSING—VOCATIONAL (Suspended for 1985-1986)

NURSING—REGISTERED (A. S. DEGREE)

The courses described are open only to those students accepted in the Associate Degree Nursing Program (see Index: "Nursing, A. S. Degree" for admission requirements). A grade of C or higher is necessary for progression in the sequence. Upon graduation, the candidate receives an Associate in Science degree and is eligible to write the California Board of Registered Nursing Licensing examination.

†211 **INTRODUCTION TO NURSING (4.5).** *Four lecture and 15 lab hours per week. Prerequisite: Admission to the A.S. degree Nursing Program, completion of Biol 265 or 250, or equivalent, with grade C or better.* To help students identify basic human needs and the principles, facts, concepts and skills basic to nursing care. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†212 **CONCEPTS OF HOMEOSTASIS IN NURSING (4.5).** *Four lecture and 15 lab hours per week for 8 weeks. Prerequisite: Completion of Nursing 211 with grade C or better.* To help students continue to identify human needs and the principles, facts, concepts, and skills basic to nursing care using the nursing process to promote homeostasis. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†221 **PEDIATRIC NURSING (4.5).** *Five lecture hours and 12 lab hours per week for eight weeks. Prerequisites: Nursing 211, 212, Biology 266 or 260, and Psychology 100, each with grade C or better, and concurrent enrollment in or satisfactory completion of Psychology 201 with grade C or better.* To help students identify the developmental levels and common health needs/problems from infancy to young adult. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†222 **MATERNITY NURSING (4.5).** *Five lecture hours and 12 lab hours per week for eight weeks. Prerequisites: Nurs. 211, 212, Biol 266 or 260, and Psych. 100, each with grade of C or better, and concurrent enrollment in or satisfactory completion of Psych. 201, with grade C or better.* To help students identify needs/problems of the family during the maternity cycle along with identifying needs and problems of male and female reproduction. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†231 **PSYCHIATRIC NURSING (5).** *Five lecture hours and 15 lab hours per week for eight weeks. Prerequisites: Nursing 221, 222, Biology 243, Psychology 201, each with grade C or better.* To help students identify effective and non-effective communication, equilibrium and disequilibrium in life styles and functioning in the adolescent to adult patient. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†232 **MEDICAL/SURGICAL NURSING (5).** *Five lecture and 15 lab hours per week for eight weeks. Prerequisite: Nursing 221, 222, Biology 243, Psychology 100, each with grade C or better.* To help the student identify more complex health needs/problems in the adult, and special needs of the peri-operative patient. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†241 **ADVANCED MEDICAL/SURGICAL NURSING (5).** *Five lecture hours and 15 lab hours per week for eight weeks. Prerequisite: Nursing 231 232, each with grade C or better.* To help students meet the overt and covert needs of adult patients undergoing threats to homeostasis in a variety of complex situations. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†242 **LEADERSHIP/MANAGEMENT IN NURSING (5).** *Five lecture hours and 15 lab hours per week for eight weeks. Prerequisite: Nursing 241 with grade C or better.* To help students in the transition to the graduate role. The student initiates the nursing process with emphasis on the determination of priorities, on decision-making responsibilities, and on personal accountability. Guided learning experiences in various health care facilities are correlated with classroom instruction.

†649 **COOPERATIVE EDUCATION (1-4).** (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor/coordinator. (See Index: "Cooperative Education.")

†680 **SELECTED TOPICS IN NURSING (1-3).** *Hours by arrangement.* Selected topics in Nursing not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

811 REVIEW—INTRODUCTION TO NURSING (2). (Credit/No Credit.)

812 REVIEW—CONCEPTS OF HOMEOSTASIS IN NURSING (2). (Credit/No Credit.) *Four lecture hours per week for eight weeks per course. Prerequisites: Completion of Nursing 240 or equivalent.* Review for nurses of principles, facts, concepts, and skills basic to nursing care. Human needs are identified and nursing process is used to promote homeostasis.

821 REVIEW—PEDIATRIC NURSING (2.5). (Credit/no credit.) Five lecture hours per week for eight weeks. *Prerequisites:* Completion of Nursing 240 or equivalent. Review for nurses of developmental levels and common health needs/problems from infancy to young adult.

822 REVIEW—MATERNITY NURSING (2.5). (Credit/No credit.) Five lecture hours per week for eight weeks. *Prerequisites:* Completion of Nursing 240 or equivalent. Review for nurses of needs/problems of the family during the maternity cycle along with identifying needs and problems of male and female reproduction.

831 REVIEW—PSYCHIATRIC NURSING (2.5). (Credit/No credit.) Five lecture hours per week for eight weeks. *Prerequisites:* completion of Nursing 240 or equivalent. Review for nurses of effective and non-effective communication, equilibrium and disequilibrium in life styles and functioning in the adolescent to adult patient.

832 REVIEW—ADVANCED MEDICAL/SURGICAL NURSING I (2.5). (Credit/No credit.) Five lecture hours per week for eight weeks. *Prerequisites:* Completion of Nursing 240 or equivalent. Review for nurses of more complex health needs/problems in the adult.

841 REVIEW—ADVANCED MEDICAL/SURGICAL NURSING (2.5) (Credit/No credit).

842 REVIEW—LEADERSHIP/MANAGEMENT IN NURSING (2.5) (Credit/No credit) Five lecture hours per week for eight weeks per course. *Prerequisites:* Satisfactory completion of nursing 240 or equivalent. Review for nurses of meeting overt and covert needs of adult patients undergoing threats to homeostasis in a variety of complex situations. The nursing process is used with emphasis on determination of priorities, decision making responsibilities, and personal accountability.

Oceanography

+100 OCEANOGRAPHY (3). Two lecture and one recitation hour per week plus two field trips. Introduction to marine geology, chemistry and biology. Includes the hydrologic cycle, properties of sea water and marine organisms; currents, waves, tides, coastal processes and ecology of the ocean; continental drift and sea floor spreading.

+101 OCEANOGRAPHY LABORATORY/FIELD STUDY (1). Three lab hours per week. *Prerequisites:* Completion of or concurrent enrollment in Ocen. 100. Laboratory exercises in ocean currents, sedimentation, marine life forms, materials of the oceanic crust and sea floor, physical and chemical properties of sea water, and plate tectonics. Field trips included.

Office Administration

+100 BEGINNING TYPING (1-3). (Open entry/open exit.) A minimum of 25 hours per semester is required for each unit of credit. Introduction to the keyboard; an elementary course to develop correct typing techniques, including the study of simple business letters, manuscripts, and tabulated reports.

+110 INTERMEDIATE TYPING (1-3). (Open entry/open exit.) A minimum of 25 hours per semester is required for each unit of credit. *Prerequisites:* ability to type 30 words a minute and Beginning Typing or equivalent. An intermediate course to improve typing skills, to develop working knowledge of business papers through training in production typing of letters, reports and tabulated material. Designed to prepare the student to meet entry-level employment standards.

+111 MEDICAL TYPEWRITING (1-3). (Open entry/open exit.) Five lab hours per week. A minimum of 25 hours per semester are required for each unit of credit. Designed to develop working knowledge of medical office typing through training in production typing of medical letters, reports, and forms.

+120 ADVANCED TYPING (1-3). (Open entry/open exit.) A minimum of 25 hours per semester is required for each unit of credit. *Prerequisites:* Ability to type 40 words a minute and Intermediate Typing or equivalent. Typing a variety of documents with specialized forms and vocabulary. Designed to prepare the student to meet high-level employment standards.

145 TYPING SKILL BUILDING (1). Five lecture hours and two lab hours a week for 5.5 weeks by arrangement. *Prerequisite:* Knowledge of keyboard. May be taken twice for credit. Speed and accuracy development individualized for all levels of competency. May be taken concurrently with all typing courses except OFAD 100.

+200 BEGINNING GREGG SHORTHAND (5). Five lecture hours and one lab hour per week. *Prerequisites:* Enrollment in or completion of OFAD 400; enrollment in or completion of Beginning Typing or equivalent. Foundation course in Gregg Shorthand Series 90 theory. Dictation to achieve a minimum speed of 60 wpm for three minutes.

205 ALPHABETIC SHORTHAND (2-3). Three lecture hours and two lab hours per week by arrangement for 11 weeks for two units of credit. An additional unit may be earned by completing the full semester. Foundation course in alphabetic shorthand—principles, dictation, transcription. Personal or vocational use.

+210 INTERMEDIATE SHORTHAND (1). Six lecture hours and two lab hours a week by arrangement for 5.5 weeks. May be taken twice for credit. *Prerequisites:* ability to take dictation at 60 words a minute for three minutes; completion of or enrollment in three units of Beginning Typing or equivalent; enrollment in or completion of OFAD 400 equivalent. Speed development individualized for all levels of competency. May be taken concurrently with OFAD 211.

+211 INTERMEDIATE SHORTHAND I (4). Six lecture hours and two lab hours a week by arrangement for eleven weeks. *Prerequisites:* Ability to take dictation at 60 words a minute for three minutes; enrollment in or completion of three units of Intermediate Typing (OFAD 110, or equivalent.) OFAD 400 or equivalent. Integration of English, typing, and shorthand skills to produce mailable copy. Individualized for all levels of competency.

+230 INTENSIVE SHORTHAND DICTATION AND TRANSCRIPTION (2). Four lecture hours and one lab hour per week by arrangement. *Prerequisites:* OFAD 211; ability to take dictation at 70 words per minute for three minutes; OFAD 400; enrollment in or completion of three units of Intermediate Typing (OFAD 110) or equivalent. Production transcription with emphasis on employment standards.

250 LEGAL SHORTHAND AND TRANSCRIPTION (2). Four lecture and one lab hour per week by arrangement. *Prerequisites:* OFAD 211 or ability to take dictation at 70 words per minute. Enrollment in or completion of three units of Intermediate Typing or equivalent. Intensive dictation and transcription of legal correspondence, records and documents. Emphasis on shorthand speed, transcription accuracy and development of legal terminology commonly used in law offices.

†300 MACHINE TRANSCRIPTION (1-4). (Open entry/open exit.)

Two lecture and two lab hours plus one hour per week by arrangement. Prerequisite: Typing speed of 40 wpm; OFAD 400. A foundation course in machine transcription to develop a student's skill in transcribing mailable copy. Instruction is audiovisual/tutorial.

†304 INTRODUCTION TO WORD/INFORMATION PROCESSING SYSTEMS (3).

Three lecture hours per week. Concepts of word and information processing systems (need, applications, procedures, equipment, careers, and integration with other systems) and basic word processing on IBM Personal Computers.

†305 BEGINNING WORD PROCESSING (2).

Minimum of six lab hours per week, by arrangement. Prerequisites: typing speed of 40 wpm; OFAD 304 (Legal excepted), 400 or equivalents. Machine transcription and word processing training to develop skills to produce mailable copy and to meet job requirements.

†306 ADVANCED WORD PROCESSING (1-4). (Open entry/open exit.)

Minimum of six lab hours per week, by arrangement. Prerequisites: 50 wpm; OFAD 304 (Legal excepted), 305, or equivalents. Training on IBM O/S 6, AM Jacquard 425, and NBI equipment to develop skills to meet job requirements. Practical applications include production, production measure, and revisions. (To increase competency, may be repeated for a maximum of 6.0 units of credit.)

†315 WORD PROCESSING: CONCEPTS AND MANAGEMENT TECHNIQUES (3).

Three lecture hours per week. Prerequisites: OFAD 304 or equivalent. Techniques of management and supervision for word processing centers—organizing and operating the center; selection, training and motivating personnel; preparing procedures and policy manuals, work measurement tools, and work-flow charts; evaluating and selecting word processing equipment and software support; and studying work environment requirements.

400 BUSINESS ENGLISH AND COMMUNICATIONS I (3).

Three lecture hours per week. Study of all parts of speech, including in-depth review and usage of verbs, use of the dictionary, spelling, capitalization, sentence structure, expression of numbers, punctuation, word division and general vocabulary for business usage.

410 OFFICE PROCEDURES (3).

Four lecture hours per week plus one hour by arrangement. Prerequisites: OFAD 400 or successful completion of proficiency exam; completion of three units of Intermediate Typing or equivalent; Bus. 412 or equivalent; Bus. 401. Intensive course in application of skills in the wide range of activities performed in secretarial and office administration. (Spring only.)

412 FILING AND RECORDS MANAGEMENT (1-2). (Open entry/open exit.)

Two lecture hours per week. Principles to be applied and procedures to be followed in setting up and using various types of filing systems; transfer, storage and retention of records.

418 OFFICE ADMINISTRATION (3).

Five lecture hours per week. Prerequisite: OFAD 410 or equivalent. Integration of training through simulated office experience with emphasis on techniques of administration.

†440 BEGINNING LEGAL OFFICE TRAINING (3).

Five lab hours per week. Prerequisites: Typing speed of 45 wpm. Duties and responsibilities of a legal secretary. Introduction to terminology and transcription of legal documents.

448 LEGAL SECRETARIAL PROCEDURES (3)

Four lecture hours per week plus one hour by arrangement. Prerequisites: OFAD 440. (Spring only) Intensive course in specialized procedures applicable to the secretarial duties in law offices. General reference is made to legal duties per se; specific instruction in legal secretarial routines and documents operative in California.

495 CERTIFIED PROFESSIONAL SECRETARY REVIEW (3).

Three lecture hours per week. Prerequisite: Demonstrated proficiency in typing and shorthand. An intensive review course designed to prepare secretaries for the National Secretaries Association's Certified Professional Examination. Specialists review the areas of office procedures, business and public policy, economics of management, financial analysis and the mathematics of business, communications and decision making and environmental relationships.

641 COOPERATIVE EDUCATION (1-4) (Grade option.)

Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

Paleontology

†110 GENERAL PALEONTOLOGY (3).

Two lecture and two recitation hours per week, plus two one-half day field trips. Evolution of life with emphasis on fossil apes, men and dinosaurs. Fossils as evidence of the history of life. Animals and plants related to modern and ancient environments. Methods of interpreting the fossil record. The impact of drifting continents on the extinctions and origins of major groups of organisms.

Philosophy

(See also Humanities.)

†100 INTRODUCTION TO PHILOSOPHY (3).

Three lecture hours per week. An introductory survey of philosophical questions and points of view. Problems about the nature of the world and human life are discussed, including contemporary moral and political issues. Intended to help students clarify their own thinking about such questions, through learning and discussing how philosophers have dealt with them.

†244 CONTEMPORARY SOCIAL AND MORAL ISSUES (3).

Three lecture hours per week. Discussion and analysis of contemporary controversial issues in the fields of medical, business and professional ethics, law enforcement, and the role of government. Issues will include abortion, euthanasia, truth-telling in advertising, corporate responsibilities, capital punishment, victimless crimes, freedom of the press, and the uses of war and terrorism as instruments of national policy.

