Associate Degree Programs and Certificates
ASSOCIATE DEGREE PROGRAMS AND CERTIFICATES

Courses that satisfy a degree or certificate requirement must be completed with a “C” grade or higher (P/NP grading not accepted).

ACCOUNTING.......................... ✦
Bookkeeping.......................... ✦

AMERICAN SIGN LANGUAGE .......... ✦

ART
Studio Arts for Transfer (AA-T)..........
Drawing and Painting.................
Graphic Design........................

AUTOMOTIVE TECHNOLOGY .......... ✦
Advanced Engine Performance and Emissions ........
ASEP ..................................
ASSET ................................
Brakes and Front-End ..................
Engine Performance and Drive Train....

BIOLOGICAL SCIENCES ............... ✦
Biological Sciences: Pre-Allied Health

BUSINESS
Business Administration for Transfer (AS-T)..........
Business Administration ..........
Business Data Management ...........
Business-General .............
Database Administration ...........

BUSINESS OFFICE TECHNOLOGY ..... ✦
Administrative Assistant ...........
Executive Assistant................
Account Clerk .....................
Front Office Receptionist ..........
Office Assistant Level I ..........
Office Assistant Level II ........
Office Professional .............
Office Software Specialist Level I ....
Office Software Specialist Level II ...

CADD TECHNOLOGY
Building Design Industry ..........
Manufacturing Industry ...........

CALIFORNIA STATE UNIVERSITY
GENERAL EDUCATION BREEDTH....

CHEMISTRY ..........................

CHILD DEVELOPMENT
Early Childhood Education for Transfer (AS-T)..........
Infants and Toddlers ..............
Preschool Children ..............

COMMUNICATION ..................
Communication Studies for Transfer (AA-T)..........

COMPUTER AND INFORMATION SCIENCE
Networking, Security and System Administration ......
Web Development ..................
Cisco Certified Network Associate ..... ✦
Cisco Network Professional ......
Computer Programming ..........
Computer Support Technician ......
Web Design .....................
Web Programming ................

ELEMENTARY EDUCATION ..........
Elementary Teacher Education for Transfer (AA-T)......

ENGINEERING
Civil Engineering ...................
Electrical & Computer Engineering ..
Mechanical & Aerospace Engineering ........

ENGLISH ..........................
English for Transfer (AA-T) ....

ENTREPRENEURSHIP-SMALL BUSINESS MANAGEMENT ..... ✦

ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT
Environmental Management ....
Environmental Technician ........
Occupational Safety and Health (OSH) Management .....
Occupational Safety and Health (OSH) Technician .....

EXERCISE SCIENCE ...............
Recreational Leadership-
School-Based Programs ........

GENERAL STUDIES
Business & Technology ............
Communication & Language Arts...
Humanities & Fine Arts ..........
Lifelong Health, Well-Being and Self-Development ....
Science & Mathematics ..........
Social & Behavioral Sciences ....

GRAPHIC DESIGN ..................
Digital Photography ............
Web Graphics ...................

HISTORY ..........................
History for Transfer (AA-T) ....

INTERSEGMENTAL GENERAL
EDUCATION TRANSFER CURRICULUM (CSU OR UC) ....

KINESIOLOGY FOR TRANSFER (AA-T) ........

KUMEYAA STUDIES ........................

MANAGEMENT .....................

MATHEMATICS .....................
Mathematics for Transfer (AS-T) ....

MUSIC
Music for Transfer (AA-T) ........
Music Education ................
Music Industry Studies ............

ORNAMENTAL HORTICULTURE
Arboriculture .....................
Floral Design .....................
Golf Course and Sports Turf Management ....
Irrigation Technology ..........
Landscape Design ............
Landscape Technology ........
Nursery Technology ..........
Sustainable Urban Landscapes ..
Basic Ornamental Horticulture ....

PARALEGAL STUDIES ................

PHILOSOPHY FOR TRANSFER (AA-T) ........

PHYSICAL SCIENCE ..................

PHYSICS ..........................
Physics for Transfer (AS-T) ....

POLITICAL SCIENCE FOR TRANSFER (AA-T) ........

PSYCHOLOGY FOR TRANSFER (AA-T) ........

REAL ESTATE ......................
Broker’s License ..................

SOCIAL WORK ........................

SOCIOLOGY FOR TRANSFER
(AA-T) ..........................

SPANISH ..........................
Spanish for Transfer (AA-T) .......

SURVEYING ..........................

UNIVERSITY STUDIES
Business & Economics ..........
Communication & Language Arts...
Humanities & Fine Arts ..........
Science & Mathematics ..........
Social & Behavioral Sciences ....

WATER/WASTEWATER TECHNOLOGY
Water Resources Management ....
Water Treatment Plant Operator ....
Water Distribution Systems Operations ....
Wastewater Collection Systems ...
Wastewater Treatment Operator ...
Backflow and Cross Connection Control ....

✦ ASSOCIATE DEGREE FOR TRANSFER
✦ ASSOCIATE DEGREE
✦ CERTIFICATE OF ACHIEVEMENT
✦ CERTIFICATE OF SPECIALIZATION
ACCOUNTING

This degree program is designed to prepare students to enter the workforce as accounting technicians or tax technicians. The curriculum is supported by related business courses and a strong general education program for students interested in qualifying for responsible positions in accounting. Designed for a two-year degree or certificate. Students interested in pursuing a bachelor’s degree in accounting should consult the catalog of the transfer institution for specific requirements.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Articulate economic and industry issues, and the role of accounting within that environment.
• Apply accounting concepts, principles, standards, and processes.
• Demonstrate information technology skills as they apply to today’s business environment to solve business problems and to communicate those solutions.
• Demonstrate analytical skills through finding, organizing, assessing, and analyzing data appropriate to a given situation.
• Provide insightful, advisory judgments and recommendations regarding the accounting for and the business implications of events, conditions, circumstances, and transactions that give rise to business opportunities or problems.
• Interpret and analyze accounting information for internal control, planning, performance evaluation, and coordination to continuously improve business processes.
• Use personal and ethical frameworks to respond to ethical dilemmas.

CAREER OPPORTUNITIES
* Auditor
* Budgeter
* Bank Examiner
* Bookkeeper
* Cost Accountant
* Certified Accountant
* Controller
* Credit Card Clerk
* Securities Clerk
* Systems Analyst
* Tax Specialist/Accountant
* Treasurer
* Bachelor Degree or higher required

BOOKEEPPING CERTIFICATE
This certificate is for students who need very specific training in the area of bookkeeping/accounting, either to obtain the necessary skills for an entry level office position, or to provide technical competence for advancement within the office environment.

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

• Articulate economic and industry issues and the role of accounting within that environment.
• Apply bookkeeping concepts, principles, standards and processes.
• Demonstrate information technology skills as they apply to today’s business environment to solve business problems and to communicate those solutions.
• Demonstrate analytical skills through finding, organizing, assessing and analyzing data appropriate to a given situation.
• Provide insightful advisory judgments and recommendations regarding the accounting for and the business implications of events, conditions, circumstances, and transactions that give rise to business opportunities or problems.
• Use personal and ethical frameworks to respond to ethical dilemmas.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 123-125 Comprehensive Excel Levels I-III 3</td>
</tr>
<tr>
<td>BUS 109 Elementary Accounting 3</td>
</tr>
<tr>
<td>BUS 120 Financial Accounting 4</td>
</tr>
<tr>
<td>BUS 121 Management Accounting 4</td>
</tr>
<tr>
<td>BUS 128 Business Communication 5</td>
</tr>
<tr>
<td>BUS 129 Payroll Accounting and Business Taxes 2</td>
</tr>
<tr>
<td>BUS 176 Computerized Accounting Applications 2</td>
</tr>
<tr>
<td>CIS 105 Introduction to Computing 3</td>
</tr>
</tbody>
</table>

Total Required 20-21

Note: BUS 109 may be taken instead of BUS 120 for the Bookkeeping certificate only.

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Bookkeeping. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

AMERICAN SIGN LANGUAGE

This certificate is designed for students who want to acquire advanced expressive and receptive signing skills, as well as develop a greater awareness of the Deaf community and Deaf culture. The emphasis is on paraprofessional vocations and preparation for continued study in the subject. Upon completion, students may wish to transfer to an Interpreter Certification, American Sign Language, or Deaf Studies program or a four year university to continue their studies. It is recommended that students interested in this certificate contact the department faculty.

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

• Demonstrate the acquisition of receptive skills by answering comprehension questions based on a three minute signed presentation with 80 percent accuracy.
• Compare and contrast American Deaf cultural traditions with American hearing cultural traditions.
• Describe the evolution of medical technology in the Deaf community.
• Demonstrate the use of current communication technology as used by the Deaf Community, e.g., videophones.

CAREER OPPORTUNITIES
* Case Worker
* Child Care Worker
* Communication Disorders Aide
* Early Childhood Education Intervention Aide
* Educational Classroom Aide
* Interpreter
* Program Coordinator
* Rehabilitation Counselor
* Social Work
* Special Education Classroom Aide
* Teacher
* Bachelor degree or higher required
* Certification required

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASL 120 American Sign Language I 4</td>
</tr>
<tr>
<td>ASL 121 American Sign Language II 4</td>
</tr>
<tr>
<td>ASL 220 American Sign Language III 4</td>
</tr>
<tr>
<td>ASL 221 American Sign Language IV 4</td>
</tr>
<tr>
<td>ASL 125 American Sign Language with School Age Children 1</td>
</tr>
<tr>
<td>ASL 130 Sign Language: Fingerspelling 3</td>
</tr>
<tr>
<td>ASL 140 Perspectives on Deaf Culture 3</td>
</tr>
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</table>

Select five to six units from the following:

<table>
<thead>
<tr>
<th>Course Title Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASL 120 American Sign Language I 4</td>
</tr>
<tr>
<td>ASL 121 American Sign Language II 4</td>
</tr>
<tr>
<td>ASL 220 American Sign Language III 4</td>
</tr>
<tr>
<td>ASL 221 American Sign Language IV 4</td>
</tr>
</tbody>
</table>

Total Required 16

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in American Sign Language. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
The following is required for the AA-T in Studio Arts for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of "C" or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

1. Use the vocabulary of the visual arts to express their observations as they perceive and respond to works of art, objects in nature, events, and the environment.
2. Apply artistic processes and skills using a variety of media to communicate meaning and intent in original works of art.
3. Analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and the artists.
4. Analyze and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and aesthetic qualities.
5. Apply what they have learned in the visual arts across subject areas by developing competencies and creative skills in problem solving, communication, management of time, and identifying resources that contribute to lifelong learning, career skills, and careers in and related to the visual arts.

Associate in Arts Degree Requirements:

Core Curriculum:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 120 Two-Dimensional Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 124 Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 129 Three-Dimensional Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 141 History of Western Art II: Circa 1250 A.D. to Present Time</td>
<td>3</td>
</tr>
</tbody>
</table>

List A: Select one of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 140 History of Western Art I: Prehistoric to 1250 A.D.</td>
<td>3</td>
</tr>
<tr>
<td>ART 143 Modern Art</td>
<td>3</td>
</tr>
<tr>
<td>ART 144 Architecture of the 20th Century</td>
<td>3</td>
</tr>
<tr>
<td>ART 145 Contemporary Art History: 1945-Present</td>
<td>3</td>
</tr>
<tr>
<td>ART 146 Asian Art</td>
<td>3</td>
</tr>
</tbody>
</table>

List B: Select three of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 121 Painting I</td>
<td>3</td>
</tr>
<tr>
<td>ART 125 Drawing II</td>
<td>3</td>
</tr>
<tr>
<td>ART 135 Watercolor I</td>
<td>3</td>
</tr>
<tr>
<td>ART 148 Introduction to Crafts</td>
<td>3</td>
</tr>
<tr>
<td>ART 230 Figure Drawing I</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Units for CSU GE Breadth or IGETC-CSU: 37-39

Total Transferable Elective Units: 3-5

Total Units for Degree: 60

Please note: SDSU accepts this degree for students transferring into Art (Studio Arts emphasis).

II. ART—DRAWING AND PAINTING
This degree program is designed to provide a fundamental background in two-dimensional studio arts, emphasizing both technique and aesthetic awareness. The curriculum consists of courses in both studio techniques and art history. Students will develop their ability to control line, value, shape, color, perspective and composition in various mediums. The major provides preparation for transfer to a four-year college in fine art or a vocational area related to art.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

1. Use the vocabulary of the visual arts to express their observations as they perceive and respond to works of art, objects in nature, events and the environment.
2. Apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.
3. Analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and the artists.
4. Analyze, access and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and aesthetic qualities.
5. Apply what they have learned in the visual arts across subject areas, develop competencies and creative skills in problem solving, communication, and management of time and resources that contribute to lifelong learning and career skills, and identify careers in and related to the visual arts.

CAREER OPPORTUNITIES
* Advertising Specialist
* Antique Dealer
* Art Conservator
* Art Therapist
* Arts Administration
* Cartoonist
* Curator
* Display Manager
* Fashion Designer
* Gallery Owner
* Illustrator
* Independent Artist
* Interior Design
* Jewelry Designer
* Museum Technician
* Painter
* Police Artist
* Set Designer
* Teacher/Professor
* Bachelor Degree or higher required

Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ART 120 Two-Dimensional Design</td>
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<td>ART 121 Painting I</td>
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<td>ART 141 History of Western Art II: Circa 1250 A.D. to Present Time</td>
<td>3</td>
</tr>
<tr>
<td>ART 230 Figure Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>GD 105 Fundamentals of Digital Media</td>
<td>3</td>
</tr>
</tbody>
</table>

Select six units from the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 129 Three-Dimensional Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 135 Watercolor I</td>
<td>3</td>
</tr>
<tr>
<td>ART 143 Modern Art</td>
<td>3</td>
</tr>
<tr>
<td>ART 145 Contemporary Art History: 1945-Present</td>
<td>3</td>
</tr>
<tr>
<td>ART 220 Painting II</td>
<td>3</td>
</tr>
<tr>
<td>ART 231 Figure Drawing II</td>
<td>3</td>
</tr>
<tr>
<td>GD 126 Photoshop Digital Imaging</td>
<td>3</td>
</tr>
<tr>
<td>GD 225 Digital Illustration</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 30

Plus General Education Requirements

Recommended Electives: FREN 120, HIST 105, HUM 155, RELG 120

III. ART—GRAPHIC DESIGN
This degree program emphasizes aesthetics, design and craft using manual and digital mediums. Students will develop their ability to think spatially in two and three dimensions and to use creative problem-solving techniques using images and letter forms. Students will develop a professional portfolio for placement at a four-year university. Designed for students interested in pursuing a bachelor’s degree in Graphic Design; please consult the catalog of the transfer institution for specific requirements. Students interested in pursuing the entry level, one-year associate degree or certificate in graphic design should refer to the Graphic Design program.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

1. Research, analyze, organize and formulate artistic order out of chaos.
2. Recognize and speak a global visual language and demonstrate an awareness of the meanings and power of symbols and words.
3. Design products and services that will make a social and ecological impact.
4. Apply elements and principles of design to projects that include packaging, magazine production, and design and production of posters, logos and brochures.
5. Formulate decisions about issues of concept, format, imagery, type, printing and methodology.
6. Use computer and traditional methods to solve graphic problems.
7. Create a professional portfolio that can be used to pursue studies at a four-year university or obtain employment.

CAREER OPPORTUNITIES
* Advertising Director
* Art Director
* Desktop Publishing
* Display Designer
* Graphic Designer
* Illustrator
* Marketing Director
* Multimedia
* Package Designer
* Web Page Designer
* Bachelor Degree or higher required

Associate in Arts Degree Requirements:

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<td>3</td>
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<td>ART 125 Drawing II</td>
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<td>ART 141 History of Western Art II: Circa 1250 A.D. to Present Time</td>
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<tr>
<td>GD 225 Digital Illustration</td>
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</tbody>
</table>

Total Required: 30

Plus General Education Requirements

Recommended Electives: FREN 120, HIST 105, HUM 155, RELG 120
I. AUTOMOTIVE TECHNOLOGY

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO 120 Engine Performance I - Mechanical and Ignition Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 122 Automotive Electrical Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 123 Engine Performance II - Fuel Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 130 Automotive Brakes and Brake License</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 140 Four-Wheel Alignment</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 180 Automotive Service Advisor</td>
<td>1</td>
</tr>
<tr>
<td>AUTO 182 Automotive Work Experience</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required 27

Plus General Education Requirements

Recommended Electives: ART 135, BUS 110, GD 230, MUS 121

II. ADVANCED ENGINE PERFORMANCE AND EMISSIONS

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
• Demonstrate and practice standardized safety and hazardous waste handling practices.
• Diagnose and repair engine mechanical and ignition problems utilizing a variety of diagnostic and repair equipment.
• Evaluate vehicle emission equipment and accurately perform a full smog inspection.
• Diagnose and repair vehicles that fail smog inspections.
• Read and interpret automotive electrical wiring diagrams to aid in the diagnosis of automotive electrical problems.
• Following prescribed industry standards, correctly utilize test equipment and tools to diagnose and repair automotive electrical systems.
• Independently demonstrate ability to perform computer system and fuel system service using related diagnostic equipment.
• Evaluate technical service bulletins for assisting in repairing various drivability concerns.
• Utilize communication skills to effectively deal with disgruntled colleagues in your work place.
• Utilize good customer relations techniques to improve customer satisfaction.
• Correctly adhere to BAR regulations involving writing repair order estimates, revising estimates, and final invoicing.
• Independently apply technical training and skill sets learned at school in an actual automotive repair shop environment.