†300 INTRODUCTION TO WORLD RELIGIONS (3).

Three lecture hours per week. Describes and compares seven major religious traditions, as different ways in which human beings relate themselves to an ultimate or transcendent order of reality, being or power. Their basic tenets, worship and ritual practices and ethical and social institutions are analyzed and discussed from a sympathetic but neutral and objective perspective.

†680 SELECTED TOPICS IN PHILOSOPHY (1-3).

Hours by arrangement. Selected topics in Philosophy not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS IN PHILOSOPHY (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Physical Education

The Physical Education Division offers a wide variety of physical activities in which individual students can choose to participate in accordance with their interest and needs, and which have carry-over value for the students' leisure time, now and in future years. Instruction is provided in progressive levels of competency, offering the opportunity for specialization in a given activity. (See Index: "Physical Education Requirement.")

Courses will normally be offered for the number of units specified in this catalog. However, units allowed for a given Physical Education class may be adjusted to conform with an increase or a decrease in the number of hours for which the class will be offered. Units are earned on the basis of .5 unit per class hour per semester. To increase competency, all Physical Education activity classes may be repeated a maximum of three times.

ADAPTIVE (ADAP)

†100 **ADAPTIVE AQUATICS (.5-1-1.5).** *(Credit/No credit.) Two-three lab hours per week. (Open entry/open exit within semester). Prerequisite: Physician's verification of physical limitation.* Designed for all physically limiting conditions. Students will practice techniques to increase range-of-motion and strengthen weakened extremities through water-oriented exercises and swim instruction.

†110 **ADAPTIVE GENERAL CONDITIONING (.5-1-1.5).** *(Credit/No credit.) Two-three lab hours per week. (Open entry/open exit within semester). Prerequisite: Physician's verification of physical limitation.* Prescription and implementation of adaptive exercises for a multiple of limiting conditions, ranging from stroke injured clients to orthopedic problems.

†140 **ADAPTIVE CIRCUIT WEIGHT TRAINING (.5-1.5).** *(Credit/No credit.) (Open entry/open exit within semester.) Two-three lab hours per week. Prerequisite: Physician's verification of physical limitation.* Designed for individuals with medically verified disability. Through a circuit weight training program, students will develop muscular endurance utilizing universal weight training machines.

AQUATICS (AQUA)

†100 **INTERMEDIATE SWIMMING (1).** *Three lab hours per week.* Instruction in water adjustment, treading, floating, breathing techniques, crawl, breaststroke, sidestroke, backstroke; also personal water safety procedures.

†105 **INTERMEDIATE/ADVANCED SWIMMING (1).** *Two lab hours per week. Prerequisites: Demonstration of fundamentals in front crawl, back crawl and breast stroke.* Designed to develop proficiency in front crawl, back crawl, backstroke, side stroke, breast stroke, butterfly stroke and front dive. Provides information on mouth-to-mouth resuscitation.

†109 **INTERMEDIATE SWIMMING AND BEGINNING WATER POLO (1).** *Two lab hours per week. Prerequisite: Ability to swim comfortably in deep water.* Instruction in the basic swimming strokes plus basic water polo fundamentals and actual competitive scrimmages with men and women competing against members of their own sex. Progressive skill development in picking up the ball in water; passing, receiving, shooting, dribbling and playing the game of water polo. Knowledge of water polo rules. For students with no previous water polo experience.

†120 **AQUATIC FITNESS (1.5).** *Three lab hours per week. Prerequisite: Ability to swim 200 yards continuously demonstrating the crawl stroke.* Endurance swimming is stressed, based on an interval training system. A class goal is the ability to swim one mile within a 40-minute time period.

†204 **INTERMEDIATE/ADVANCED WATER POLO (1.5).** *Three lab hours per week. Prerequisite: Demonstration of competency.* Review of shooting skills, defensive techniques, and goal tending. Introduction to team defense and techniques utilizing the extra man. Participation in intra-class league games.

†300 **LIFE SAVING (1).** *Two lab hours per week. Prerequisite: Ability to swim 400 yards continuously, demonstration of the crawl, side and breast strokes.* Progressive skill development in take-offs, approaches, carries, defensive mechanism, shallow water carries, water safety knowledge and artificial respiration.**

**American Red Cross Certificate is granted upon successful completion of course requirements.

†310 **WATER SAFETY INSTRUCTOR (2).** *One lecture and two lab hours per week. Prerequisite: Possession of valid certification in advanced lifesaving or concurrent enrollment in life saving.* Development of effective performance in the basic swimming strokes and various life saving and water safety skills. Teaching techniques, methods and knowledge necessary to teach American Red Cross swimming and life saving courses. Certification as a Red Cross Water Safety Instructor is granted with successful completion of course requirements.

COMBATIVES (COMB)

†101 **BEGINNING SELF DEFENSE (1).** *Two lab hours per week.* Orientation in philosophy and physical methods of self defense. Basic kicks, block, punches and escape techniques. Home, car, and outside security precautions. Rape prevention.

†103 **INTERMEDIATE SELF DEFENSE (1).** *Two lab hours per week. Prerequisite: Comb 101.* Review of skills learned in Beginning Self Defense. Advanced skills, including controlled sparring, leading to next rank in Self Defense. Home, car, and outside security precautions. Rape prevention.

†104 **INTERMEDIATE/ADVANCED SELF DEFENSE (1-2).** *(Open entry/open exit.) Four lab hours per week. Prerequisite: Comb 101, 103.* Advanced skills in all phases of self defense. Individual work in sparring, throws, and attack techniques. Working for red or black belt rank.

†110 **INTRODUCTION TO SELF DEFENSE (1-2).** *(Open entry/open exit.) One lecture, two lab hours per week.* Orientation in philosophy and physical methods of self defense. Basic kicks, block, punches and escape techniques. Home, car, and outside security precautions. Lectures will include guest speakers and a more in-depth look at home security and rape prevention.

DANCE

Descriptions of the following courses are identical to those listed under the **DANCE** designation found previously in this catalog.

- 360 Movement and Body Awareness (1)
- 148 Beginning Ballet & Modern Dance (1)
- 380 Theatre Dance and Movement (2)
- 141 Beginning Ballet I (1)
- 143 Intermediate Ballet II (1)
- 121 Contemporary Modern Dance II (1)

- 130 Jazz Dance I (1)
- 132 Jazz Dance II (1)
- 411 Dance Production I (1)
- 412 Dance Production II (2)

FITNESS (FITN)

- †100 **ADULT FITNESS (1).** *Two lab hours per week.* A course designed to re-acquaint the adult with exercise and to increase cardiovascular fitness. Exercise for flexibility, strength and agility; running for conditioning of the vascular and respiratory systems. Emphasis on working at own pace.
- †110 **ADULT CONDITIONING ACTIVITIES (1).** *Two lab hours per week.* A series of coordinated exercises designed for the stretching and flexibility components of fitness, accompanied by a period of running. Designed to allow each student to progress at his/her own level. (Summer class meets 36 hours for one unit, and includes volleyball and racquet tennis.)
- †120 **EXERCISE FOR FITNESS (1).** *Two lab hours per week.* Exercises ranging from mild to very active, individual fitness evaluation and all-around endurance. Designed to help the individual understand the need and the benefits of physical fitness throughout the adult years.
- †201 **BEGINNING WEIGHT CONDITIONING (1.5).** *Two or three lab hours per week.* A basic course of weight conditioning designed to build and strengthen the body, to increase flexibility, and to add agility; instruction in various exercises and associated safety procedures utilizing free weights and/or weight machines.
- †203 **INTERMEDIATE WEIGHT CONDITIONING (1-1.5).** *Two to three lab hours per week. Prerequisite: Successful completion of Beginning Weight Conditioning or equivalent.* Progressive skill and weight development in various weight conditioning exercises; opportunities to specialize in different areas of the body; development of individual programs. Free weights and weight machines are used.
- †212 **CIRCUIT WEIGHT CONDITIONING (1.5).** *Three lab hours per week.* Designed to promote overall physical fitness for men and women. Use of weight training machines in an exercise circuit created to develop and/or maintain muscle tone and increase flexibility. Circuit participation is preceded by stretching calisthenics and followed by period of light jogging activity.
- †215 **WEIGHT CONDITIONING FOR VARSITY TRACK (2).** *Four lab hours per week. Prerequisite for student athletes who will be participating as members of the Varsity Track team.* A weight conditioning course designed for the individual development of the 18 different events in Track and Field.
- †218 **CIRCUIT TRAINING (1-1.5).** *Two or three lab hours per week.* Vigorous weight training exercises set up in training "stations." Individuals rotate from station to station on a specific time schedule. Emphasis is on strength and overall body conditioning. Weight machines are utilized.
- †220 **WEIGHT CONDITIONING FOR VARSITY FOOTBALL (1-1.5).** *Three or four lab hours per week. Prerequisite: Varsity Football candidate.* Course is designed to teach students to use overload weight training to build bulk and strength. Students will work on major muscle groups, with emphasis on legs and upper body development.
- †305 **PAR COURSE (1-1.5-2)** *Two, three or four lab hours per week.* Exercise periods in preparation for running and a program of running. Objective is to bring about an increase in cardiovascular efficiency and neuro-muscular strength through use of the Par Course (optional).

INDIVIDUAL SPORTS (INDV)

- †120 **BADMINTON (1-1.5).** *Two to three lab hours per week.* Emphasis on skill techniques, proper footwork, rules of play, strategies, doubles and singles play for various skill levels. Tournaments in singles and doubles.
- †121 **BEGINNING BADMINTON (1-1.5).** *Two to three lab hours per week.* Rules and strategies of badminton, as well as fundamentals of grip, strokes, footwork, and course coverage through drills and competition; and testing program in the various techniques taught. Tournaments in singles and doubles.
- †123 **INTERMEDIATE BADMINTON (1-1.5).** *Two to three lab hours per week. Prerequisite: Beginning Badminton.* Emphasis on strategy, tactics, footwork, doubles teamwork, and the singles game. Tournaments in singles and doubles.
- †125 **ADVANCED BADMINTON (1-1.5).** *Two to three lab hours per week. Prerequisite: Completion of the beginning OR intermediate course in the top ability group.* Advanced techniques of strategy and tournament play. Tournaments of different types will be played in class. Students are encouraged to enter outside tournaments.
- †142 **BEGINNING/INTERMEDIATE BOWLING (1).** *Two lab hours per week.* An opportunity to learn the techniques of bowling or to refresh current knowledge and improve to a more advanced level. Classes will be listed by skill levels in the schedule. (Beginning, Intermediate, Intermediate/Advanced offered in Fall. League bowling offered in Spring.) Students must provide own transportation.
- †150 **BEGINNING/INTERMEDIATE/ADVANCED FENCING (1).** *Two lab hours per week.* Techniques and practice in form, attacks, parries, counterattacks, bouting, timing, strategy, history, safety, etiquette, rules, terminology, judging, directing, scorekeeping, and tournaments.
- †161 **BEGINNING GOLF (1).** *Two lab hours per week.* Instruction in techniques, rules, etiquette and philosophy for the beginning golfer; stance, grip, swing as associated with iron and wood shots. Outside assignments may include playing at least 9 holes of golf.
- †251 **BEGINNING TENNIS (1).** *Two lab hours per week.* Instruction in the fundamental skills of the service, forehand and backhand strokes; court strategy and the rules of play; testing program in all tennis skills and rules.
- †253 **INTERMEDIATE TENNIS (1).** *Two lab hours per week. Prerequisite: beginning tennis or demonstration of ability in forehand, backhand and service.* Emphasis on net play and doubles and singles strategy. Includes volley, lob, and smash. Singles and doubles tournaments are included. Testing in skills, techniques, and rules.
- †254 **INTERMEDIATE/ADVANCED TENNIS (1).** *Two lab hours per week.* Techniques and skills of basic tennis strokes used in playing doubles and singles. Also includes philosophy and strategy used in playing doubles and singles.
- †255 **ADVANCED TENNIS (1-1.5)** *Two or three lab hours per week. Prerequisites: Beginning and intermediate tennis, or equivalent.* Advanced aspects of tennis plan. Instruction in advanced strategy, philosophy, and techniques; tournament play in singles and doubles.
- †257 **TOURNAMENT TENNIS (1).** *Two lab hours per week.* Designed for the advanced tennis student who desires strong competition. Singles, doubles, mixed doubles, tournaments and ladder tournaments are offered.

†320 **GYMNASTICS/TUMBLING/TRAMPOLINE (1).** *Two lab hours per week.* A combination of gymnastic activities including trampoline, tumbling and the traditional gymnastic apparatus. Students may receive instruction in all areas or specialize in one area of interest.

†330 **TRAMPOLINE (1).** *Two lab hours per week.* Beginning, intermediate, and advanced work on trampoline skills. Instruction and practice in proper trampoline techniques.

TEAM SPORTS (TEAM)

†101 **BEGINNING BASEBALL (1).** *Two lab hours per week.* Activity in the basic skills of baseball. Rules of play and team strategies are stressed.

†105 **ADVANCED BASEBALL (2-5).** *Four to fourteen lab hours per week. Prerequisite: High school baseball or equivalent.* Designed as a training class for students seeking to participate in Varsity Baseball. Practice in fundamental as well as advanced skills and techniques in baseball. Written and practical testing.

†111 **BEGINNING BASKETBALL (1).** *Two lab hours per week. (Co-ed.)* Basic skills, and practice in basketball. Skills include dribbling, shooting, guarding and passing. Also included are the theory, use, and practice of team play and strategy. Participation in Round Robin team play.

†115 **ADVANCED BASKETBALL (1).** *Two lab hours per week. Prerequisite: Playing experience in high school on either "B" or varsity level, or equivalent.* Advanced skills of basketball play; some continuation of basketball play; some continuation of elementary skills; advanced techniques of offensive and defensive play; Round Robin team play.

†118 **ADVANCED BASKETBALL FOR WOMEN (2).** *Six lab hours per week. Required class for women wishing to compete on Women's Varsity Basketball Team. *Beginning of school in September until the last class in December.* Advanced skills of basketball play; development of team play.

†135 **ADVANCED FOOTBALL AND CONDITIONING (1.5-2).** *Three or four lab hours per week. Prerequisite: Varsity football experience in high school or college, or equivalent.* Review of basic skills and introduction to advanced techniques and strategies in offensive and defensive football. Stresses conditioning necessary to play the game and for life-long health goals. Weight training included.

†151 **BEGINNING SOFTBALL (1-1.5).** *Two or three lab hours per week.* Activity in the basic skills, strategy and practice in softball. Skills include batting, catching and throwing. Also included are the rules of play and team strategy through Round Robin competition.

†158 **ADVANCED SOFTBALL FOR WOMEN (2).** *Four lab hours per week. Prerequisite to Women's Varsity Softball.* Designed as a training class for women interested in participating on the Women's Varsity Softball team. Advanced skills of softball play. Emphasis on team play, offense and defense.

†165 **ADVANCED TRACK AND FIELD (1-3).** *Two to six hours per week. Co-ed.* Designed to increase conditioning through weight training, with emphasis on individual needs in specific track events. Running and instruction in all aspects of track and field are included. Designed for athletes planning to participate in Varsity Track & Field in the spring semester.

†171 **BEGINNING VOLLEYBALL (1).** *Two lab hours per week.* Fundamentals of serving, passing, setting and spiking; team competition under national rules of play. Strong emphasis on knowledge of rules.

†173 **INTERMEDIATE VOLLEYBALL (1).** *Two lab hours per week. Prerequisite: Elementary Volleyball.* Continuation of fundamental skills in tournament play. Team competition.

†175 **ADVANCED VOLLEYBALL (1).** *Two lab hours per week. Prerequisite: Demonstration of competency.* Volleyball play for advanced volleyball students of superior ability; continuation of the fundamental skills; emphasis on team play and advanced strategy. Tournament play is offered.

†179 **TOURNAMENT VOLLEYBALL (1).** *Two lab hours per week.* Designed for the advanced beginner to intermediate student in volleyball. Will include participation in organized league tournaments preceded by a brief period of stretching calisthenics and appropriate warm-up activities.

INTERCOLLEGIATE SPORTS (VARS)

These courses are designed for those students who wish to compete in intercollegiate athletics and may be limited to those who demonstrate the necessary physical and mental fitness. Students must pass a physical exam. Sufficient skill to reduce the likelihood of injury is also required.

Most varsity sports entail practice from 2-5 p.m. daily.

†100 **VARSITY BASEBALL (1-2).** *Fifteen hours per week by arrangement. Prerequisite: Demonstration of competency.* Intercollegiate varsity baseball competition in the Golden Gate Conference tournament and with other community colleges in the area.

†110 **VARSITY MEN'S BASKETBALL** Offered at Cañada or Skyline Colleges only. Students interested in participating in intercollegiate men's basketball may attend CSM and enroll in varsity basketball at either Cañada or Skyline College. Must be enrolled in 12 units at CSM.

†120 **VARSITY CROSS COUNTRY (1-2).** *Fifteen hours per week by arrangement. Prerequisite: High school track or cross country experience, or equivalent.* **Men**—Cross country and distance running competition on an intercollegiate level in the Golden Gate Conference, participation in conference meets, invitational meets, Northern California meets and State championship for those who qualify. Racing distance is 4 miles. Candidates should also enroll in Weight Conditioning for Cross Country (2 units.) Practice begins at 1:00 p.m.

†130 **VARSITY FOOTBALL (1-2).** *Fifteen hours per week by arrangement. Prerequisite: demonstration of competency.* Intercollegiate Varsity Football competition in the Golden Gate Conference. Student athlete must be ready to start practice in late August before the Fall semester begins. Student can also participate if enrolled in 12 or more units at either Skyline or Cañada College. Participation in pre-Fall practice is a prerequisite for playing in the first and second games of the season.

†140 **VARSITY MEN'S GOLF** Offered at Cañada College only. Students interested in participating in intercollegiate men's golf may attend CSM and enroll in varsity golf at Cañada College. Must be enrolled in 12 units at CSM.

†150 **VARSITY SOCCER** Offered at Cañada or Skyline Colleges only. Students interested in participating in intercollegiate soccer may attend CSM and enroll in varsity soccer at either Cañada or Skyline College. Must be enrolled in 12 units at CSM.

†180 **VARSITY TRACK AND FIELD (1-2).** *Fifteen hours per week by arrangement. Prerequisite: High school track or cross country experience, or equivalent.* **Men**—Track and field competition in the Golden Gate Conference on an intercollegiate basis; participation in conference meets, Northern California Finals and the State meets for those who qualify. Candidates should also enroll in Weight Conditioning for Track (2 units.) Practice begins at 1:00 p.m.

†**200 VARSITY WRESTLING** Offered at Skyline College only. Students interested in participating in intercollegiate wrestling may attend CSM and enroll in varsity wrestling at either Skyline College. Must be enrolled in 12 units at CSM.

†**300 WOMENS VARSITY BASKETBALL (1-2).** *Fifteen hours per week minimum. Prerequisite: Demonstration of competency.* Intercollegiate competition in the Golden Gate Conference, Northern California Championships.

†**310 VARSITY WOMEN'S CROSS COUNTRY (1-2).** *Fifteen hours per week by arrangement. Prerequisite: high school track or cross country experience, or equivalent.* Cross-country and distance running competition on an intercollegiate level in the Golden Gate Conference; participating in conference meets, invitational meets, and State Championship meets for those who qualify. Racing distance is 3 miles. Candidates should also enroll in Weight Conditioning for Cross Country (2 units.)

†**320 VARSITY WOMEN'S SOFTBALL (1-2).** *Fifteen hours per week minimum. Prerequisite: Demonstration of competency.* Intercollegiate competition in the Golden Gate Conference and State championships.

†**330 VARSITY WOMEN'S TENNIS (1-2).** *Fifteen hours per week minimum. Prerequisite: Demonstration of competency.* Intercollegiate competition in the Golden Gate Conference, Northern California, and State championships.

†**340 VARSITY WOMEN'S VOLLEYBALL** Offered at Cañada or Skyline Colleges only. Students interested in participating in intercollegiate women's volleyball may attend CSM and enroll in varsity women's volleyball at either Cañada or Skyline College. Must be enrolled in 12 units at CSM.

†**380 VARSITY WOMEN'S TRACK AND FIELD (1-2).** *Fifteen hours per week by arrangement. Prerequisite: High school track or cross country experience or equivalent.* Track and field competition in the Golden Gate Conference on an intercollegiate basis; participation in conference meets, invitational meets, Northern California finals and State meets for those who qualify. Candidates should also enroll in Weight Conditioning for Track (2 units). Course is identical to Vars. 180 except lighter shot, discus and javelin are used.

THEORY (P.E.)

†**115 THEORY OF ADAPTIVE PHYSICAL EDUCATION (4.5).** *Three lecture, three lab hours per week.* Involves the training of students to assist persons with various physically limiting conditions. Designed to provide hands-on experience, as well as a formal training for pre-therapy students.

†**140 CARE AND PREVENTION OF ATHLETIC INJURIES (3).** *Two lecture, two lab hours per week. Prerequisites: None. Anatomy, Physiology and Adv. First Aid recommended.* To give a basic knowledge of prevention, immediate treatment and rehabilitation of athletic injuries. Course will deal with specific injuries, running injuries, protective taping, types of therapy, nutrition for athletes and legal aspects of athletic training.

†**646 COOPERATIVE EDUCATION (1-4).** *(Grade option.)* Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†**680 SELECTED TOPICS IN PHYSICAL EDUCATION (1-3).** *Hours by arrangement.* Selected topics in Physical Education not covered by regular catalog offerings. Course content and unit credit to be determined by the Physical Education Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†**690 SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

810 ADAPTIVE P.E. ASSISTANT LAB (1.5-4.5). *(Open entry/open exit.)* *Three to nine lab hours per week.* Designed to provide hands-on experience for pre-therapy students. Students will gain experience working with disabled students in the Adaptive Physical Education Program.

Physical Science

†**100 INTRODUCTION TO THE PHYSICAL SCIENCES (3).** *Three lecture hours per week. Open to all students except those who are currently enrolled in or have completed a college course in physics, astronomy or chemistry.* Survey of topics in physics, astronomy and chemistry. Interdisciplinary aspects of science are emphasized. (Intended for non-science majors.)

†**129 SCIENCE AND ART LABORATORY (1).** *Three lab hours per week.* Basic concepts in the physical sciences, with emphasis on the experiments leading to major theories in science: optics, astronomy, electricity, geology, biology, chemistry, the atom. Satisfies lab science credit at University of California and California State Universities.

Physics

†**100 DESCRIPTIVE INTRODUCTION TO PHYSICS (3).** *Three lecture hours per week. Prerequisite: None; the equivalent of at least one semester of high school-level Algebra is recommended.* Open to all students except those who have had or are taking Physics 210 or 250. A description with experimental demonstrations of the more important phenomena of physics.

†**210-220 GENERAL PHYSICS I AND II (4-4).** *Three lecture and three lab hours per week. Prerequisite: 210—Elementary Algebra and Plane Geometry; 220—Physics 210.*

†**210—** Mechanics, heat and sound.

†**220—** Magnetism, electricity, light and modern physics. (The 210-220 sequence is designed for students majoring in some field of letters and science; required for those planning to enter Medicine, Dentistry, Pharmacy, Optometry, Agriculture or Forestry.)

†**250-260-270 PHYSICS WITH CALCULUS I, II AND III (4-4-4).** *Three lecture and three lab hours per week. Prerequisite: 250—Math 260 and concurrent enrollment in Math 261; 260—Physics 250 and Math 261 and concurrent enrollment in Math 262; 270—same as 260. Students whose majors require only Math 241-242 should consult the instructor. Extra supplies may be required.*

250 — Mechanics, wave motion and special relativity.

260 — Electricity and magnetism.

270 — Heat, light and modern physics. (250-260-270 constitute a three-semester program designed to give the student majoring in Engineering, Physics or Chemistry a thorough foundation in the fundamentals of physics.)

†**680 SELECTED TOPICS IN PHYSICS (1-3).** *Hours by arrangement.* Selected topics in Physics not covered by regular catalog offerings. Course content and unit credit to be determined by the Math/Science Division in relation to community-student need and/or available staff. May be offered as a seminar/lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the study field. (Note: Students normally may receive credit for one Special Project per semester.)

Political Science

+100 INTRODUCTION TO POLITICAL SCIENCE (3). *Three lecture hours per week.* An introductory survey designed to introduce the student to the nature of politics and to Political Science as a field of study. The scope of the course includes examination of the nature of the state, forms of government and political institutions, political theory and ideology, public law and administration, and international relations. (Fall only.)

+110 CONTEMPORARY FOREIGN GOVERNMENTS (3). *Three lecture hours per week. Prerequisite: One of the following: Pol. Sci. 100, 150, 200, 210, or 220.* An introduction to representative foreign political systems. A comparative analysis of how varied governments reconcile stability and change, power and responsibility, freedom and efficiency. The course stresses interrelationships of social patterns, ideology, and political institutions.

+130 INTERNATIONAL RELATIONS (3). *Three lecture hours per week.* An introductory survey of the nature of relations among states, focusing on the analysis of the basic forces affecting the formulation of foreign policy and the dynamics of international politics. The scope of the course includes examination of the nation-state system, sources of national power, instruments of national policy, and the attempt to resolve international conflict by peaceful methods. (Spring only.)

+150 INTRODUCTION TO POLITICAL THEORY (3). *Three lecture hours per week. Prerequisite: Successful completion of at least 12 semester units of college work.* A study of classical and modern political thought designed to develop student understanding of various theoretical approaches to politics, basic political problems and proposed solutions to these problems.

+170 INTRODUCTION TO PUBLIC ADMINISTRATION (3). *Three lecture hours per week.* Study of structures of Federal government organizations, the decision-making process and actual focus of power within our bureaucratic system of government. Relationships among government branches, history and growth of administration in U.S., organizational theory, administrative and management theories, including leadership, personnel and budgetary concepts, planning and evaluation of public policies for both current and future issues.

+200 NATIONAL, STATE AND LOCAL GOVERNMENTS (5). *Five lecture hours per week. Not open to students who have had Pol. Sci. 210 or 310, or a comparable course in American or state institutions. Established primarily for students whose majors are Political Science, PreLaw, Criminology and allied behavioral and social sciences.* Introduction to the principles and problems of American government at the national, state and local levels. Intergovernmental relationships examined from a functional point of view. Major areas of emphasis are American federalism, judicial review, the political process in nation and state, civil liberties, foreign policy and the role of the citizen at all levels of government. (Satisfies the American Institutions and California State and Local Government requirements.)

+205 AMERICAN SOCIETY (5). *Five lecture hours per week. Limited to foreign students or recent immigrants.* An orientation course in American society and culture, encompassing social, political and economic institutions as well as history. Particular emphasis on aspects of American life and historical development that are unique — ethnic history, patterns of voluntary association, political and non-political, educational trends, cultural characteristics. (Satisfies American Institutions and California State and Local Government requirements.)

+210 AMERICAN POLITICS (3). *Three lecture hours per week.* Thorough study of the Constitution, a survey of the organization and functions of the branches of the Federal government, and an examination of the dynamics of the American political process. (Satisfies the American Institutions requirement.)

+215 CONTEMPORARY ISSUES IN AMERICAN POLITICS (3). *Three lecture hours per week.* An exploration, within the institutional framework, of current issues of import to well-informed citizens in a democracy — for example, goals and tactics of American foreign policy; nuclear weapons; civil rights; the economy; executive power and its abuses; religion and politics; and the politics of energy and the environment. (Satisfies the American Institutions requirement.)

+220 THE AMERICAN PRESIDENCY (3). *Three lecture hours per week.* A comparative critical analysis of the executive branch of American government from Franklin Roosevelt's administration to the present. Variations in policy-making, political activity, administrative leadership, and Executive-Legislative branch relationships are scrutinized. (Satisfies the American Institutions requirement.)

+250 CIVIL LIBERTIES AND CIVIL RIGHTS (3). *Three lecture hours per week.* A survey and analysis of the issues and problems considered by the U.S. Supreme Court in the area of civil liberties and civil rights. The rights of racial, political and religious minorities, and of criminal defendants; the concepts of due process and equal protection of the laws; the interaction of the Supreme Court with the President, Congress, political parties and interest groups. (Satisfies the American Institutions requirement.)

+255 WOMEN, POLITICS AND POWER (3). *Three lecture hours per week.* An examination of the changing roles of women in the political process. Emphasis is on methodology, rationale and effect on women's participation on several levels of political activity. (Satisfies the American Institutions requirement.)

+260 CONTEMPORARY ETHNIC POLITICS (3). *Three lecture hours per week.* A survey of the political perspectives, goals, and strategies of Black, Asian, Hispanic and Native American minorities within the context of American politics. Includes analysis of traditional and alternative approaches to political ascendancy, with particular emphasis on the movements of the 1960's and 1970's. (Satisfies the American Institutions requirement.)