CAREER OPPORTUNITIES
Auto Electrician
Auto Parts Salesperson
Automotive Air Conditioning Technician
Brake and Front-End Technician
Computerized Engine Control Specialist
Engine Machinist
General Repair Technician
High Performance and Racing Specialist
Licensed Smog Technician
Manufacturer Service Engineer
Service Advisor
Service Manager
Technical Instructor
Technical Sales Representative
Transmission Technician
Tune-up Technician

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO 120 Engine Performance I - Mechanical and Ignition Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 121 Emission Control License</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 122 Automotive Electrical Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 123 Engine Performance II - Fuel Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 124 Engine Performance III - Drivability</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Required 25

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Automotive Technology–Advanced Engine Performance and Emissions. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. AUTOMOTIVE TECHNOLOGY–ASEP

The General Motors sponsored ASEP degree program offers a unique job training opportunity to those students who are accepted. Training includes all systems of the sponsoring manufacturers’ automobiles. In addition, students will be required to further their studies in a sponsoring dealership as a paid (work experience) technician. Students who test low in English, reading or math assessment scores (and are accepted into the program) will be required to take remedial courses in those areas in addition to the general education courses. Students who have previous college credit or an associate degree or higher may be exempt from all or part of the general education requirements; please see a counselor.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Demonstrate and practice standardized safety and hazardous waste handling practices.
• Describe the work flow processes utilized by new car dealership service departments.
• Perform lubrication maintenance service and minor maintenance services.
• Perform service repair and diagnosis of vehicle suspension, steering and brake systems utilizing a variety of tools and equipment.
• Retrieve manufacturers’ repair data and specifications and utilize this information for accurate diagnosis and repair.
• Following prescribed industry guidelines, diagnose, remove, repair and replace automatic and manual transmissions and transaxles.
• Perform engine repairs to prescribed industry standards.
• Following prescribed industry standards, accurately measure and perform various machining processes on engine components.
• Diagnose and repair engine mechanical and ignition problems utilizing a variety of diagnostic and repair equipment.
• Independently demonstrate ability to perform computer system and fuel system service using related diagnostic equipment.
• Evaluate technical service bulletins for assisting in repairing various drivability concerns.
• Independently demonstrate ability to perform electronic engine diagnostics on both gasoline and diesel engines.
• Following prescribed industry standards, correctly utilize test equipment and tools to diagnose and repair automotive electrical systems.
• Utilizing prescribed industry practices, diagnose, repair, remove and replace air conditioning and heating systems and components.
• Independently apply technical training and skill sets learned at school in an actual automotive repair shop environment.
• Evaluate vehicle emission equipment and accurately perform a full smog inspection.
• Diagnose and repair vehicles that fail smog inspections.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO 121 Emission Control License</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 200 ASE–Orientation</td>
<td>1</td>
</tr>
<tr>
<td>AUTO 201 ASE–Electrical</td>
<td>6</td>
</tr>
<tr>
<td>AUTO 202 ASE–Brakes and Alignment</td>
<td>7</td>
</tr>
<tr>
<td>AUTO 203 ASE–Engine Repair</td>
<td>4.5</td>
</tr>
<tr>
<td>AUTO 204 ASE–Power Train</td>
<td>7</td>
</tr>
<tr>
<td>AUTO 205 ASE–Engine Performance and Air Conditioning</td>
<td>7</td>
</tr>
<tr>
<td>AUTO 206 ASE–Automotive Technology</td>
<td>15</td>
</tr>
</tbody>
</table>

Total Required: 52.5

Plus General Education Requirements: *Must be taken five times for a total of 15 units.

IV. AUTOMOTIVE TECHNOLOGY–ASSET

The Ford sponsored ASSET degree program offers a unique job training opportunity to those students who are accepted. Training includes all systems of the sponsoring manufacturers’ automobiles. In addition, students will be required to further their studies in a sponsoring dealership as a paid (work experience) technician. Students who test low in English, reading or math assessment scores (and are accepted into the program) will be required to take remedial courses in those areas in addition to the general education courses. Students who have previous college credit or an associate degree or higher may be exempt from all or part of the general education requirements; please see a counselor.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Demonstrate and practice standardized safety and hazardous waste handling practices.
• Describe the work flow processes utilized by new car dealership service departments.
• Prepare new vehicles for customer delivery.
• Perform lubrication maintenance service and minor maintenance service.
• Perform service repair and diagnosis of vehicle suspension, steering and brake systems utilizing a variety of tools and equipment.
• Retrieve manufacturers’ repair data and specifications and utilize this information for accurate diagnosis and repair.
• Following prescribed industry guidelines, diagnose, remove, repair and replace automatic and manual transmissions and transaxes.
• Perform engine repairs to prescribed industry standards.
• Following prescribed industry guidelines, accurately measure and perform various machining processes on engine components.
• Diagnose and repair engine mechanical and ignition problems utilizing a variety of diagnostic and repair equipment.
• Independently demonstrate ability to perform computer system and fuel system service using related diagnostic equipment.
• Evaluate technical service bulletins for assisting in repairing various drivability concerns.
• Independently demonstrate ability to perform electronic engine diagnostics on both gasoline and diesel engines.
• Following prescribed industry standards, correctly utilize test equipment and tools to diagnose and repair automotive electrical systems.
• Utilizing prescribed industry practices, diagnose, repair, remove and replace air conditioning and heating systems and components.
• Independently apply technical training and skill sets learned at school in an actual automotive repair shop environment.
• Evaluate vehicle emission equipment and accurately perform a full smog inspection.
• Diagnose and repair vehicles that fail smog inspections.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO 121 Emission Control License</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 190 ASSET–Orientation, PDI and Lubrication</td>
<td>2</td>
</tr>
<tr>
<td>AUTO 191 ASSET–Brakes and Alignment</td>
<td>7</td>
</tr>
<tr>
<td>AUTO 192 ASSET–Drive Train</td>
<td>8</td>
</tr>
<tr>
<td>AUTO 193 ASSET–Engine Repair</td>
<td>4.5</td>
</tr>
<tr>
<td>AUTO 195 ASSET–Electronic Engine Controls</td>
<td>7</td>
</tr>
<tr>
<td>AUTO 196 ASSET–Electrical, Accessories and Air Conditioning</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 197 ASSET–Work Experience</td>
<td>13</td>
</tr>
</tbody>
</table>

Total Required: 51.5

Plus General Education Requirements: *Must be taken five times for a total of 13 units.

V. BRAKES AND FRONT-END

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:
• Demonstrate and practice standardized safety and hazardous waste handling practices.
• Perform various brake system repairs to prescribed industry standards.
• Diagnose and repair Anti-lock Brake systems.
• Using prescribed industry standards, diagnose and replace/repair steering and suspension components.
• Diagnose wheel alignment and tire related problems and align vehicles to industry specifications.
• Utilize communications skills to effectively deal with disgruntled colleagues in your work place.
• Utilize good customer relations techniques to improve customer satisfaction.
• Correctly adhere to BAR regulations involving writing repair order estimates, revising estimates and final invoicing.
• Independently apply technical training and skill sets learned at school in an actual automotive repair shop environment.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO 120 Engine Performance I–Mechanical and Ignition Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 122 Automotive Electrical Systems</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 152 Drive Train Systems</td>
<td>4</td>
</tr>
<tr>
<td>AUTO 170 Engine Overhaul</td>
<td>5</td>
</tr>
<tr>
<td>AUTO 182 Automotive Work Experience</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 22

Certificate of Achievement

Students who complete the requirements above qualify for a Certificate in Automotive Technology–Brakes and Front-End. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

VI. ENGINE PERFORMANCE AND DRIVE TRAIN

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:
• Demonstrate and practice standardized safety and hazardous waste handling practices.
• Diagnose and repair engine mechanical and ignition problems utilizing a variety of diagnostic and repair equipment.
• Using prescribed industry standards, correctly utilize test equipment and tools to diagnose and repair automotive electrical systems.
• Retrieve manufacturers repair data and specifications and utilize this information for accurate diagnosis and repair.
• Following prescribed industry guidelines, diagnosis, remove, repair and replace automatic and manual transmissions and transaxes.
• Perform engine repairs to prescribed industry standards.
• Following prescribed industry standards, accurately measure and perform various machining processes on engine components.
• Utilize communications skills to effectively deal with disgruntled colleagues in your work place.
• Utilize good customer relations techniques to improve customer satisfaction.
• Correctly adhere to BAR regulations involving writing repair order estimates, revising estimates and final invoicing.