+300 STATE AND URBAN POLITICS (3). *Three lecture hours per week.* Examines state and urban governments in California and their interrelationship with the national government. General focus on those issues that spring from the geopolitical, cultural and economic conditions of our state's diverse and unique character. Special consideration given to an understanding of current semester's state affairs, especially to those matters of controversy that provoke public opinion, affect decision making and shape public policies. (Satisfies the California State and Local Government requirement.)

+310 CALIFORNIA STATE AND LOCAL GOVERNMENT (2). *Two lecture hours per week.* Designed to acquaint the student with the institutions and problems of state and local government in California. (Satisfies the California State and Local Government requirement.)

+520 THE GOVERNMENTS AND POLITICS OF AFRICA (3). *Three lecture hours per week.* An introduction to the study of the emergent African states, examining the political factors impinging on their decision-making processes and their geopolitical consequences. A comparative analysis of non-Western institutional structures; differences in ideological orientation; and economic interdependence in the context of contemporary world politics.

+680 SELECTED TOPICS IN POLITICAL SCIENCE (1-3). *Hours by arrangement.* Selected topics in Political Science not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS IN POLITICAL SCIENCE (3). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Psychology

(See also Sociology)

+100 GENERAL PSYCHOLOGY (3). *Three lecture hours per week.* Survey of major topics, theories and research results of contemporary psychology. Among topics covered are personality, social behavior, memory, motivation, emotion, perception, learning and physiological basis of behavior.

+105 EXPERIMENTAL PSYCHOLOGY (3). *Three lecture hours per week. Prerequisite: Psych. 100 with a minimum grade of C. Recommended: Psych. 121.* Philosophy and aims of scientific inquiry and how it can be applied to answer questions in psychology. Students carry out experiments to familiarize themselves with the methods discussed.

+108 PSYCHOLOGY IN PRACTICE (3). *Three lecture hours per week.* Application of psychological principles to problems of everyday living rather than the technical-scientific approach of Psych. 100. Intended for those who wish a general picture of human psychology. (May not be taken for credit following Psych. 100.)

+110 COURTSHIP, MARRIAGE AND THE FAMILY (3). *Three lecture hours per week.* History and development of marriage; dating; courtship; personality adjustment in marriage; parenthood; the problem of divorce, mate-selection; love; the family; anatomic, physiologic, psychologic and sociologic aspects of sex; children; religious factors; marriage as a social institution.

+121 BASIC STATISTICAL CONCEPTS (3). *Three lecture hours per week. Prerequisite: Math 120 or four semesters of high school level Algebra with a C average; Psych. 100 or Soci. 100 or Anth. 110. Recommended Psych. 100.* Introduction to the basic descriptive techniques and statistical inferences used in the behavioral sciences. (Spring only.)

+201 CHILD DEVELOPMENT (3). *Three lecture hours per week. Prerequisite: Psych. 100.* Study of perceptual cognitive, linguistic social, and emotional development of the child. Emphasis on current research and theories. May include case studies and direct observation of children.

+300 SOCIAL PSYCHOLOGY (3). *Three lecture hours per week. Prerequisite: Psyc. 100 or Sociology 100.* The study of human interaction, with emphasis on social patterning and process of perception, identity, roles and attitudes.

+340 HUMAN SEXUALITY (3). *Three lecture hours per week.* Human sexuality considered from a psychological, physiological and cultural perspective, with a review of sex research. Topics include: reproductive process; dimensions of sexuality; sexual arousal and response; sexual inadequacies and deviations; drugs and sexuality.

+410 ABNORMAL PSYCHOLOGY (3). *Three lecture hours per week.* Elaboration on the study of abnormal behavior and personality introduced in previous courses. Topics include neuroses, psychoses and other psychological problems, along with their etiology, dynamics, principal symptoms and treatments. The relationship between theory of personality and psychotherapy is explored.

+480 INTRODUCTION TO PARAPSYCHOLOGY (3). *Three lecture hours per week.* Traces the emergence of scientific thought from the plough to the microchip, and explores possible future developments in the realm of phenomena now regarded as paranormal, such as E.S.P. and psychokinesis.

+680 SELECTED TOPICS IN PSYCHOLOGY (1-3). *Hours by arrangement.* Selected topics in Psychology not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

+690 SPECIAL PROJECTS IN PSYCHOLOGY (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

Reading

800 FUNDAMENTAL SKILLS I (1-3). (Credit/No credit.) *Three lecture hours and one lab hour per week. Prerequisite: 6.0 or below on the Nelson-Denny Reading Test.* Basic reading course with review in basic skills of word analysis, techniques for vocabulary development and increased comprehension. Analysis of individual reading difficulties will result in a prescribed program of instruction suited to student's needs. (To increase competency, may be repeated for a maximum of 6 units of credit.)

801 FUNDAMENTAL SKILLS II (1-3). (Credit/No credit.) *Three lecture and one lab hour per week. Prerequisite: Reading 800 or score between 6.1-8.9 in comprehension on the Nelson-Denny Reading Test.* Builds on basic reading skills taught in Reading 800. Concentration on building vocabulary and learning techniques for reading a variety of material with increased efficiency. (To increase competency, may be repeated for a maximum of 6 units of credit.)

802 BASIC PHONIC SKILLS (3). *Three lecture hours per week plus one lab hour per week.* Introduction to the study of basic speech sounds and practice in pronouncing any word met in reading. Review of dictionary symbols, diacritical marks, syllabication, and fundamental phonic generalizations. (To increase competency, may be repeated for a maximum of 6 units of credit.)

806 BEGINNING READING FOR LIMITED ENGLISH SPEAKERS (1-3). (Credit/No credit.) Three lecture plus one lab hour per week. *Prerequisite:* Non-native speaker of English. Designed to improve the English vocabulary, reading comprehension, and study skills of students from language backgrounds other than English. Some focus on increased reading speed and efficiency for more advanced students. Assignments are tailored to student's individual needs. (To increase competency, may be repeated for a maximum of 6 units of credit.)

807 BASIC PHONIC SKILLS FOR LIMITED ENGLISH SPEAKERS (3). Three lecture and one lab hours per week. *Prerequisite:* Non-native speaker of English. Introduction to the study of basic speech sounds and practice in pronouncing any word in reading. Review of dictionary symbols, diacritical marks, syllabification and fundamental phonic generalizations. (To increase competency, may be repeated for a maximum of 6 units of credit.)

808 READING IMPROVEMENT I (1-3). (Credit/No credit.) Three lecture hours per week. *Prerequisite:* At least 9th grade comprehension on the Nelson-Denny Reading Test or eligibility for English 800. Reading techniques designed to improve rate and comprehension on various types of material, fiction and nonfiction. Introduction to and practice with various machines, programmed materials and texts. Individual evaluation to discover strengths and help students deal with their weaknesses. (To increase competency, may be repeated once for credit.)

810 SPEED READING (.5-3). (Credit/No credit.) Three lecture hours and one lab hour per week. *Prerequisite:* At least 10.0 in reading comprehension on the Nelson-Denny Reading Test or eligibility for Engl 100. An advanced course for students who wish to improve their reading speed and comprehension. (To increase competency, may be repeated for a maximum of 6 units of credit.)

812 READING LABORATORY (1-3). (Credit/No credit.) One to three lab hours per week. Individualized instruction for improvement of reading skills. Instructional materials, written as well as audiovisual, will be individually assigned, based upon careful diagnostic testing and conferences with instructor. Students may enroll any time through the 10th week of the semester. (To increase competency, may be repeated for a maximum of 6 units of credit.)

Real Estate

For licensed real estate agents, R.E. 100 and 105 may be waived as prerequisites for all R.E. courses. A photo copy of license must be filed with the Office of Registration and Admissions.

+100 REAL ESTATE PRINCIPLES (3). Three lecture hours per week. Property, contracts, agency, financing, recordation, liens and encumbrances, taxes, escrows, land description and real estate math. (Meets State requirements for the broker's examination.)

+105 REAL ESTATE VALUATION (3). Three lecture hours per week. *Recommended:* Concurrent enrollment in R.E. 100. Development of California real estate principles, measuring changing value of money. Estimating: costs, depreciation, taxes, maintenance, return on investment. Accounting: rules—capital gains and losses, accelerated methods of calculating depreciation charges. (Meets the State requirements for the broker's examination.)

+110 REAL ESTATE PRACTICE (3). Three lecture hours per week. *Prerequisite:* R.E. 100 and R.E. 105 or equivalent. Comprehensive presentation of real estate brokerage skills in the State of California with emphasis on the daily activities of salesmen and brokers. (Meets the State requirements for the broker's examination.)

+121 LEGAL ASPECTS OF REAL ESTATE I (3). Three lecture hours per week. *Prerequisite:* R.E. 100 and R.E. 105 and R.E. 110, or concurrent enrollment, or equivalent. The legal aspects of real estate brokerage, real estate sales, property management, real estate ownership, the management of the building of an estate and related topics, along with a study of the facts and principles of California Real Estate Law. (Meets the State requirements for the broker's examination.)

122 LEGAL ASPECTS OF REAL ESTATE II (3). Three lecture hours per week. *Prerequisite:* R.E. 121 or equivalent. An in-depth study of contracts, security transactions and current developments in law. Course materials will be edited selections of California appellate court decisions. This course is for the serious student who will devote the required time of approximately six hours of study each week. (Meets the State requirements for the broker's examination.)

+131 REAL ESTATE FINANCE I (3). Three lecture hours per week. *Prerequisite:* Salesman's or broker's license, or completion of R.E. 100 and 105. Completion of R.E. 110, or may be taken concurrently. Practices, customs and laws relating to mortgage lending and the financing of real estate, with emphasis on financing private houses. (Meets the State requirements for the broker's examination.)

132 REAL ESTATE FINANCE II (3). Three lecture hours per week. *Prerequisite:* R.E. 131, or equivalent. Financing of commercial, industrial, and special-purpose properties. Financing mathematics, financial analysis, construction financing, feasibility through social action programs. (Meets the State requirements studies, creative financing, and government participation for the broker's examination.)

+141 REAL ESTATE APPRAISAL (BASIC) (3). Three lecture hours per week. *Prerequisites:* R.E. 100 and R.E. 105, or equivalent. Basic real estate appraisal which considers the analysis of residential and commercial properties. Techniques for determination of loan, market and insurance values. (Meets the State requirements for the broker's examination.)

+143 REAL ESTATE APPRAISAL (URBAN) (3). Three lecture hours per week. *Prerequisite:* R.E. 141 or equivalent. Advanced real estate appraisal of multi-family dwellings, apartment houses, commercial and special purpose property. (Meets the State requirements for the broker's examination.)

+145 REAL ESTATE APPRAISAL (RURAL) (3) Three lecture hours per week. *Prerequisites:* R.E. 141 or 143, or equivalent. Advanced course in real estate appraisal of rural properties, covering three types: row crop, orchard and livestock properties. (Meets the State requirements for the broker's examination.)

+200 REAL ESTATE ECONOMICS (3). Three lecture hours per week. *Prerequisites:* R.E. 100 and R.E. 105, or equivalent. Study of the economic aspects of real estate designed to provide a grasp of the dynamic economic conditions and related factors underlying the real estate business. (Meets the State requirements for the broker's examination.)

205 REAL ESTATE MATHEMATICS (3). Three lecture hours per week. Review of the fundamentals of mathematics as they apply to real estate practice, with problems in the area of amortization, appraising, broker's trust fund accounts, interest calculations and capitalization techniques.

+210 REAL ESTATE EXCHANGES AND TAXATION (3). Three lecture hours per week. *Prerequisites:* R.E. 100 and R.E. 105, R.E. 110, R.E. 121, R.E. 131 and R.E. 141, or equivalent. Advanced course for real estate brokers and investors with experience in residential and commercial transactions. Primary emphasis on developing and analyzing exchange transactions, practical and technical aspects of completion, the correlation of exchanges and tax matters. (Meets the State requirements for the broker's examination.)

†215 COMMERCIAL AND INVESTMENT PROPERTY (3). *Three lecture hours per week. Prerequisite: R.E. 100 and R.E. 105, R.E. 110, R.E. 121, R.E. 131, and R.E. 141, or equivalent.* For licensed real estate brokers and salesmen, financing officials and investors. Emphasizes the process of selecting various properties for investment, including analyzing income, operating expenses and income tax implications. (Meets the State requirements for the broker's examination.)

†220 REAL ESTATE PROPERTY MANAGEMENT (3). *Three lecture hours per week. Prerequisites: R.E. 100 and 105, R.E. 110, R.E. 121, and 131, or license equivalent.* Survey course on the basic elements of investment property management. Topics include cash flow projection and valuation, merchandising, maintenance and evictions. Emphasis on apartment property.

225 REAL ESTATE OFFICE ADMINISTRATION (3). *Three lecture hours per week. Prerequisites R.E. 100 and 105, and 110, 121, 131 and 141, or equivalent.* An introduction to management; research, personnel and market management decisions; transition from sales associate to manager; personnel training, counseling and compensation; future trends in the industry and their implications for management. (Meets the State requirements for the broker's examination.)

230 REAL ESTATE INTERNSHIP (4). *Two lecture hours and ten laboratory hours per week. Prerequisites: R.E. 100 and R.E. 105, or equivalent. R.E. 110 may be taken concurrently.* Supervised work experience and seminar. A practical application of skills and understandings learned in the academic classroom as applied to areas of specialization to be selected by the student. Intended to assist the student enrolled in the Work Experience Education program.

235 REAL ESTATE SALESMANSHIP (3). *Three lecture hours per week. Prerequisites: R.E. 100 and R.E. 105, or equivalent.* Specialized techniques required to promote an effective sales record. Coordinates the theoretical background required for State examinations into the area of property merchandising.

301 ESCROW PROCEDURES (BASIC) (3). *Three lecture hours per week.* A basic course in the methods and techniques of escrow procedure for various types of business transactions with emphasis on real estate. (Meets the State requirements for the broker's examination.)

303 ESCROW PRACTICES (INTERMEDIATE) (3). *Three lecture hours per week. Prerequisites: R.E. 301, or equivalent.* An advanced course covering more unusual and different types of escrow and evaluating possible solutions. (Meets the State requirements for the broker's examination.)

305 ESCROW PROBLEMS (ADVANCED) (3). *Three lecture hours per week. Prerequisites: R.E. 303, or equivalent.* Further study of more unusual and difficult types of escrows. Actual case problems are presented and discussed. Conflicts and disputes in escrow are studied. (Meets the State requirements for the broker's examination.)

311 TITLE EXAMINING PROCEDURES I (3). *Three lecture hours per week.* Compiling and interpreting data from various official sources leading to the production of evidence of ownership of real estate.

313 TITLE EXAM PROCEDURES II (3). *Three lecture hours per week.* Comprehensive study of map reading and easements. A study of abandonments, including vesting and effects. Procedure for examining court proceedings relating to divorce, probate, foreclosures, etc. Detailed studies of property problems.

641 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

Sign Language

821 (Formerly Speech 821) ELEMENTARY AMERICAN SIGN LANGUAGE (2-3) *Two-three lecture hours per week.* Basic skills course in American sign language taught as a second language using dialogue drills, commands, creative ideas.

822 (Formerly Speech 822) INTERMEDIATE AMERICAN SIGN LANGUAGE (2-3) *Two-three lecture hours per week. Prerequisite: Speech 821 or equivalent.* Language skills course for skilled hearing signers and deaf people using encoding, decoding, interaction, and acquisition techniques.

Social Science

†111 CRITICAL THINKING (3). *Three lecture hours per week.* Designed to develop critical thinking skills and techniques for evaluating political rhetoric, advertising claims, editorials, scientific claims, social commentary. To enable students to evaluate and analyze written material; study of valid and invalid argument forms.

†648 COOPERATIVE EDUCATION (1-4). (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN SOCIAL SCIENCE (1-3). *Three class hours per week.* An experimental course interdisciplinary in nature designed to explore a series of current and urgent human concerns. The theme and content of each offering will be publicized in time for registration for the semester in which the course is to be offered. See counselors for current offering.

†690 SPECIAL PROJECTS IN SOCIAL SCIENCE (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

820 CURRENT WORLD AFFAIRS (1). (Credit/No credit.) *Two lecture hours per week.* Study of current issues, events and institutional changes in the U.S. Through the analysis of their geographic and historical context and their relation to events and people at home and abroad. (To increase competency, may be repeated for a maximum of 4.00 units of credit.)

Sociology

†100 INTRODUCTION TO SOCIOLOGY (3). *Three lecture hours per week.* Analysis of processes of group behavior and interaction between the individual and society; personality development in different cultures as shaped by learned customs, attitudes and values. Study of family, politico-economic and religious behavior; social movements; "mass society" and communications; community structure; social class and status, ethnic and racial minorities, work and leisure.

- †105 **SOCIAL PROBLEMS (3)**. *Three lecture hours per week.* Theories of social problems involving sociological and psychological approaches. Theoretical and descriptive studies of specific problem areas of crime and delinquency, mental illness, drug use and suicide, and the social problem areas of mass society.
- †110 **COURTSHIP, MARRIAGE AND THE FAMILY (3)**. *Three lecture hours per week.* History and development of marriage; dating; courtship; personality adjustment in marriage; parenthood; the problem of divorce; mate selection; love; the family; anatomic, physiologic, psychologic and sociologic aspects of sex; children; religious factors; marriage as a social institution.
- †141 **RACIAL & CULTURAL MINORITIES (3)**. *Three lecture hours per week.* Sociology of inter-ethnic contact with emphasis on the experience of minorities in the United States. An examination of the dual themes of racism and equality in American society, and consideration of the patterns of prejudice and discrimination.
- †200 **URBAN SOCIOLOGY (3)**. *Three lecture hours per week.* Urbanism and urbanization, ecology and growth, social class and racial trends, urban education, urban crime, local government and politics, planning and experimental solutions. (Satisfies the California State and Local Government requirement.)
- †300 **SOCIAL PSYCHOLOGY (3)**. *Three lecture hours per week.* *Prerequisite: Sociology 100 or Psychology 100.* The study of human interaction, with emphasis on social patterning and processes of perception, identity, roles and attitudes.
- †340 **HUMAN SEXUALITY (3)**. *Three lecture hours per week.* A look at human sexuality from a psychological, physiological and cultural point of view. Sex research will be discussed; emphasis will be placed on the need for affiliation, commitment, and intimacy.
- †391 **PARENT-CHILD RELATIONS (3) (Telecourse)**. Confronts many problems faced by new and prospective parents. Study of parent-child interaction and perception of attitudes, roles, and identity. Alternative solutions and coping strategies are explored in an effort to assist parents in the process of guiding their child's growth and development.
- †680 **SELECTED TOPICS IN SOCIOLOGY (1-3)**. *Hours by arrangement.* Selected topics in Sociology not covered by regular catalog offerings. Course content and unit credit to be determined by the Social Science Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.
- †690 **SPECIAL PROJECTS IN SOCIOLOGY (1-2)**. *Hours by arrangement.* *Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two College-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)
- Spanish**
- Language Laboratory and Listening Requirement**—Students enrolled in certain courses in foreign language are required to make use of the language laboratory as prescribed by each department. Imitation, response and independent practice are integral features of the study of a foreign language at the College.
- †110 **ELEMENTARY SPANISH (5)**. *Five lecture hours and two lab hours per week.* Spanish structures and active vocabulary based on oral and written pattern drills. Conversation based on short readings containing only structures already practiced.
- †111 **ELEMENTARY SPANISH I (3)**. *May be offered either for eight weeks on a daily lecture basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week.* Approximately half of the semester's work in Spanish 110 is covered in this course.
- †112 **ELEMENTARY SPANISH II (3)**. *May be offered for eight weeks on a daily lecture basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week.* *Prerequisite: Spanish 111 or assignment on the basis of a Foreign Language Placement Test in Spanish.* Approximately the second half of the semester's work in Spanish 110 is covered. (Spanish 111 and 112 are equivalent to Spanish 110.)
- †120 **ADVANCED ELEMENTARY SPANISH (5)**. *Five lecture hours and two lab hours per week.* *Prerequisite: Completion of Spanish 111, 112 with a passing grade; or assignment by the Foreign Language Department on the basis of Foreign Language Placement Test in Spanish.* Continuation of Spanish 110. Reading of Spanish short stories to serve as a basis for classroom conversation.
- †121 **ADVANCED ELEMENTARY SPANISH I (3)**. *May be offered either for eight weeks on a daily lecture basis plus two lab hours, or in a semester-long program for three lecture hours and one lab hour per week.* *Prerequisite: Spanish 110 or 112 or assignment on the basis of Foreign Language Placement Test in Spanish.* Approximately half of the semester's work in Spanish 120 is covered.
- †122 **ADVANCED ELEMENTARY SPANISH II (3)**. *May be offered either for eight weeks on a daily lecture basis plus two lab hours, beginning at mid-term, or in a semester-long program for three lecture hours and one lab hour per week.* *Prerequisite: Spanish 121 or assignment on the basis of Foreign Language Placement Test in Spanish.* Approximately the second half of the semester's work in Spanish 120 is covered. (Spanish 121 and 122 are equivalent to Spanish 120.)
- †130 **INTERMEDIATE SPANISH (5)**. *Five lecture hours and one lab hour per week.* *Prerequisite: Spanish 120 or 122 with a passing grade or assignment on the basis of Foreign Language Placement Test in Spanish.* Practice of conversation and composition; review of grammar; class and collateral reading of Spanish and Spanish-American literature.
- †131 **INTERMEDIATE SPANISH I (3)**. *Three lecture hours and one lab hour per week.* *Prerequisite: Spanish 120 or 122 with a passing grade or assignment on the basis of Foreign Language Placement Test in Spanish.* Approximately half of the semester's work in Spanish 130 is covered.
- †132 **INTERMEDIATE SPANISH II (3)**. *Three lecture hours and one lab hour per week.* *Prerequisite: Spanish 131 with a passing grade or assignment on the basis of Foreign Language Placement Test in Spanish.* Approximately the second half of the Semester's work in Spanish 130 is covered.
- †133 **SPANISH FOR NATIVE SPEAKERS (3)**. *Three lecture hours per week.* *Prerequisites: Spanish-speaking background and ability to converse in Spanish.* Geared to the special needs of the Spanish-speaking student who has not had formal training in Spanish. Includes vocabulary building, spelling practice and training in grammatical principles of Standard Spanish for improved oral and written communication; class and collateral readings from Hispanic plays and short stories.
- †140 **ADVANCED INTERMEDIATE SPANISH (3)**. *Three lecture hours per week.* *Prerequisite: Spanish 130 or 132 with passing grade or assignment on basis of Foreign Language Placement Test in Spanish.* Further practice of conversation and composition based on class reading of works of modern Spanish and Latin-American authors; review of grammar; collateral reading of Spanish and Spanish-American literature.

†161 **READING IN SPANISH LITERATURE I (3).** *Three lecture hours per week. Prerequisite: Spanish 140.* Oral and written composition, class reading of works of Spanish and Spanish-American literature, extensive collateral reading of varied types of Spanish and Spanish American literature, and review of grammar.

†162 **READING IN SPANISH LITERATURE II (3).** *Three lecture hours per week. Prerequisite: Spanish 161.* Further oral and written composition, class reading of works of Spanish and Spanish American literature, extensive collateral reading of varied types of Spanish and Spanish American literature, and review of grammar.

†201 **SPANISH CONVERSATION I (2).** *Two lecture hours and one lab hour per week. Prerequisite: Successful completion of Spanish 130 or higher. May be taken concurrently with Spanish 130 with permission of the instructor.* Practice in conversation based on Spanish customs and culture.

†202 **SPANISH CONVERSATION II (2).** *Two lecture hours and one lab hour per week. Prerequisite: Successful completion of Spanish 201.* Further practice in conversation based on Spanish customs and culture.

†251 **HISPANOAMERICA CONTEMPORANEA (3).** *Three lecture hours per week. Prerequisites: Spanish 140 or Spanish-speaking background.* A study of contemporary Latin-American culture, its problems and concerns, as revealed in contemporary literature; short story, drama and novel. Conducted in Spanish.

†620 **INDIVIDUAL READINGS (1-2).** *Conferences for oral reports. Time to be arranged. A minimum of three hours of reading per unit per week is required. Prerequisite: Spanish 162.* Reading of Spanish and Latin-American representative 19th and 20th Century literature. (To increase competency, may be repeated for a maximum of 6 units of credit.)

†680 **SELECTED TOPICS IN SPANISH (1-3).** *Hours by arrangement.* Selected topics in Spanish not covered by regular catalog offerings. Course content and unit credit to be determined by the Director of the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 **SPECIAL PROJECTS (1-2).** *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Director of the Language Arts Division. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

801 CONVERSATIONAL SPANISH I, ELEMENTARY (2). (Credit/No credit.) *Three lecture hours per week.* Intensive drill in the patterns and idioms of daily speech is supported with sufficient grammar to give flexibility in the spoken language. May be considered an excellent preparatory course for students who have not taken a foreign language before. (To increase competency, may be repeated for a maximum of 8 units of credit.) (This course will not fulfill language requirements at California State Universities or at the University of California.)

When student demand is light, Spanish 802, 803, and 804 may be offered as 1.5 hour modules.

802 CONVERSATIONAL SPANISH II, ADVANCED ELEMENTARY (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: Spanish 801 or equivalent.* Further work in conversation following the model of Spanish 801. (To increase competency, may be repeated for a maximum of 8 units of credit.) (This course will not fulfill language requirements at California State Universities or at the University of California.)

803 CONVERSATIONAL SPANISH III, INTERMEDIATE (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: Spanish 803 or equivalent.* More advanced work in conversation following the model of Spanish 802. (To increase competency, may be repeated for a maximum of 8 units of credit.) (This course will not fulfill the language requirements at California State Universities or at the University of California.)

804 CONVERSATIONAL SPANISH IV, ADVANCED INTERMEDIATE (2). (Credit/No credit.) *Three lecture hours per week. Prerequisite: Spanish 803 or equivalent.* Further advanced work in conversation following the model of Spanish 803. (To increase competency, may be repeated for a maximum of 8 units of credit.) (This course will not fulfill the language requirements at California State Universities or at the University of California.)

Speech

The Speech program consists of courses in public speaking, interpersonal communication, and oral interpretation of literature. The English requirement may be partially satisfied by 3 units of Speech 100 or Speech 120.

†100 **FUNDAMENTALS OF SPEECH AND PERSUASION (3).** *Three lecture hours per week.* Practice in delivering extemporaneous speeches; study of basic principles of effective communication; techniques of organizing and outlining; structure and content of basic speech types; development of critical listening; analysis and evaluation of speeches.

†111 **ORAL INTERPRETATION I (3).** *Three lecture hours per week.* Oral reading of different forms of literature (poetry, short story, drama); analysis of meaning; analysis of voice quality; enunciation, pronunciation and expressiveness; performances for audiences and recording.

†112 **ORAL INTERPRETATION II (3).** *Three lecture hours per week. Prerequisite: Speech 111.* Continuation of oral reading of different forms of literature (poetry, short story, drama); analysis of meaning; analysis of voice quality; enunciation, pronunciation and expressiveness; performances for audiences and recording.

†120 **INTERPERSONAL COMMUNICATION (3).** *Three lecture hours per week.* Interpersonal communication, rational dialogue and cooperative analysis of communicative events. Provides for study of communicative interactions, the symbolic process, reasoning and advocacy, and the effects of communication on man and society.

†130 **VOICE AND ARTICULATION (3).** *Three lecture hours per week.* Exploration of various modes of communicating ideas, emotions and values through a meaningful use of the voice. Lessons in vocal variety, expressiveness, resonance, articulation and pronunciation.

†184 **IMPROVING GROUP COMMUNICATION (3).** *Three lecture hours per week.* Gathering material, writing outlines and composing questions for classroom debate-discussions. Discussion of current problems pertaining to ageism, sexism, racism as well as problems pertaining to business, labor, industry, and government.

†680 **SELECTED TOPICS IN SPEECH (1-3).** *Hours by arrangement.* Selected topics in Speech not covered by regular catalog offerings. Course content and unit credit to be determined by the Language Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture, or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Language Arts Division Director. Students are eligible to request approval of a Special Project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

801 SPEECH IMPROVEMENT (.5-3) (Credit/No credit.) *One to three lecture hours per week. Prerequisites: Diagnosed speech, hearing or other language handicap.* Individual and small group training is provided for problems of articulation, voice, fluency and language. Assessment of individual communicative skills will result in a program designed for the individual student's needs. (To increase competency, may be repeated for a maximum of 6 units of credit.)

811 SPEECH FOR NON-NATIVE SPEAKERS I (3). *Three lecture hours per week.* Practice in pronunciation and diction, usage; extemporaneous speaking. (To increase competency, may be repeated for a maximum of 6 units of credit.)

812 SPEECH FOR NON-NATIVE SPEAKERS II (3). *Three lecture hours per week. Prerequisite: Speech 811.* Practice in conversational English skills and American idioms; verbal and nonverbal communication skills. (To increase competency, may be repeated for a maximum of 6 units of credit.)

825 BASIC COMMUNICATION (3). *Three lecture hours per week.* Understanding the nature of communication through frequent exercises in interpersonal communication, extemporaneous speaking, and correlation between speaking and writing well. Emphasis is on individual needs and abilities in meeting situations in daily life: at home, at work, at college.