Certificate of Achievement

Students who complete the requirements above qualify for a Certificate in Automotive Technology–Brakes and Front-End. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

I. BIOLOGICAL SCIENCES

This degree program is designed to provide a two-year transfer program with emphasis on the uniformity and diversity of life. The curriculum fulfills the lower division requirements for majors in biology, dentistry, medicine, nursing, pharmacy, environmental health, microbiology and ecology.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Explain the basic structures and fundamental processes of life at the molecular, cellular, and organismal levels.
• Identify the evolutionary processes that lead to adaptation and biological diversity.
• Describe the relationship between life forms and their environment and ecosystems.
• Collect, organize, analyze, interpret and present quantitative and qualitative data and incorporate them into the broader context of biological knowledge.
• Effectively apply current technology and scientific methodologies for problem solving.
• Find, select and evaluate various types of scientific information including primary research articles, mass media sources and World Wide Web information.
• Communicate effectively in written and oral formats.

CAREER OPPORTUNITIES
* Aquatic Biologist
* Athletic Trainer
* Biologist
* Biochemical Engineer
* Biological Technician
* Biomedical Equipment Technician
* Biotechnologist
* Botanist
* Clinical Lab Technician
* Cytologist
* Ecologist
* Environmental Engineer
* Environmental Technician
* Environmental Microbiologist
* Genetic Engineering Technician
* Greenhouse Assistant
* Laboratory Technician
* Physical Therapist
* Public Health Biologist
* Purification Technician
* Research Assistant
* Safety Specialist
* Teacher
* Technical Writer
* Waste Management Technician

* Bachelor Degree or higher required

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
---|---|---
BIO 215 | Statistics for Life Sciences | 3
BIO 230 | Principles of Cellular, Molecular and Evolutionary Biology | 4
BIO 240 | Principles of Ecology, Evolution and Organismal Biology | 5
CHEM 141 | General Chemistry I | 5
CHEM 142 | General Chemistry II | 5
CHEM 120 | Organic Chemistry I | 5
MATH 180 | Analytic Geometry and Calculus I | 5
PHYC 130 | Fundamentals of Physics | 4
PHYC 131 | Fundamentals of Physics | 4

Total Required | 40

Plus General Education Requirements

**II. BIOLOGICAL SCIENCES: PRE-ALLIED HEALTH**

This program provides students with a pathway into allied health programs at baccalaureate institutions. Required science courses provide training in the methods of scientific inquiry, the fundamental principles of natural science, and the principles laws and theories governing the physical and life sciences. Recommended general education courses expose students to the necessary base of knowledge that will serve them well in any of the allied health fields. This degree prepares students for transfer to a baccalaureate institution or for advanced study in an allied health major.

Prior to enrolling in several courses in this major, students must take general biology and general biology laboratory as prerequisites. It is recommended that students check with transfer institutions for specific program requirements.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Collect, organize, analyze, interpret and present scientific and qualitative data and incorporate them into the broader context of biological knowledge.
2. Effectively apply current technology and scientific methodologies for problem solving.
3. Find, select and evaluate various types of scientific information including primary research articles, mass media sources and World Wide Web information.

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
---|---|---
BIO 140 | Human Anatomy | 5
BIO 141 | Human Physiology | 3
BIO 141L | Laboratory in Human Physiology | 1
BIO 152 | Paramedical Microbiology | 5
CHEM 102 | Introduction to General, Organic and Biological Chemistry | 5
CHEM 116 | Introductory Organic and Biochemistry | 4
COMM 122 | Public Speaking | 3
PSY 120 | Introductory Psychology | 3
SOC 120 | Introductory Sociology | 3

Total Required | 28-31

Plus General Education Requirements

**Recommended Electives:**

CD 125 or PSY 165; MATH 160

**BUSINESS**

**Associate Degree for Transfer™**

1. **BUSINESS ADMINISTRATION FOR TRANSFER (AS-T)**

This program is designed to provide students with the common core of lower division courses required to transfer and pursue a baccalaureate degree in Business Administration. This includes business degrees with options such as accounting, finance, human resources management, international business, management, operations management and marketing. This major aligns with the California State University (CSU) Bachelor of Science in Business Administration.

The following is required for the AS-T in Business Administration for Transfer degree:

1. Minimum of 60 semester or 90 quarter units in the major.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units required for the major.
4. A grade of “C” or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth or the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Recognize entrepreneurial opportunities for new business ventures, evaluate potential for business success, and consider implementation issues including financial, legal, operational and administrative procedures involved in starting new business ventures.
2. Communicate effectively and professionally in business situations through physical or virtual presence, writing, speaking, listening, and electronic media.
3. Work effectively, respectfully, ethically, and professionally with people of diverse ethnic, cultural, gender and other backgrounds, and people with different organizational roles, social affiliations and personalities.
4. Lead by using team building skills and facilitating collaborative behaviors in the accomplishment of group goals and objectives.
5. Assess how organizations create value in their global supply chains through the integrated production and distribution of goods, services and information.
6. Recognize and appropriately respond to ethical and legal concerns relating to human resource and organizational management.

**Associate in Science Degree Requirements:**

**Core Curriculum:**

**Course** | **Title** | **Units**
---|---|---
BUS 120 | Financial Accounting | 4
BUS 121 | Managerial Accounting | 4
BUS 125 | Business Law: Legal Environment of Business | 3
ECON 120 | Principles of Macroeconomics | 3
ECON 121 | Principles of Microeconomics | 3

**List A: Select one of the following:**

MATH 160* | Elementary Statistics | 4
MATH 178* | Calculus for Business, Social and Behavioral Sciences | 4

**List B: Select two of the following:**

BUS 128* | Business Communication | 3
CIS 110 | Principles of Information Systems | 4
Any course from List A not selected above* | 4

Total Units for Major (9 units may be double-counted with GE) | 28-29
Total Units for CSU GE Breadth or IGETC-CSU | 37-39
Total Transferable Elective Units | 1
Total Units for Degree | 60

*Students planning to transfer to SDSU are strongly encouraged to complete Math 160, Math 176, and BUS 128.

Please note: SDSU accepts this degree for students transferring into Business Administration (Financial Services) or Business Administration (General) majors.
II. BUSINESS ADMINISTRATION
This degree program is designed to provide students who choose to work toward a bachelor’s degree a well-balanced introduction to a professional career in business. The curriculum fulfills the lower division requirements for most majors in the School of Business Administration at San Diego State University and is typical of requirements at other four-year schools. For specific requirements, transfer students should consult the catalog of their selected institution.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Recognize entrepreneurial opportunities for new business ventures, evaluate potential for business success, and consider implementation issues including financial, legal, operational and administrative procedures involved in starting new business ventures.
• Communicate effectively and professionally in business situations through physical or virtual presence, writing, speaking, listening and electronic media.
• Work effectively, respectfully, ethically and professionally with people of diverse ethnic, cultural, gender and other backgrounds and with people with different organizational roles, social affiliations, and personalities.
• Lead by using team building skills and facilitating collaborative behaviors in the accomplishment of group goals and objectives.
• Assess how organizations create value in their global supply chains through the integrated production and distribution of goods, services and information.
• Recognize and appropriately respond to ethical and legal concerns relating to human resource and organizational management.

CAREER OPPORTUNITIES
* Advertising/Marketing Manager
* Agricultural Marketing Specialist
* Banker
* Broker
* Consultant
* Computer Operations Specialist
* Credit Investigator
* Economic Forecaster
* Financial Analyst
* Hospital Administrator
* Import/Export Agent
* Market Research Analyst
* Personnel Manager
* Real Estate Broker/Agent
* Retail Manager
* Securities Analyst/Trader
* Bachelor Degree or higher required

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 120 Financial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>BUS 121 Managerial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>BUS 125 Business Law: Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 126 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>CIS 110 Principles of Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>ECON 120 Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 121 Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160 Elementary Statistics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 178 Calculus for Business, Social and Behavioral Sciences</td>
<td>4</td>
</tr>
<tr>
<td>BUS 128 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>CIS 110 Principles of Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>ECON 120 Principles of Macroeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Business Administration. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. BUSINESS DATA MANAGEMENT
This degree program prepares students for careers in business using information technology to organize and promote advanced business management policies. Preparation for the Microsoft Certified Database Administrator exams.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Explain how a DBMS ensures security, recovery from failure, and concurrency control.
• Identify the advances in networking, data communications and the Internet and how they affect the way business is conducted.
• Identify which information technology tools are used to solve various business problems.
• Develop proficiency solving business problems using modern productivity tools (e.g., spreadsheet, database) or creating custom programs.
• Describe how relational databases store business data and provide desired information.
• Analyze organizational information requirements using the entity-relationship approach and model them as Entity-Relationship Diagrams (conceptual database design).
• Map an Entity-Relationship Diagram to a relational database (logical database design).
• Use normal form theory to analyze and improve a database design.
• Create a database and process complex information using the SQL language.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 128 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>BUS 240 SQL for Business Applications</td>
<td>3</td>
</tr>
<tr>
<td>BUS 242 Data Mining</td>
<td>2</td>
</tr>
<tr>
<td>CIS 110 Principles of Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>CIS 140 Databases</td>
<td>3</td>
</tr>
<tr>
<td>CIS 190 Windows Operating System</td>
<td>3</td>
</tr>
<tr>
<td>CIS 240 Advanced Databases</td>
<td>3</td>
</tr>
<tr>
<td>CIS 242 Database Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 120 Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>COMM 122 Public Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 216 Active Server Pages</td>
<td>3</td>
</tr>
<tr>
<td>CIS 290 Windows Server-Installing and Configuring</td>
<td>2</td>
</tr>
<tr>
<td>CS 180 Introduction to Visual Basic Programming</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Required 2-4

Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Business Data Management. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

IV. BUSINESS–GENERAL
This degree program is designed to develop and foster those skills and understandings which can be utilized for employment in an increasingly challenging business environment. The curriculum provides students with a broad preparation for a career in business. Business courses are included which provide a solid background for future promotion in a chosen occupational area. The degree is designed for students who do not plan to transfer to a four-year college or university.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Identify and analyze business problems and opportunities and formulate recommendations for courses of action.
• Communicate effectively and professionally in business situations through physical or virtual presence, writing, speaking, listening, and electronic media.
• Demonstrate an awareness of economic, environmental, political, ethical, legal and regulatory contexts of global business practices.
• Describe the concept of competitive advantage and how it may be achieved through strategic and tactical methods.
• Define markets and apply marketing concepts and principles using a customer focus to effectively sell products and services.
• Recognize and appropriately respond to ethical and legal concerns relating to human resource and organizational management.
• Apply accounting concepts and methods to interpret financial statements for evaluating the financial position and performance of organizations.

CAREER OPPORTUNITIES
Administrative Assistant
* Bookkeeper
* Budget Consultant
* Buyer
* Conciliator
* Credit Analyst
* Employment Interviewer
* Hospital Administrator
* Sales Agent
* Trust Officer
* Bachelor Degree or higher required

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 109 Elementary Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 120 Financial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>BUS 110 Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 115 Human Relations in Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 125 Business Law: Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BOT 110* Business English and Communication</td>
<td>3</td>
</tr>
<tr>
<td>BUS 128 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>BUS 195 Personal Finance</td>
<td>3</td>
</tr>
<tr>
<td>CIS 105 Introduction to Computing</td>
<td>3</td>
</tr>
<tr>
<td>CIS 110 Principles of Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>ECON 120 Principles of Macroeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required 24-26

Plus General Education Requirements

*Offered at Grossmont College

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Business–General. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
CERTIFICATE OF SPECIALIZATION:  
DATABASE ADMINISTRATION

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

• Analyze organizational information requirements using the entity-relationship approach and model them as Entity-Relationship Diagrams (conceptual database design).

• Develop business solutions using information technology tools such as databases and spreadsheets following the systems development life cycle (SDLC) including problem analysis, solution design, implementation, testing, evaluation and recommendation for improvement.

• Recognize the need to maintain currency with the information technology industry and how changes in information technology can impact business.

Certificate Requirements:
Course Title Units
BUS 240 SQL for Business Applications 3
BUS 242 Data Mining 3
CIS 140 Databases 3
CIS 240 Advanced Databases 3
CIS 242 Database Design 3
Total Required 15

Students who complete the requirements above qualify for a Certificate in Database Administration. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

BUSINESS OFFICE TECHNOLOGY

I. BUSINESS OFFICE TECHNOLOGY
This degree program prepares students for employment in today’s business offices which are technology intensive. The curriculum is also appropriate for those wishing to update current skills. Emphasis is on the computerized office and development into supervisory positions.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Explain the basic language and concepts within the field of business office technology.

• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

CAREER OPPORTUNITIES
Account Clerk  
Administrative Assistant  
Bank Teller  
Billing Clerk  
Bookkeeper  
Brokerage Clerk  
Computer Operator  
Court Clerk  
Customer Service Representative  
Executive Assistant  
Executive Secretary  
File Clerk  
General Office Clerk  
Hotel/Motel Desk Clerk  
Information Clerk  
Insurance Clerk  
Legal Secretary  
Loan/Credit Clerk  
Medical Secretary  
Office Manager  
Personnel Clerk  
Real Estate Clerk  
Secretary  
Word Processing Specialist

Course Equivalencies:
The following Cuyamaca and Grossmont College courses are considered similar enough to be treated as equivalent. Modification of Major forms are not required.

Cuyamaca Course
Grossmont Course
BOT 120+121+122 .......................... CSIS 173
BOT 123+124+125 .......................... CSIS 175

Associate in Science Degree Requirements:
Course Title Units
BOT 100 Basic Keyboarding 1
BOT 101AB Keyboarding/  
  Document Processing I-II 1
BOT 102AB Intermediate Keyboarding/  
  Document Processing I-II 3
BOT 107 Office Systems and Procedures 2
BOT 120-122 Comprehensive Word Levels I-III 3
BUS 128 Business Communication 3
CIS 105 Introduction to Computing 3
or
CIS 110 Principles of Information Systems 4

Total Required 18-19

Select at least six units from the following:

• BOT 108 Using Calculators to Solve Business Problems 1
• BOT 123-125 Comprehensive Excel Levels I-III 3
• BUS 109 Elementary Accounting 3
or
• BUS 120 Financial Accounting 4
• BUS 156 Principles of Management 3
• BUS 176 Computerized Accounting Applications 2
• CIS 140 Databases 3

Total Required 24-25

Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Administrative Assistant. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

II. ADMINISTRATIVE ASSISTANT
Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Explain the basic language and concepts within the field of business office technology.

• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Associate in Science Degree Requirements:
Course Title Units
BOT 102AB Intermediate Keyboarding/  
  College Office Document Processing I-II 3
BOT 104 Filing and Records Management 1
BOT 106 Effective Job Search 1
BOT 107 Office Systems and Procedures 2
BOT 108 Using Calculators to Solve Business Problems 1
BOT 114 Essential Word 1
or
BOT 120-122 Comprehensive Word Levels I-III 3
BOT 115 Essential Excel 1
or
BOT 123-125 Comprehensive Excel Levels I-III 3

Total Required 24-25

Plus General Education Requirements

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Executive Assistant. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
CERTIFICATES OF SPECIALIZATION:

Students who complete the requirements below qualify for a certificate in that area of emphasis. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

I. ACCOUNT CLERK

This certificate prepares a beginning student to work in a job that requires bookkeeping skills as well as an ability to provide account clerk support using accounting software. Many jobs at the entry level are available for someone who has training in these two areas.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic concepts of using computerized accounting software in the relevant field of business.
• Appropriately use the vocabulary and accounting procedures specific to the workplace.
• Use computer input devices, e.g., keyboard or mouse, to efficiently and competently use accounting software specific to the relevant field of business.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 101A Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>BUS 109 Elementary Accounting</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BUS 120 Financial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>BUS 176 Computerized Accounting Applications</td>
<td>2</td>
</tr>
<tr>
<td>Total Required</td>
<td>8-9</td>
</tr>
</tbody>
</table>

II. FRONT OFFICE RECEPTIONIST

This certificate would provide an entry-level employment opportunity for a student that finishes the following courses. These skills are aimed at a student who is seeking a front office receptionist-related position in an office. This certificate prepares a beginning student to work in a job that requires basic keyboarding skills, a basic knowledge of filing, and basic office procedures necessary for meeting and greeting the public in person, by telephone, and electronically.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic concepts of business office procedures relevant to an entry-level front office receptionist position.
• Appropriately use the vocabulary specific to an entry-level front office receptionist position.
• Use computer input devices, e.g., keyboard or mouse, to efficiently and competently use the software specific to the relevant field of business.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 100 Basic Keyboarding</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 103A Building Keyboarding Skill I-II</td>
<td>1</td>
</tr>
<tr>
<td>BOT 104 Filing and Records Management I-I</td>
<td>1</td>
</tr>
<tr>
<td>BOT 107 Office Systems and Procedures</td>
<td>2</td>
</tr>
<tr>
<td>BOT 114 Essential Word</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 120 Comprehensive Word, Level I</td>
<td>1</td>
</tr>
<tr>
<td>BOT 151 Using Microsoft Outlook</td>
<td>1</td>
</tr>
<tr>
<td>Total Required</td>
<td>6</td>
</tr>
</tbody>
</table>

III. OFFICE ASSISTANT LEVEL I

This certificate prepares students for positions that require keyboarding skills, basic knowledge of filing, and basic computer skills. It is designed for students with no prior computer training and who lack general office background and experience. Upon completion, students will qualify for positions as data entry clerks or other entry level office clerical positions.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic language and concepts within the field of business office technology.
• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 096 Computer Basics for the Office</td>
<td>1</td>
</tr>
<tr>
<td>BOT 097 Windows Basics for the Office</td>
<td>1</td>
</tr>
<tr>
<td>BOT 100 Basic Keyboarding</td>
<td>1</td>
</tr>
<tr>
<td>BOT 101AB Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>BOT 104 Filing and Records Management</td>
<td>1</td>
</tr>
<tr>
<td>BOT 105 Data Entry Skills</td>
<td>1</td>
</tr>
<tr>
<td>BOT 106 Effective Job Search</td>
<td>1</td>
</tr>
<tr>
<td>Total Required</td>
<td>9</td>
</tr>
</tbody>
</table>

IV. OFFICE ASSISTANT LEVEL II

This certificate is designed for students who have completed the Office Assistant Level I certificate or have the equivalent keyboarding and computer skills. It prepares students for advancement in office careers in which knowledge of Microsoft Office applications is required.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic language and concepts within the field of business office technology.
• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 102AB Intermediate Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>BOT 107 Office Systems and Procedures</td>
<td>2</td>
</tr>
<tr>
<td>BOT 114 Essential Word</td>
<td>1</td>
</tr>
<tr>
<td>BOT 115 Essential Excel</td>
<td>1</td>
</tr>
<tr>
<td>BOT 116 Essential Access</td>
<td>1</td>
</tr>
<tr>
<td>BOT 117 Essential PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>Total Required</td>
<td>9</td>
</tr>
</tbody>
</table>

V. OFFICE PROFESSIONAL

This certificate is designed for students interested in entry-level positions in a broad spectrum of office environments. Utilizing a short-term, intensive format, students are provided with the basic skills necessary to be productive employees. The curriculum provides the foundation for further study and advancement in the clerical field, which is one of the largest employment areas in our information processing society.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic language and concepts within the field of business office technology.
• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 100 Basic Keyboarding</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 101AB Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 102AB Intermediate Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 107 Office Systems and Procedures</td>
<td>2</td>
</tr>
<tr>
<td>BOT 114 Essential Word</td>
<td>1</td>
</tr>
<tr>
<td>BOT 115 Essential Excel</td>
<td>1</td>
</tr>
<tr>
<td>BOT 223 Office Work Experience</td>
<td>1</td>
</tr>
<tr>
<td>BUS 110 Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 126 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>Total Required</td>
<td>12-14</td>
</tr>
</tbody>
</table>

VI. OFFICE SOFTWARE SPECIALIST LEVEL I

This certificate is designed for students interested in working in an administrative support capacity who need working knowledge of word processing, electronic spreadsheet, database and presentation software. These courses may also be applied to the Office Assistant Level II certificate.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic language and concepts within the field of business office technology.
• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 100 Basic Keyboarding</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 102AB Intermediate Keyboarding/Document Processing I-II</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 120 Comprehensive Word, Levels I-II</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 115 Essential Excel</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 123-124 Comprehensive Excel, Levels I-II</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 116 Essential Access</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 126-127 Comprehensive Access, Levels I-II</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 117 Essential PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 129-130 Comprehensive PowerPoint, Levels I-II</td>
<td>2</td>
</tr>
<tr>
<td>Total Required</td>
<td>5-9</td>
</tr>
</tbody>
</table>
VII. OFFICE SOFTWARE SPECIALIST LEVEL II

This certificate is designed for students interested in working in an administrative support capacity who need working knowledge of word processing, electronic spreadsheet, database, and presentation software as well as software integration techniques. Students who complete the certificate may continue taking courses to earn the Executive Assistant Certificate of Achievement.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Explain the basic language and concepts within the field of business office technology.
• Use computer input devices (e.g., keyboard and mouse) to properly and efficiently create and edit documents in word processing, spreadsheet, and presentation programs such as Word, Excel, and PowerPoint, and electronic communications such as email.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 100 Basic Keyboard</td>
<td>1</td>
</tr>
<tr>
<td>BOT 118 Integrated Office Projects</td>
<td>1</td>
</tr>
<tr>
<td>BOT 120 Comprehensive Word, Level I</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 114 Essential Word</td>
<td>1</td>
</tr>
<tr>
<td>BOT 121 Comprehensive Word, Level II</td>
<td>1</td>
</tr>
<tr>
<td>BOT 122 Comprehensive Word, Level III</td>
<td>1</td>
</tr>
<tr>
<td>BOT 123 Comprehensive Excel, Level I</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 115 Essential Excel</td>
<td>1</td>
</tr>
<tr>
<td>BOT 124 Comprehensive Excel, Level II</td>
<td>1</td>
</tr>
<tr>
<td>BOT 125 Comprehensive Excel, Level III</td>
<td>1</td>
</tr>
<tr>
<td>BOT 126 Comprehensive Access, Level I</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 116 Essential Access</td>
<td>1</td>
</tr>
<tr>
<td>BOT 127 Comprehensive Access, Level II</td>
<td>1</td>
</tr>
<tr>
<td>BOT 129 Comprehensive PowerPoint, Level I</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BOT 117 Essential PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>BOT 130 Comprehensive PowerPoint, Level II</td>
<td>1</td>
</tr>
<tr>
<td>Total Required</td>
<td>12</td>
</tr>
</tbody>
</table>

CADD TECHNOLOGY

Occupational preparation in Computer-Aided Drafting and Design is the primary purpose of the CADD Technology degree program. Students are required to complete two core courses and to select from two potential career paths: Building Design Industry or Manufacturing Industry. Adherence to industrial practices and standards is stressed, including problem solving in a simulated industrial environment.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

• Create 3D modeling objects of various orientations including sections and elevations of objects, and identify the relationships of objects or object features to demonstrate visualization proficiency.
• Identify or describe the typical characteristics and uses of common construction or manufacturing materials, products and systems, document them in drawings, and make appropriate selections based on design project requirements.
• Use the latest version of 2D/3D CADD and Solid Modeling software programs (AutoCAD and SolidWorks) to create industry standard architectural or engineering drawings.
• Model the habits and attitudes for success in professional employment as a CADD technician including the preparation and presentation of a professional portfolio.
• Demonstrate computation, communication, critical thinking, and problem-solving skills to perform effectively as a CADD technician in the field of architecture and/or the civil, electronic, mechanical, structural, and surveying engineering fields.

CAREER OPPORTUNITIES

CAD Technician in the field of Architecture and Civil, Electronic, Mechanical, Structural, and Surveying Engineering

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Core Curriculum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 115 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>CADD 120 Introduction to Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Areas of Emphasis:

A. BUILDING DESIGN INDUSTRY

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 127 Survey Drafting Technology</td>
<td>3</td>
</tr>
<tr>
<td>CADD 131 Architectural Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>CADD 133 Advanced Architectural Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>CADDQOH120 Introduction to Computer-Aided Landscape Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 126 Electronic Drafting</td>
<td>3</td>
</tr>
<tr>
<td>CADD 128 Dimensioning and Tolerancing</td>
<td>3</td>
</tr>
<tr>
<td>CADD 132 Advanced Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>CADDQOH120 Advanced Computer-Aided Landscape Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required Including Core Classes 24

Plus General Education Requirement

B. MANUFACTURING INDUSTRY

Select four of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADDQOB125 3D Solid Modeling</td>
<td>3</td>
</tr>
<tr>
<td>CADD 126 Electronic Drafting</td>
<td>3</td>
</tr>
<tr>
<td>CADD 128 Dimensioning and Tolerancing</td>
<td>3</td>
</tr>
<tr>
<td>CADDQOB129 Engineering Solid Modeling</td>
<td>3</td>
</tr>
<tr>
<td>CADD 132 Advanced Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 127 Survey Drafting Technology</td>
<td>3</td>
</tr>
<tr>
<td>CADD 131 Architectural Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>CADD 133 Advanced Architectural Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>CADDQOH120 Introduction to Computer-Aided Landscape Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required Including Core Classes 24

Plus General Education Requirements

Certificate of Achievement

Students who complete only the courses required for the major including an area of emphasis qualify for a Certificate in CADD Technology in that area of emphasis. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

CALIFORNIA STATE UNIVERSITY

GENERAL EDUCATION BREADTH

Certificate of Achievement

The Certificate of Achievement in California State University General Education Breadth (CSU GE) may be awarded upon completion of the CSU GE Breadth requirements (see Degree Requirements and Transfer Information section). Students must complete a minimum of 39 units, which are distributed among five areas. CSU GE Breadth requirements are designed to be taken with a major area of concentration and elective courses in preparation for transfer to the California State University.