830 LANGUAGE SKILLS FOR THE HEARING IMPAIRED (2). *Two lecture hours per week. Prerequisites: Diagnosed severe to profound hearing loss and assignment by the speech pathologist with assistance of the instructor.* For hearing-impaired students who wish to improve their English writing and reading skills. Program will be developed to meet individual student's needs. Interaction between hearing-impaired and hearing students. (To increase competency, may be repeated for a maximum of 6 units of credit.)

Technical Art/Graphics

Extra supplies may be required in all Technical Art/Graphics courses.

†201-202 TECHNICAL ILLUSTRATION I AND II (6-6). *Three lecture and nine laboratory hours per week. Prerequisites: 201—Concurrent enrollment in T.A.G. 210; 202—201.*

201—Basic practices and procedures used in technical drawing with emphasis on ink line techniques and the systems of projection used in technical illustration.

202—Working from sketches, blueprints, photographs, and objects, students prepare technical illustrations and develop a professional portfolio.

†210 TECHNIQUES FOR THE GRAPHIC DESIGNER (4). *Two lecture and six laboratory hours per week.* Principles of design, stylized abstracted drawing, symbolic communication, designing expressive type, trademark and logo design, typography, and full page layouts from thumbnail sketches through comprehensive layouts. Creativity and the problem definition/solution process.

†220 VISUAL PRESENTATIONS (4). *Two lecture and six laboratory hours per week.* Application of the student's creative ability and drawing skills to the development of visual presentations. Emphasis on charts, graphs, and transparencies for the overhead projector and 35mm slides. Each student will prepare and present before his class, a sequence of visuals on a designated subject.

†300 INTRODUCTORY REPRODUCTION PROCESSES (2). *One lecture and three laboratory hours per week. Prerequisite: T.A.G. 201.* Study of the basic practices and procedures used in industry to reproduce technical art and publications. Emphasis will be on the offset printing process. Instruction on stencil, mimeo, diazo and convenience copiers will be included.

†310 VISUALIZATION TECHNIQUES IN INDUSTRIAL DESIGN (4) *Two lecture and six laboratory hours per week. Prerequisites: T.A.G. 201, 202.* Introduction to the design sequence. Execution of concept drawings and models involved in producing an industrial design. Laboratory experience in idea interpretation and finished presentation drawings.

†351-352 PRODUCTION TECHNIQUES FOR OFFSET PRINTING (2-4). *351—One lecture and three laboratory hours per week; 352—Two lecture and six laboratory hours per week. Prerequisites: 351—T.A.G. 300 or T.A.G. 712 & 713; 352—T.A.G. 351.*

351—Designing original camera-ready art work and continuous tone copy and reproducing the artwork on an offset press.

352—Students learn and perform each skill in the production sequence for the printing of an original booklet, from concept through bindery

†400 ADVANCED PROJECT (1). *Three lab hours per week. Prerequisites: Completion of three semesters of T.A.G. curriculum.* Students will initiate, develop and complete substantial individual projects in consultation and under the direction of the instructor. Emphasis on initiative, innovation and perseverance in the completion of these projects.

†642 COOPERATIVE EDUCATION (1-4) (Grade option.) Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN TECHNICAL ART/GRAPHICS (1-3). *Hours by arrangement.* Selected topics in Technical Art/Graphics not covered by regular catalog offerings. Course content and unit credit to be determined by the Fine and Performing Arts Division in relation to community-student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

†690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

710-714 GRAPHIC COMMUNICATIONS (1.5 each). *Two lecture and three lab hours per week for eight weeks. No prerequisite for any course.* Self-paced graphic basic skill areas which are repeated at progressively higher levels of competency. The cores are intensifications of informational blocks and skill areas.

710—Core A—Design; B—Paste-up; C—Composition and photo conversion.

711—Core B—Paste-up; C—Composition and photo conversion; D—Plate making and stripping.

712—Core C—Composition and photo conversion; D—Plate making and stripping.

713—Core D—Plate making and stripping; E—Press operation; F—Bindery

714—Cores A, B, C, D, E, and F.

715 GRAPHIC ARTS FOR BUSINESS (1.5). *Three lecture hours per week for eight weeks.* A study of the concepts needed by business persons to communicate with graphic arts professionals. Topics covered show the graphic arts process, from concept to printed material; lettering, typography, photography, illustration, color separation, plate making, paper, printing and bindery operations.

Technology

(See Manufacturing and Industrial Technology)

Telecommunications

(See Broadcasting Arts)

Trade and Industrial

(See Apprenticeship Training)

Welding Technology

(Also see Manufacturing and Industrial Technology)

†110 ELEMENTARY WELDING THEORY I (4). *Four lecture hours per week. Prerequisite: Concurrent enrollment in W.T. 111.* Introduction to gas welding of ferrous and non-ferrous metals, brazing and soldering. Instruction on the theory of flamecutting, nondestructive testing, introduction to metallurgy, and blueprint reading for welding. Extra supplies required.

†111 ELEMENTARY WELDING PRACTICE I (3). *Four three-hour lab hours per week. Prerequisite: Concurrent enrollment in W.T. 110.* Practical experience in gas and conventional arc welding of ferrous metals, brazing and soldering. Extra supplies may be required.

†120 ELEMENTARY WELDING THEORY II (4). *Four lecture hours per week. Prerequisite: W.T. 110 and concurrent enrollment in W.T. 121.* Introduction to conventional arc welding of steel, stainless steel and TIG (GTAW) welding of aluminum. Study of metallurgy and blueprint reading for welders. Extra supplies required.

†121 ELEMENTARY WELDING PRACTICE II (3). *Nine lab hours per week. Prerequisite: W.T. 111.* Advanced experience in conventional arc welding of steel in the flat, vertical and overhead positions. Introduction to manual TIG (GTAW) welding of aluminum. Inspection of welded assemblies. Extra supplies may be required.

†210 ADVANCED WELDING THEORY I (4). *Four lecture hours per week. Prerequisite: W.T. 110/120 1 and concurrent enrollment in W.T. 211.* TIG (GTAW), MIG (GMAW) welding with emphasis on carbon steel, alloy steel, and stainless steel. Advanced problems in all phases of welding. Study in the theory of metallurgy and heat treating as it applies to welding technology. Extra supplies required.

†211 ADVANCED WELDING PRACTICE I (5). *Fifteen lab hours per week. Prerequisite: W.T. 111 and 121, concurrent enrollment in W.T. 210.* Practical experience in TIG (GTAW), MIG (GMAW), and low hydrogen arc welding with emphasis on steel, stainless steel and aluminum. Extra supplies may be required.

†220 ADVANCED WELDING THEORY II (4). *Four lecture hours per week. Prerequisite: W.T. 210 and concurrent enrollment in W.T. 221.* Theory of MIG (GMAW) welding, pulsed MIG (GMAW) and TIG (GTAW) welding, electron beam welding, sub-arc welding, electro-slag/gas welding, pipe welding study, of the A.W.S. Structural Code and A.S.M.E. Boiler Code and Pressure Vessel Code Section IX. Study of the fundamentals of robotics, nondestructive testing and welding symbols as they apply to blueprints. Extra supplies required.

†221 ADVANCED WELDING PRACTICE II (5). *Fifteen lab hours per week. Prerequisite: W.T. 211.* Practical experience in the welding of exotic metals, flame spraying, pulsed TIG (GTAW), pipe and MIG (GMAW) welding. Practical experience in job estimation and production welding techniques as well as maintenance welding techniques. Instruction in the application of manipulative skills required in metal fabrication processes: hand and power shearing, punching, forming, mechanical fastening and sheet metal layout. Extra supplies required.

†300 WELDING FOR TECHNOLOGY (2). *One lecture and one three-hour lab per week. Prerequisite: None.* A related course of instruction designed to assist the student who is not a welding major in understanding the theories of oxyacetylene welding, bronze brazing, conventional shielded metal arc, low hydrogen shielded metal arc, resistance welding and silver brazing with emphasis on associated equipment and supplies. (Extra supplies may be required.)

†649 COOPERATIVE EDUCATION (1-4). *(Grade option.)* Work experience in a field related to a career goal, supplemented by individual counseling from an instructor-coordinator. (See Index: "Cooperative Education.")

†680 SELECTED TOPICS IN WELDING TECHNOLOGY (1-3). *Hours by arrangement.* Selected topics in Welding Technology not covered by regular catalog offerings. Course content and unit credit to be determined by the Technology and Applied Sciences Division in relation to community student need and/or available staff. May be offered as a seminar, lecture or lecture/laboratory class.

690 SPECIAL PROJECTS (1-2). *Hours by arrangement. Prerequisite: 3.0 GPA in subject field.* Independent study in a specific field or topic, directed by an instructor and supervised by the Division Director. Students are eligible to request approval of a special project only after successfully completing at least two college-level courses in the subject field. (Note: Students normally may receive credit for only one Special Project per semester.)

700 TIG WELDING TECHNOLOGY (4). *Two lecture and six lab hours per week. Prerequisite: W.T. 300, previous course in welding or equivalent.* Practical experience in welding of aluminum, steel, and stainless steel. The types of weldments made are corner, fillet and butt. Study of TIG (GTAW) welding aluminum, steel and stainless steel, basic metallurgy and welding symbols as they apply to blueprints. Extra supplies required.

President
Lois A. Callahan

INSTRUCTIONAL SERVICES

Gilbert B. Gossett
Dean of Instruction

Michael B. Kimball
Director of Instructional Services

ACADEMIC DIVISIONS

Leo N. Bardes
Director, Fine and Performing Arts

Michael J. Clemens
Director, Social Science

Clifford G. Giffin
Director, Physical Education/Athletics

Cecilia A. Hopkins
Director, Business

Ardash Ozsogomonyan
Director, Mathematics and Science

James Petromilli
Director, Electronics

Wilson G. Pinney
Director, Language Arts

John C. Williams
Director, Technology
and Applied Sciences

STUDENT SERVICES

Allan R. Brown
Dean of Student Services

Josué Hoyos
Director of Special Programs
and Services

John E. Mullen
Director of Admissions
and Records

Jackman L. LeBlanc
Director of College
Readiness Program/
EOPS Multicultural Center

OPERATIONS

Lynn Pontacq
Director of Operations

KCSM

Vacant
Director of Educational
Broadcasting and Services

(Date of original appointment follows name.)

Acena, Albert A. (1966)
History
B.A., Seattle University
M.A., Ph.D., University of Washington

Alexandre, Alvin A. (1961)
English, Journalism.
B.A., M.A., New York University

Allende, David H. (1967)
Art
B.A., M.A., University of Tulsa

Anderson, Robert D. (1959)
Physics
A.B., University of Calif., Berkeley
M.S., Purdue University

Andrews, Edgar H. (1958)
History, Humanities
A.B., M.A., University of Calif., Berkeley

Andrews, Garlan (1969)
Music
B.M., M.M., Indiana University

Angier, Jeanne (1965)
English
B.A., M.A., Washington University, St. Louis

Arnold, Marlene C. (1965)
Nursing
B.S., R.S., College of St. Scholastica
M.S., University of Calif., San Francisco

Atkins, Gregg T. (1975)
Coordinator, Library Services
A.A., College of San Mateo
B.A., M.L.S., University of California, Berkeley

Avakian, John S. (1984)
Electronics
B.A., M.A., California State Univ., Los Angeles

Bardes, Leo N. (1965)
Director, Fine & Performing Arts Division
B.A., M.A., San Francisco State University

Beale, Paul L. (1963)
Accounting
B.S., M.B.A., Stanford University

Beaty, Donald E. (1967)
Physics
B.A., M.A., Whittier College
M.A., Colorado College

Bell, James K. (1963)
English
B.A., University of Calif., Santa Barbara
M.A., University of Calif., Berkeley

Bennett, Robert (1967)
Business Technology Center
B.S., Montana State
M.A., Eastern Montana State
Ed.D., University of California Berkeley

Berensmeier, Barbara Jean (1956)
Physical Education
A.B., San Francisco State University

Bernasque, Jean A. (1973)
Dental Assisting
A.A., College of San Mateo

Berry, Daniel A. (1958)
Business Administration
B.S., Armstrong College
A.B., M.A., University of Calif., Berkeley

Berry, Fredrick J. (1968)
Music
B.M., M.M., Southern Illinois University

Beuttler, Rose Marie P. (1965)
French, Re-entry Program
B.A., University of Calif., Berkeley
A.M., Stanford University

Bitton, Lou S. (1983)
Electronics

Blitz, George A. (1974)
Botany, Biology,
Landscape Design
B.S., A.B., M.A., University of Calif., Berkeley

Blust, Dale W. (1965)
Aeronautics, Counselor
A.S., College of San Mateo

Bogan, Harold S. (1974)
Security
A.A., College of San Mateo

Bowman, Don (1981)
Interior Design
B.A., M.A., San Jose State University

Bramlett, George E. (1969)
Electronics Technology, Counselor
B.A., Calif. State Univ., Fresno
M.A., San Jose State University

Brannock, Patricia A. (1983)
Word Processing
B.A., M.A., San Francisco State University

Brixen, Roy E. (1981)
Electronics
B.A., M.A., San Jose State University

Brown, Allan R. (1959)
Dean of Student Services
A.B., A.M., Stanford University
Ph.D., Stanford University

Brown, Kathryn (1977)
Learning Skills
A.A., College of San Mateo
B.A., San Francisco State University
M.S., San Diego State University

Brusin, Michael J. (1964)
History, Economics
B.A., M.A., San Jose State University

Bucher, Michael C. (1969)
Biology
B.A., M.A., University of California, Los Angeles

Burdash, Elizabeth A. (1965)
Psychology
B.A., Boston University
M.S., M.I.T.

Burke, Michael C. (1976)
Mathematics
B.A., University of California, Santa Barbara
M.A., Stanford University
M.A., University of Oregon

Callahan, Lois A. (1968)
President
B.S., Southwest Missouri State University
M.A., California State University, Chico
Ed.D., University of Southern California

Cameron, D. Bruce (1968)
English
A.A., Santa Rosa Junior College
B.A., Hunter College
M.A., Columbia University

Camps, Albert (1967)
Electronics Technology
A.A., City College of San Francisco

Castillo, Richard P. (1969)
Spanish
B.A., University of Calif., Berkeley
M.A., Middlebury College, Vermont

Cate, Donald E. (1964)
Political Science
B.A., Pacific University
M.A., Oregon State University
Ph.D., Stanford University

Chaw, Gladys (1973)
Librarian
A.A., City College of San Francisco
B.A., Calif. State University, Sacramento
M.L.S., University of California, Berkeley

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Chowenhill, Dean E. (1967)
Drafting Technology,
Counselor
A.A., Los Angeles Harbor College
B.A., M.A., San Jose State
University

Chriss, Michael (1966)
Astronomy
B.S., M.S., University of Arizona

Chroman, Peter (1969)
Sociology,
Anthropology
A.B., University of Illinois
M.A., San Francisco State
University

Clarke, Rosalee (1980)
Mathematics
A.B., Stanford University
M.S., San Jose State University

Clay, Michael E. (1983)
Chemistry
B.A., University of West
Virginia
Ph.D., Arizona State
University

Clemens, Michael J. (1967)
Director,
Social Science Division
A.B., M.A., Columbia University

Cohn, Adrian A. (1963)
English
B.S., M.S., Ph.D., University of
Wisconsin

Cons, Jean M. (1976)
Anatomy, Physiology
B.A., San Francisco State
University
M.A., Ph.D., University of
California, San Francisco

Cooke, Stuart T. (1964)
History, Humanities
A.B., Lafayette College
M.A., University of Pennsylvania

Cordes, Henry (1964)
German
B.A., M.A., State University of
New York, Buffalo
Ph.D., Stanford University

Crawford, Douglas B. (1960)
Mathematics, Counselor
A.B., A.M., Stanford University

Crawford, Zelte (1969)
Ethnic Studies
B.S., M.A., Western Michigan
University
Ph.D., Stanford University

Cron, John A. (1968)
Business
A.B., M.A., San Francisco State
University

Cullen, James A. (1985)
Manufacturing Technology

Curren, Terence B. (1962)
Zoology, Physical Anthropology
B.A., University of Calif., Berkeley
M.A., San Francisco State
University

Datson, Brad (1983)
Coordinator of Apprenticeship
Programs
B.A., Sonoma State University

Davis, Gregory (1966)
Political Science, Humanities
A.B., A.M., Stanford University

Davis, W. Lloyd (1981)
Mathematics
B.A., Harvard College
M.S., Stanford University

De Freitas, Louis (1966)
Welding Technology
B.V.E., M.A., San Francisco State
University

De Gregorio, Michael L. (1957)
Chemistry, Physics
A.B., A.M., San Francisco State
University

Dehnel, George S. (1962)
Biology, Health Science
B.A., San Diego State University
Ph.D., University of Calif.,
Berkeley

Denney, Clifford O. (1975)
Chemistry
B.S., Portland State University
M.Ed., M.S., Ph.D., Oregon State
University

DeWitt, Carl W. (1981)
Computer & Information Science
B.A., San Francisco State
University
M.A., University of San Francisco

Dickey, William J. (1966)
Physical Education,
Football Coach
B.S., Utah State

Diskin, Thomas R. (1984)
Electronics
B.S., California Polytechnic State
University, San Luis Obispo

Donner, Richard C. (1963)
Physical Education
B.A., M.A., San Jose State
University

Dorsett, Darrel (1984)
Electronics Microcomputer
Instructional Developer
B.S., Illinois State University

DuRant, Patricia (1981)
Engineering
B.S., Georgia Institute of Technology
M.S., Arizona State University

Edmundson, James S. (1964)
French
B.A., M.A., University
of Washington
B.S., Georgetown University
Ph.D., Columbia University

Eggers, Arthur A. (1981)
Electronics
A.A., College of San Mateo

Fark, Roland H. (1969)
Marine Biology, Ecology
B.A., B.S., M.A., Bowling Green
State University

Faure, Emile L. (1970)
Mathematics
B.A., San Diego State University
M.A., Claremont Graduate School

Fiedler, John C. (1975)
English
A.B., Kansas State Teachers
College
M.A., University of Missouri
Ph.D., University of
California, Berkeley

Fisher, Anita (1969)
Psychology
B.A., University of Southern Calif.
Ph.D., Stanford University

Fitzgerald, Maurice J. (1964)
English
B.S., University of San Francisco
A.M., Stanford University
Ed.D., University of Southern
California

Fraker, Wilson P. (1968)
Business
A.B., Harvard
M.B.A., University of California,
Berkeley

Frasseti, Gerald J. (1967)
English, Foreign Student Advisor
B.A., St. Mary's College
M.A., San Francisco State
University

Galindo, Donald V. (1956)
Art
A.B., University of Calif., Berkeley
B.A.E., M.F.A., California College
of Arts and Crafts

- Gattmann, Eric** (1964)
Education, Counselor
A.B., University of Calif., Berkeley
M.A., San Francisco State University
- Gershenson, Bernard M.** (1984)
English
A.B., University of Illinois
M.A., University of Kentucky
M.A., San Francisco State University
- Gibson, Ellen Ross** (1970)
Photography, Art
B.F.A., Virginia Commonwealth University
M.A., San Francisco State University
- Giffin, Cliff G.** (1958)
Director, Physical Education/
Athletics Division
B.S., M.S., University of Oregon
- Gill, John M.** (1969)
English
B.A., M.A., University of Washington
Ph.D., New York University
- Giniere, Ann** (1981)
Cosmetology
- Glass, Fred B.** (1984)
Electronics Instructional Designer
B.A., University of Calif., Los Angeles
M.A., San Francisco State University
- Glen, William** (1957)
Geology, Paleontology, Counselor
B.S., Brooklyn College
M.A., University of Calif., Berkeley
Ph.D., Union Graduate School
- Gomes, Lyle** (1984)
Photography, Art
B.A., M.A., San Francisco State University
- Gossett, Gilbert B.** (1955)
Dean of Instruction
B.A., M.A., University of Pacific
- Graham, Alexander** (1966)
Horticulture
Scottish Diploma Horticulture, West Scotland, College of Agriculture
Diploma Horticulture, Royal Botanic Garden, Edinburgh, Scotland
National Diploma Horticulture, Royal Horticulture Society
- Griffiths, William S.** (1982)
Computer & Information Science
B.A., University of Calif., Los Angeles
M.A., University of Calif., Irvine
- Gustavson, Charles E.** (1966)
Music
A.B., M.A., San Francisco State University
- Halualani, Jennie** (1963)
School Nurse
R.N., St. Francis Hospital School of Nursing, Hawaii
B.S.N.E., St. Mary's College, Kansas
M.S., University of California, San Francisco
- Hancock, John C.** (1965)
Music
A.B., San Francisco State University
M.A., San Jose State University
- Harris, Edward M.** (1968)
Mathematics
B.S., University of Colorado
M.A., San Francisco State University
- Harris, Richard V.** (1965)
Physical Education
A.B., M.A., Humboldt State College
- Harrison, Kenneth W.** (1969)
Music
B.M., University of Southern Calif.
M.A., San Francisco State College
- Heitz, Carol Rhodabarger** (1964)
Career & Personal Development, Counselor
A.B., University of California, Santa Barbara
M.A., San Francisco State University
M.S., California State University, Hayward
- Henderson, Frances C.** (1967)
Nursing
B.S., R.N., Dillard University
M.S., University of California, San Francisco
Ed.D., Nova University
- Herman, Mary M.** (1978)
Speech Pathologist
B.A., M.A., San Francisco State University
- Heyeck, Robin R.** (1965)
English
A.B., A.M., Stanford University
- Hills, Dorothy** (1968)
Supervisor, Child Care Center
B.S., University of Oregon
M.A., San Francisco State University
- Hogan, John H.** (1981)
Adaptive Physical Education
B.S., M.A., San Jose State University
- Holmes, Paul C.** (1964)
English
B.A., University of Calif., Berkeley
M.A., San Francisco State University
- Holmgren, Roy H.** (1957)
Mathematics
A.B., M.A., University of Calif., Berkeley
- Hopkins, Cecilia Ann** (1958)
Director, Business Division
B.S., Montana State College
M.A., San Francisco State University
M.A., San Francisco State University
Ph.D., Calif. Western University
- Howe, Robert S.** (1965)
Career & Personal Development, Counselor
A.B., San Jose State University
A.M., Stanford University
- Hoyos, Josué E.** (1972)
Director, Special Programs & Services
B.A., M.A., Pacific Union College
- Ingraham, Joann** (1962)
Physical Education
A.B., San Jose State University
- Innis, James E.** (1967)
Health Science
A.B., M.A., University of Northern Colorado
- Ireson, Amy G.** (1963)
Consumer Arts & Science, Counselor
B.S., Mary Washington State University
M.S., Virginia Polytechnic Institute-State University
- Isaacson, Brian** (1980)
Aeronautics
- Jackson, James L.** (1959)
Mathematics
B.A., Beloit College
M.A., University of Calif., Berkeley
- Jacques, James J.** (1969)
Physical Education
B.A., M.A., San Jose State University
- Janatpour, Mohsen** (1983)
Chemistry, Physics
B.A., M.S., San Jose State University

Janssen, William A. (1965)

Business
A.B., M.A., San Jose State University

Jeffers, Mary Lloyd (1963)

Political Science
A.B., M.A., Tennessee State Univ.

Johnson, Joseph R. (1979)

Welding Technology
A.S., College of San Mateo

Jorgenson, Wallace H. (1969)

Aeronautics
A.A., College of San Mateo
B.V.E., San Francisco State University

Joslin, Rex J. (1964)

Biology
B.S., Wisconsin State College
M.S., University of Illinois

Karl, John E., Jr. (1962)

Anatomy, Physiology
B.A., Allegheny College
M.S., University of Kentucky
Ph.D., Louisiana State University

Kaufmann, Walter M. (1966)

Sociology, Psychology
B.A., J.D., University of Calif., Berkeley
M.A., San Francisco State University

Kellejian, Robert (1962)

Electronics Technology
A.B., M.A., San Francisco State University

Keller, Robert M. (1958)

Chemistry
A.B., M.A., San Jose State University

Kennedy, Kenneth D. (1967)

Political Science
A.A., College of San Mateo
B.A., M.A., San Francisco State University

Kennedy, Vance A. (1976)

Business
A.A., San Jose City College
B.S., M.B.A., San Jose State University

Keys, Noel W. (1966)

Psychology, Psychological Services
B.S., Denison University
M.A., Duke University
Ph.D., University of North Carolina

Kimball, Michael B. (1968)

Director, Instructional Services & Development
B.A., Stanford University
M.A., San Francisco State University

Kirk, John R. (1970)

Economics
B.A., University of California, Berkeley
M.A., San Jose State University

Kirsch, Theodore (1984)

Electronics
B.A., San Jose State University
M.A., San Francisco State University
Ed.D., Oregon State University

Kowerski, Robert C. (1980)

Chemistry
B.S., Illinois Institute of Technology
Ph.D., Stanford University

Landmann, Eva M. (1975)

Nursing
R.N., Central Middlesex Hospital, London
B.S.N., University of Alberta
M.S.N., San Jose State University

Leach, Walter J., Jr. (1956)

Psychology, Sociology
B.A., University of California, Los Angeles
M.A., University of California, Santa Barbara

Le Blanc, Jackman L. (1974)

Director, College Readiness Program
B.A., United States International University
M.Ed., University of California, Santa Barbara

Lee, Priscilla T. (1967)

Anthropology
A.B., A.M., Ph.D., Stanford University

Leroi, Frank B. (1968)

Economics
B.A., University of California, Los Angeles
M.A., San Jose State University

Linder, Doris H. (1967)

History
B.A., M.A., Stanford University
Ph.D., University of Minnesota

Lokken, Arlys K. (1963)

Nursing
R.N., University of North Dakota School of Nursing
B.S., University of North Dakota
M.S., University of California, San Francisco

MacDonald, Lorne (1968)

Electronics Technology
B.S., Pacific State University

Mahood, Marcia (1960)

Business, Re-entry Program, Counselor
B.A., M.A., Michigan State University
M.S., Calif. State Univ., Hayward

Mangan, George A. (1982)

Video Instructional Developer
A.A., College of San Mateo
B.A., Calif. State Univ., Chico
M.A., Macquarie Univ., Sydney, Australia

Mantabe, Musonda D. (1969)

History, Counselor
B.A., Syracuse University
M.A., Lone Mountain College

Marks, Jacqueline (1979)

Business Administration
A.A., Pensacola Junior College
B.A., Pacific College
M.B.A., Golden Gate University

Marshall, R. Galen (1964)

Music
A.B., M.A., San Francisco State University

Martinez, Thomas A. (1976)

Physical Education, Athletics
B.A., San Francisco State University
M.A., Azusa Pacific College, California

McCracken, Ruth (1980)

Nursing
B.S., Michigan State University
M.S.N.Ed., Wayne State University

McCue, Mary J. (1955)

English
B.A., Marygrove College
M.A., University of Michigan

McDonough, Joseph M. (1966)

Psychology
A.B., Princeton University
M.S., University of Miami
Ph.D., Michigan State University

Mellor, Sandra L. (1974)

Business
B.A., M.A., San Jose State University

Michael, Robert E. (1965)

Business Administration, Counselor
B.S., M.S., San Jose State University
B.F.T., American Institute for Foreign Trade

Monroe, Howard C. (1961)

Ecology, Marine Biology
B.S., University of Toledo
M.A., University of Calif., Los Angeles