Courses completed at California community colleges and participating institutions will be certified based on approval at the original campus. Courses taken at other colleges and universities, i.e., out-of-state, private, may be used in the certification under certain conditions. Although this certificate recognizes the completion of lower division general education requirements for the CSU, it does not guarantee admission to a four-year institution. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

• Exhibit proficiency in written communication in English.
• Exhibit proficiency in oral communication in English.
• Analyze, criticize and advocate ideas and reach well-supported conclusions.
• Show skills and understanding beyond the level of intermediate algebra, and apply mathematical concepts to solve problems.
• Analyze and appreciate works of philosophical, historical, literary, aesthetic and cultural importance.
• Recognize an historical understanding of major civilizations and cultures, both Western and non-Western.
• Evaluate the basic concepts of physical and biological sciences.
• Use the scientific method of inquiry and techniques to answer questions about physical and biological processes.
• Cultivate a lifelong understanding and development as an integrated physiological, social, and psychological being.
CHEmISTRY

The chemistry curriculum is designed to provide students who choose to work toward a bachelor's degree a well-balanced, lower division program with a strong emphasis on fundamentals and problem solving. This major fulfills the lower division requirements (except for analytical chemistry) for chemistry majors and is typical of the requirements at four-year colleges and universities.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Comprehend and describe the nature of matter, including its classification, composition and change.
- Demonstrate an understanding of the transformations of matter, both physical and chemical.
- Develop critical thinking skills by predicting interactions between different types of matter, both physical and chemical; analyzing matter in the laboratory both qualitatively and quantitatively; performing mathematical calculations related to the transformation and analysis of matter, and solving qualitative and quantitative word problems in connection with the transformation and analysis of matter.

CAREER OPPORTUNITIES
Chemists work in a variety of fields, primarily those of the chemical, biotechnological, environmental, biomedical, pharmaceutical, electronic, forensic, agricultural and food industries. They usually work in analysis, research, development or production of materials. Management, marketing and teaching opportunities are also available.

- Agricultural Chemist
- Air Quality Control
- Analytical Chemist
- Biochemist
- Chemistry Teacher
- Dietician
- Environmental Technologist
- Fishery Specialist
- Food And Drug Inspector
- Forensic Specialist
- Laboratory Technician
- Materials Scientist
- Medical Technologist
- Microbiologist
- Organic Chemist
- Physician
- Polymer Chemist
- Sales Representative
- Sanitarian Technician
- Bachelor Degree or higher required

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 141 General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 142 General Chemistry II</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 231 Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>MATH 180 Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 280 Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 281 Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 200 Electricity and Magnetism</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 210 Wave Motion and Modern Physics</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Required: 43

Plus General Education Requirements

Note:
1. Students pursuing an emphasis in biochemistry should also take the following courses: BIO 230, 240.
2. Students who intend to enroll at UCSD should take MATH 285 and check with the Counseling Center regarding program options.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 123 Principles and Practices of Programs and Curriculum for Young Children</td>
<td>6</td>
</tr>
<tr>
<td>CD 125 Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>CD 130 Curriculum: Design and Implementation</td>
<td>3</td>
</tr>
<tr>
<td>CD 131 Child, Family and Community</td>
<td>3</td>
</tr>
<tr>
<td>CD 134 Health, Safety and Nutrition of Young Children</td>
<td>3</td>
</tr>
<tr>
<td>CD 153 Teaching in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>CD 212 Practicum in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>CD 213 Observation and Assessment</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Units for Major: (6 units may be double-counted with GE) 24

Total Units for CSU GE or IGETC-CSU: 37-39

Total Transferable Elective Units: 3-5

Total Units for Degree: 60

II. CHILD DEVELOPMENT

The child development curriculum is designed to prepare students for employment as teachers, directors and aides in preschools and child care centers, including infant/toddler and extended day facilities. The curriculum is also appropriate for parents, administrators, health care professionals, and others working with children. Course work meets the educational components of the Department of Social Services license regulations for child care programs. The degree meets the educational requirements of the Teacher, Master Teacher and Site Supervisor Child Development Permits. The curriculum meets lower division course preparation for students planning to obtain a bachelor’s degree in Child Development at most CSU campuses.

The Department of Social Services Title 22 minimum requirements to be a preschool teacher are 12 units in Child Development which must include: CD 125, CD 131, one curriculum class (CD 123, 126, 127, 128, 129 or 130), and one additional CD course (3 units). The California Department of Education Title 5 minimum education requirements at the Teacher level on the Child Development Matrix are 24 units in Child Development which must include: CD 125, CD 131, one curriculum class (CD 123, 126, 127, 128, 129 or 130), 12 additional units in CD, educational components of the Department of Social Services license regulations for child care programs which must include one year of special study (California Community Colleges’ Curriculum Alignment Project (CAP) consolidates and clarifies the transfer requirement for teachers of young children in the state of California. The eight CAP courses, CD 123, 125, 130, 131, 134, 153, 212 and 213, provide a strong foundation for transfer to four-year programs in Child Development of Early Childhood Education.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Integrate the key developmental concepts and teaching strategies into a coherently articulated philosophy of early childhood education and care.
- Employ appropriate classroom organizational and management techniques in a variety of early childhood education settings, including the implementation of curriculum that is well planned, developmentally appropriate, and based on the interests and needs of the children.
- Survey, assemble, and expand curricula resources for use in specific early childhood classrooms and centers.
- Apply and implement effective and sensitive discipline and guidance strategies directly with children.
- Clearly demonstrate the ability to plan child development programs which deliberately intend to advance, stimulate or otherwise enhance children’s physical, intellectual, emotional and social development in ways which are appropriate to the children’s developmental level.
- Assess their own professional competence and progress and develop a plan for professional career steps and growth.
• Survey, assemble, and expand curricula resources for use in specific early childhood classrooms and centers.
• Apply and implement effective and sensitive discipline and guidance strategies directly with children.
• Clearly demonstrate the ability to plan child development programs which deliberately intend to advance, stimulate or otherwise enhance children's physical, intellectual, emotional and social development in ways which are appropriate to the children's developmental level.
• Assess their own professional competence and progress and develop a plan for professional career steps and growth.

CAREER OPPORTUNITIES
* Adaptation Counselor
  * Adoption Counselor
  * Infants/Toddlers Teacher
  * Education Consultant
  * Early Intervention Aide
  * Recreational Specialist
  * Recreation Leader
  * Special Education Specialist
  * Preschool Director
  * Infant/Toddler Teacher
  * Preschool Teacher
  * School Age Child Care Teacher
  * Social Work Specialist
  * Special Education Assistant – Children with Special Needs
  * Bachelor Degree or higher required

Associate in Science Degree Requirements:

Core Curriculum:
Course Title  Units
CD 106 Practicum: Beginning Observation 1
CD 123 Principles of Programs and Curriculum for Children 3
CD 125 Child Growth and Development 3
CD 126 Art for Children 3
CD 127 Science and Mathematics for Children 3
CD 128 Music and Movement for Children 3
CD 129 Language and Literature for Children 3
CD 131 Child, Family and Community 3
CD 134 Health, Safety and Nutrition of Young Children 3
CD 141 Working with Children with Special Needs 3
or
CD 210 Working with Young Children with Challenging Behaviors 3
CD 153 Teaching in a Diverse Society 3

31

Areas of Emphasis:

A. INFANTS AND TODDLERS
CD 124 Infant and Toddler Development 3
CD 132 Observation and Assessment: Field Experience Seminar 3
CD 143 Responsive Planning for Infant/Toddler Care 3
CD 170 Practicum: Field Experience with Infants and Toddlers 2

31

Total Required Including Core Courses 42

Plus General Education Requirements

B. PRESCHOOL CHILDREN
CD 130 Curriculum: Design and Implementation 3
CD 132 Observation and Assessment: Field Experience Seminar 3
CD 133 Practicum-Field Experience: Student Teaching 2

8

Certificate of Achievement
Students who complete only the courses required for the major including an area of emphasis qualify for a Certificate in Child Development in that area of emphasis. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar for Transfer.

ASSOCIATE DEGREE IN COMMUNICATION FOR TRANSFER (AA-T)
This degree program is designed to provide students with a broad base of communication courses that provide training for entry into occupations in which public contact and verbal skills are important. Students will explore and analyze verbal communication methods as well as develop and advance their oral communication skills. Students completing this degree may be interested in pursuing careers in community service, sales, performing arts, teaching, and other communication professions.

The following is required for the AA-T in Communication Studies for Transfer degree:
1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of "C" or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Research, write and deliver an effective public speech.
• Analyze, critique, and improve interpersonal relationships in both personal and professional contexts.
• Describe and apply specific skills to the communication process, including perception, emotion, listening and conflict management.

II. COMMUNICATION
This degree program is designed to provide students with a broad base of communication classes that provide training for entry into occupations in which verbal skills are important. Major requirements for the four-year degree in Communication vary from institution to institution. It is recommended that students check with transfer institutions for specific requirements.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Research, write and deliver an effective public speech.
• Analyze, critique, and improve interpersonal relationships in both personal and professional contexts.
• Describe and apply specific skills to the communication process, including perception, emotion, listening and conflict management.
• Describe and interpret communication similarities and differences between people from varying cultural backgrounds.
• Interact with others in group settings to collect, analyze, and synthesize information.
• Interact respectfully with others who hold divergent perspectives.
• Critically analyze, critique and synthesize arguments and information.