- Montgomery, Douglas B.** (1963)
Broadcasting Arts
B.S., M.A., San Diego State University
- Morehouse, Steven N.** (1977)
Coordinator of Counseling Services
A.A., College of San Mateo
B.A., San Francisco State University
M.S., Calif. State Univ., Hayward
- Mullen, Edward C.** (1955)
English
A.B., M.A., San Jose State University
- Mullen, John E.** (1966)
Director of Admissions & Records
B.S., Stanford University
M.A., University of California, Riverside
- Multhaup, Ernest L.** (1964)
Engineering, Counselor
B.S., M.S., University of North Dakota
- Musgrave, Diane W.** (1970)
German
A.B., M.A., Stanford University
- Newell, Robert C.** (1980)
Electronics
B.A., B.Ed., M.A., Washington State University
- Noce, John L.** (1961)
Physical Education
A.B., University of Pacific
M.A., San Francisco State University
- Norman, Colette J.** (1974)
Librarian
B.A., Southern Univ., Baton Rouge
M.A., San Jose State University
- Notley, Edmond L.** (1981)
Electronics
B.A., College of Puget Sound
- Odum, Daniel C.** (1964)
Broadcasting Arts, Counselor
A.B., San Diego State University
- Olson, Robert A.** (1956)
Speech
B.S., Wisconsin State College
M.A., San Jose State University
- O'Mahony, Rosalie M.** (1965)
Mathematics
B.S., Loyola University
M.S., University of Notre Dame
Ph.D., Univ. of Southern Calif.
- Orozco, Adrian** (1969)
Counselor
S.T.B., St. Alexis College, Rome, Italy
M.Ed., Loyola University, Chicago
- Owen, William H.** (1963)
Machine Tool Technology
A.B., M.A., San Francisco State University
- Owens, Peter H.** (1971)
Chemistry
B.S., Mass. Institute of Technology
M.S., Oregon State University
Ph.D., University of Calif., Berkeley
- Ozsogomonyan, Ardash** (1968)
Director, Math/Science Division
B.S., Robert College, Istanbul
M.S., University of California, Los Angeles
Ph.D., Univ. of Calif., Berkeley
- Paoli, Patricia J.** (1979)
Speech
A.B., University of Calif., Berkeley
M.A., California State University, Hayward
- Petit, Susan Y.** (1968)
English
B.A., Knox College
M.A., Purdue University
M.A., College of Notre Dame
- Petromilli, James** (1973)
Director, Electronics Division
A.A., College of San Mateo
B.A., M.A., San Francisco State University
- Pex, Betty C.** (1960)
English
Ph.D., A.M., University of Chicago
- Pinney, Wilson G.** (1961)
Director, Language Arts Division
A.B., Trinity College
Ed.M., Harvard University
- Piserchio, Rosemary** (1973)
Business, Counselor
B.A., M.A., San Francisco State University
M.S., California State University, Hayward
- Polansky, Stephen H.** (1968)
Political Science
B.A., Princeton University
J.D., Harvard Law School
- Porter, Donald T.** (1963)
Philosophy, Humanities
B.S., M.A., University of Calif., Berkeley
- Pounds, Robert D.** (1970)
Physical Education
B.S., University of California, Los Angeles
- Price, Dolores** (1967)
Physical Education
B.S., M.Ed., Oregon State University
- Price, Joe A.** (1970)
Art
B.S., Northwestern University
M.A., Stanford University
- Prindle, Philip G.** (1958)
Speech
B.A., Concordia College, Minnesota
M.A., Washington State University
Ph.D., Stanford University
- Psomas, Merle Cutler** (1981)
English
B.A., San Francisco State University
M.A., San Francisco State University
- Pumphrey, Jean** (1967)
English
B.A., Denison University
M.A., San Francisco State University
- Ramsey, Carolyn Ogletree** (1974)
Career & Personal Development, Counselor
B.A., M.S., San Francisco State University
- Rankin, Theodore L.** (1971)
Administration of Justice
B.S., University of Southern California
M.P.A., Golden Gate University
- Rascon, Vincent P.** (1963)
Art
B.A., University of Texas
M.F.A., Los Angeles County Art Institute
- Rategan, Edward H.** (1968)
Computer & Information Science
B.A., J.D., Marquette University
- Rawlings, Betty R.** (1973)
Cosmetology
- Richmond, Kern** (1955)
Political Science, Counselor
A.B., M.A., University of Calif., Berkeley
- Roberts, James K.** (1980)
Floristry
AIFD, SE Dip. of Great Britain
- Rock, Jo Ann C.** (1964)
Cooperative Education, Counselor
B.S., Pacific University
M.A., San Francisco State University
- Rohrbacher, Richard W.** (1968)
Speech, English, Broadcasting Arts
A.B., University of the Pacific
M.A., Washington State University

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Rose, Jacquelyn (1977)
College Specialist
A.A., College of San Mateo
B.A., San Francisco State University

Ross, Hugh (1961)
Accounting
B.A., M.A., University of Virginia
Ph.D., Stanford University

Rubler, Selma (1964)
Nursing
R.N., Beth Israel Hospital
B.S., M.S., University of Calif., San Francisco

Rundberg, William B. (1967)
Mathematics
B.A., San Jose State University
M.A., Bowdoin College

Rush, Robert D. (1969)
Physical Education
B.A., M.A., San Jose State University

Saxton, Lloyd O. (1955)
Psychology
A.B., University of Calif., Berkeley
M.A., San Francisco State University
Ph.D., University of Pacific

Scholer, Linda K. (1984)
English
B.A., North Central College
M.Ed., University of Illinois

Schoenstein, Edward G. (1967)
Technical Art/Graphics
B.A., M.A., California State University, Chico
I.D.S.A.

Schwartz, Edwin A. (1957)
Psychology
B.A., New York University
M.A., New Mexico Highlands University

Scott, Stanley R. (1964)
Drafting Technology
B.S., Iowa State College
M.A., San Jose State University

Searle, John B. (1973)
Chemistry
B.S., Ph.D., Bristol University

Seubert, Edwin A. (1980)
Technical Art/Graphics
A.A., College of San Mateo

Silva, Caroline R. (1962)
Physical Education
A.B., M.A., San Francisco State University

Singh, Balbir (1964)
Mathematics
B.S., St. John's College, Agra University, India
M.A., Stanford University
Ph.D., University of Southern California

Smith, Robert W. (1965)
Mathematics, Engineering, Humanities, Architecture, Counselor
B.C.E., Clarkson College of Technology
M.E., University of Calif., Berkeley

Smith, Win (1973)
Supervisor, Media Center
B.A., M.A., University of Calif., Los Angeles

Sonner, Grace Y. (1970)
Consumer Arts & Science
B.A., San Jose University
M.S., Texas Woman's University

Speer, Lee W. (1965)
English
B.S., University of Scranton
M.A., San Francisco State University

Stack, Dennis M. (1968)
Technical Drafting
B.S., Calif. State Polytechnic University
M.A., San Jose State University

Statler, Richard G. (1972)
Physical Education, Health Education
B.S., M.S., California State University, Hayward

Stock, Nancy J. (1974)
Cosmetology
A.A., Santa Monica City College

Stocker, Angela R. (1964)
Dance, Physical Education
B.A., Miami University
M.A., San Francisco State University

Stringari, Lawrence T. (1969)
Psychological Services
B.A., M.A., San Francisco State University

Tarleton, Leah (1977)
School Nurse
B.S., University of Iowa
M.A., San Francisco State University

Thompson, Omer B. (1980)
Electronics
A.A., College of San Mateo
B.V.E., San Francisco State University

Thur, Jack (1981)
Physical Education
B.S., Michigan State University
M.A., Azusa Pacific College

Tollefson, Patricia A. (1984)
English
B.A., M.A., San Francisco State University
M.A., University of California, Davis

Trouse, Ronald R. (1963)
English
B.A., University of Calif., Berkeley
M.A., San Francisco State University

Turner, John (1968)
English
B.A., University of California, Berkeley

Upshaw, Debbie (1975)
Counselor
B.S., Central State University
M.Ed., University of Cincinnati

Wakeham, Duane A. (1965)
Art
B.A., Michigan State University
A.M., Stanford University

Weaver, Barlow A. (1968)
Librarian
B.A., University of Texas
M.S. in L.S., Columbia University

Weintraub, Alan L. (1962)
Geography
B.S., De Paul University, Ill.
M.S., University of Chicago
Ph.D., Michigan State University

West, David (1973)
B.A., San Francisco State Univ.
M.S.W., University of Calif., Berkeley
M.A., Ph.D., Stanford University

Williams, Agnes (1969)
Cosmetology

Williams, John C. (1963)
Director, Technology & Applied Sciences Division
A.B., M.A., San Francisco University
M.S., University of Southern California

Williams, Mark B. (1981)
Electronics
B.A., M.Ed., University of Illinois

Williamson, Richard A. (1963)
English, Film
B.A., M.A., San Francisco State University

Williamson, Stuart (1965)

Biology
A.B., Harvard University
M.A., San Francisco State
University

Willis, Janice M. (1977)

Business
B.S., Pennsylvania State University
M.A., San Francisco State
University

Witt, Irving M. (1963)

Sociology
B.A., Ph.D., University of Calif.,
Berkeley
M.A., University of Chicago

Wittwer, Betty J. (1965)

Business, Counselor
B.A., M.A., San Jose State
University

Witzel, Elizabeth L. (1966)

Dental Assisting
A.A., City College of San Francisco
B.A., San Francisco State University

Yoshimura, Yoneo (1978)

Counselor
B.A., M.S., San Francisco
State University

Young, Frank H. (1969)

Mathematics
A.B., M.A., San Francisco
State University
Ed.D., University of Southern
California

Zempel, William H. (1964)

Meteorology, Physics
B.A., San Jose State University
M.N.S., Arizona State University

Zimmerman, Paul C. (1967)

Architecture
B.Arch, M.Arch, University of
California, Berkeley
A.I.A.

Zones, Christie P. (1968)

Geology
A.B., University of Pennsylvania
M.S., University of Nevada

(Date of retirement follows name)

Edla R. Walter (1959)
Librarian

Leonora Y. Brem (1960)
Health Education

Gladys L. White (1960)
Business

Dorothy F. Herrington (1962)
French

Roland K. Abercrombie (1963)
Business

Dr. William L. Roach (1963)
Psychology

Carol E. Boyd (1963)
Home Economics

Dr. David G. Rempel (1964)
History, Political Science

Marjorie L. Hoffman (1965)
Mathematics

Francis M. Coe (1966)
Agriculture

Alice W. Danielson (1968)
Home Economics

Ainslie Harris (1968)
English

Mildred H. Stickney (1968)
Business

Fredric Roehr (1968)
Music

Dr. Stanley L. Sharp (1970)
German, English, Speech

Ralph W. Likens (1971)
Data Processing

Mildred S. Justesen Corcoran (1971)
Political Science

Woodson F. Hocker (1972)
Spanish

Dell M. Fishback (1972)
Health Education, Counselor

Dr. Claude M. Anderson (1972)
Astronomy

Helen M. Foley (1972)
Coordinator, Community Programs

Ruth H. Weston (1973)
Assistant Dean of Students

Dr. Jacob H. Wiens (1973)
Director, College of the Air

Fred J. Clark (1974)
Physics

William R. DeHart (1974)
Technical Illustration

William A. Goss (1974)
History, Counselor

Anne M. Grubbs (1974)
Chairperson, Health Occupations
Division

James A. Ice (1974)
Chemistry

Claire Langston (1974)
Dental Assisting, Counselor

Zoia V. Petelin (1974)
Cosmetology

Marjorie M. Wheeler (1974)
Early Childhood Education

Marvin Alexander (1975)
Chairperson, Social Sciences
Division

Lorraine Bush (1975)
Cosmetology

Amerigo T. Ciani (1975)
Librarian

Dr. William J. Justice (1975)
Business Administration,
Counselor

Dr. Francis A. Smart (1975)
Business Administration

Ruth R. Teel (1975)
English

Dr. Karl Grossenbacher (1976)
Biology

Clifford V. Horn (1976)
Business

Margreta S. Husted (1976)
Chemistry

Alexander J. Murphy (1976)
English, Counselor

Edmond O. Shinn (1976)
Guidance, Testing, Counselor

Dr. Rex J. Bartges (1977)
Biology

Jeanne Blanchette (1977)
Nursing

Harry E. Clinton (1977)
Business

Yolande S. Hilpisch (1977)
College Nurse

Marvin A. Kolber (1977)
Biology, Zoology

Edward A. Kusich (1977)
Engineering, Mathematics

Dr. John A. Montgomery (1977)
Business Administration

Harry W. Prochaska (1977)
Art

Elizabeth K. Rempel (1977)
Art

Gilbert G. W. Steed (1977)
Art

Alice P. Wilson (1977)
English

John B. Bestall (1978)
Engineering

Herbert W. Free (1978)
Real Estate

Winifred P. Stetson (1978)
Business, Counselor

Robert A. Brauns (1979)
Play Production

John B. Dooley (1979)
Librarian

Albert K. Fine (1979)
Technical Drafting

Herbert H. Hudson (1979)
Physical Education, Counselor

D. Richmond Le Gallais (1979)
Chemistry

Chauncey J. Martin (1979)
Machine Tool, Welding
Technology

Jeanette J. Mathers (1979)
Speech, English

Ellentine M. Mullaney (1979)
English

Samuel S. Rolph (1979)
Play Production

Russell M. Stoker (1979)
Psychology

Bernard E. Woods (1979)
Business Administration

John D. Walsh (1979)
Administration of Justice

Raymonde M. Cadol (1979)
French

Raymond I. Balsley (1980)
Physical Education

Merrill C. Hansen (1980)
Speech

Jack Daniels (1980)
Art, Counselor

Ralph H. Bierce (1980)
English

- Carl A. Wagner** (1980)
History, Political Science,
Permanent Resident (Immigrant)
Student Advisor
- David D. White** (1980)
English
- Ward J. Fellows** (1980)
Philosophy
- Roger W. C. Clemens** (1981)
Life Science
- Louise B. Hazelton** (1981)
English, History
- Myrtle T. Williams** (1981)
Cosmetology
- Virginia Burton** (1981)
Physical Education
- J. Kyle Clinkscales** (1981)
Chemistry, Counselor
- Philip D. Morse** (1981)
Director, Special Services
- Kenneth E. Blust** (1982)
Aeronautics
- John H. Goehler** (1982)
Political Science
- Valdemer A. Mendenhall** (1982)
Aeronautics
- Allen Tracy** (1982)
Chemistry
- Jewell Casstevens** (1982)
Cosmetology
- Richard L. Crest** (1982)
Music
- Kathleen M. Burton** (1982)
Business
- Raymond J. Pflug** (1982)
English
- Florence I. Jaffy** (1983)
Economics
- William Harriman** (1983)
English
- Rudolph M. Lapp** (1983)
History
- David Savidge** (1983)
English
- Robert L. Shapiro** (1983)
Electronics Technology
- Stuart R. Carter** (1983)
Physical Education
- Dorothy J. Crouch** (1983)
Biology
- Charles M. Devonshire** (1983)
Psychology
- Aline Fountain** (1983)
Director of Counseling Services
- Joe C. Hagerty** (1983)
Director, Health & Service
Careers Division
- Anita J. Lehman** (1983)
English
- Rosa I. Sausjord** (1983)
Spanish
- Herbert R. Warne** (1983)
Director of Admissions & Records
- H. Sanford Gum** (1984)
Drafting
- Richard S. Phipps** (1984)
Political Science, Career &
Personal Development, Counselor
- Thomas W. George** (1984)
Business
- George Sachen** (1984)
Aeronautics
- Marian R. Anenson** (1984)
Nursing
- George Angerbauer** (1984)
Electronics Technology, Counselor
- John J. Berglund** (1984)
Aeronautics
- Robert N. Coulson** (1984)
Machine Tool Technology
- Jane E. Hanigan** (1984)
English, Re-Entry Program
- Maureen E. Kennelly** (1984)
Nursing
- Raymond Lorenzato** (1984)
Art
- Virginia A. McMillin** (1984)
Nursing
- Dr. Frank M. Fahey** (1985)
History
- Barton Cooper** (1985)
History
- Daniel Sullivan** (1985)
Business

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