ASSOCIATE IN ARTS DEGREE REQUIREMENTS:

Core Curriculum:
Course Title  Units
COMM 122 Public Speaking 3

List A: Select two of the following:
COMM 129 Interpersonal Communication 3
COMM 137 Critical Thinking in Group Communication 3
COMM 145 Argumentation 3

6

List B: Select two of the following:
COMM 110 Introduction to Mass Communication 3
COMM 124 Intercultural Communication 3
COMM 240 Speech and Debate Competition III 3
Any course from List A not selected above 3

6

List C: Select one of the following:
ANTH 120 Cultural Anthropology 3
ENGL 122 Introduction to Literature 3
ENGL 124 Advanced Composition: Critical Reasoning and Writing 3
SOC 120 Introductory Sociology 3
Any course from Lists A or B not selected above 3

3

Total Units for Major 18
Total Units for CSU GE Breadth or IGETC-CSU 37-39
Total Transferable Elective Units 3
Total Units for Degree 60

Please note: SDSU accepts this degree for students transferring into the Health Communication Major and the Communication Major in Applied Arts and Sciences emphases.

COMMUNICATION
## CAREER OPPORTUNITIES

- Advertising Assistant
- Announcer
- Arts Administrator
- Communication Consultant
- Journalist
- Lawyer
- Lobbyist
- Narrator
- Politician
- Public Information Officer
- Public Relations Assistant
- Teacher/Instructor/College Professor

### Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 110 Introduction to Mass Communication</td>
<td>3</td>
</tr>
<tr>
<td>COMM 120 Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>COMM 122 Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>COMM 123 Advanced Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>COMM 145 Argumentation</td>
<td>3</td>
</tr>
</tbody>
</table>

Select six units from the following:

- COMM 124 Intercultural Communication                                         | 3     |
- COMM 128 Global Communication                                                | 3     |
- COMM 137 Critical Thinking in Group Communication                           | 3     |
- COMM 144* Communication Studies: Race and Ethnicity                         | 3     |

Select three units from the following:

- COMM 130 Fundamentals of Human Communication                                  | 3     |
- COMM 135 Oral Interpretation of Literature                                   | 3     |
- COMM 136 Readers Theatre                                                     | 3     |
- COMM 238 Speech and Debate Competition I                                    | 3     |
- COMM 240 Speech and Debate Competition II                                    | 3     |
- COMM 241 Speech and Debate Competition IV                                    | 3     |

**Total Required** 24

**Plus General Education Requirements**

### Associate in Science Degree Requirements:

#### Core Curriculum:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 120 Computer Maintenance and A+ Certification</td>
<td>3</td>
</tr>
<tr>
<td>CIS 121 Network Cabling Systems</td>
<td>3</td>
</tr>
<tr>
<td>CIS 125 Network+ Certification</td>
<td>3</td>
</tr>
<tr>
<td>CIS 161 Fundamentals of Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>CIS 191 Program Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>CIS 191L Program Design and Development Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Required Including Core Classes** 40-41

**Plus General Education Requirement**

### Areas of Emphasis

#### A. Enterprise Networking

- CIS 190 Windows Operating System                                             | 3     |
- CIS 191 Linux Operating System                                              | 3     |
- CIS 201 Cisco Networking Academy I                                         | 3     |
- CIS 202 Cisco Networking Academy II                                        | 3     |
- CIS 203 Cisco Networking Academy III                                       | 3     |
- CIS 204 Cisco Networking Academy IV                                        | 3     |
- CIS 209 Cisco Networking Academy IX                                         | 3     |
- CIS 263 Fundamentals of Network Security                                    | 3     |
- CIS 261 Convergent/Unified Technologies and Degree Capstone                 | 3     |
- CIS 262 Wireless Networking                                                 | 3     |
- CIS 210 Cisco Networking Academy–Voice                                        | 4     |

**Total Required Including Core Classes** 24-25

**Plus General Education Requirement**

#### B. Enterprise System Administration

- CIS 140 Databases                                                           | 3     |
- CIS 162 Technical Diagramming Using Microsoft Visio                          | 2     |
- CIS 295 VMware Certified Professional                                       | 3     |
- CIS 190 Windows Operating System                                            | 3     |
- CIS 191 Linux Operating System                                              | 3     |
- CIS 261 Convergent/Unified Technologies and Degree Capstone                 | 3     |
- CIS 263 Fundamentals of Network Security                                    | 3     |
- CIS 290 Windows Server–Installing and Configuring                            | 2     |
- CIS 291 Linux System Administration                                         | 3     |

### I. NETWORKING, SECURITY AND SYSTEM ADMINISTRATION

This degree program prepares students for careers in computer networking or system administration and related fields. Upon completion, students may find entry level positions as computer support technicians, junior network administrators, junior system administrators, hardware technicians, data/video/cable technicians, network project managers, designers/estimators or technical support personnel. The major prepares students to work as team members in an information technology group which designs, evaluates, tests, installs and maintains corporate networks. Preparation for the following industry certifications: A+, Network+, Security+, Linux+, Microsoft Certified Technician (MCT) in Windows and Windows Server (active directory, network infrastructure and applications infrastructure), Linux Profession Institute Certification Level 2, Certified Wireless Network Administrator (CWNA) and/or CCNA (Cisco Certified Network Associate).

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- **A. Enterprise Networking**
  - Describe and demonstrate the ability to install, configure, upgrade, diagnose and troubleshoot a personal computer and its associated networking hardware and system software.
  - Install, test, certify, secure, and troubleshoot copper, optical fiber, and wireless telecommunications infrastructures by constructing a system in accordance with industry standards.
  - Configure, test, and troubleshoot network topologies consisting of routers, switches, wireless routers, VoIP equipment and PCs using the Cisco IOS CLI, IP addressing, interior gateway protocols; HDLC, PPP and Frame-Relay WAN.

#### CAREER OPPORTUNITIES

- Sales and Service
  - Scientific Programmer
  - Software Consultant
  - Software Engineer/Designer
  - Systems Analyst
  - Systems Programmer
  - Technical Support Representative
  - Telecommunications Programmer
  - Telecommunications Technician
  - Telecommunications Technical Engineer
  - Training Specialist
  - Virtual Reality Developer
  - Web Master
  - Web Page Designer
  - Bachelor Degree or higher required

- **B. Enterprise System Administration**
  - Describe and demonstrate the ability to install, configure, upgrade, diagnose and troubleshoot a personal computer and its associated networking hardware and system software.
  - Install, test, certify, secure, and troubleshoot copper, optical fiber, and wireless telecommunications infrastructures by constructing a system in accordance with industry standards.
  - Configure, test, and troubleshoot a Linux and a Windows server, including directory services, networking, print services, server security, remote access, DNS, DHCP, web server, file server, mail server, FTP server, file systems, partitions, logical volumes, server/network performance, and data backup and recovery.

### SEE BUSINESS OFFICE TECHNOLOGY FOR

**Specific Microsoft applications (Word, Excel, PowerPoint, etc.).**
CERTIFICATES OF SPECIALIZATION:
These certificates offer specific training for either entry-level positions or to augment related programs such as Network Administration, Web Development, Business Office Technology or Graphic Design. The certificates are designed to demonstrate a relatively narrow expertise or skill area that may be used to attain a computer industry "niche" job.

Students who complete the requirements below qualify for a certificate in that area of emphasis. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. COMPUTER PROGRAMMING
Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
- Develop a software solution following the systems development life cycle (SDLC) including problem analysis, solution design, implementation, testing, evaluation and recommendation for improvement.
- Be proficient in at least one high-level programming language and an ability to use that language to implement software solutions in a variety of settings following the SDLC.
- Recognize the need to maintain currency with software industry changes in the computing profession.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 119</td>
<td>Program Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>CS 119L</td>
<td>Program Design and Development Lab</td>
<td>1</td>
</tr>
<tr>
<td>CS 182</td>
<td>Introduction to Java Programming</td>
<td>4</td>
</tr>
<tr>
<td>GD 126</td>
<td>Photoshop Digital Imaging</td>
<td>3</td>
</tr>
<tr>
<td>GD 130</td>
<td>Professional Business Practices</td>
<td>3</td>
</tr>
<tr>
<td>GD 217</td>
<td>Web Graphics</td>
<td>3</td>
</tr>
<tr>
<td>GD 222</td>
<td>Web Animation</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

Select one of the following:
- CIS 225: Web Development Capstone 3
- CIS 267: Directed Work Experience in CIS 1-4

Select two of the following:
- CS 191: Linux Operating System 3
- CS 119: Program Design and Development 3
- CS 119L: Program Design and Development Lab 1
- CS 182: Introduction to Java Programming 4
- GD 126: Photoshop Digital Imaging 3
- GD 130: Professional Business Practices 3
- GD 217: Web Graphics 3
- GD 222: Web Animation 3

Total Required 26-33

Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Web Development. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
VI. WEB PROGRAMMING

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Write valid HTML and CSS code to create web content, structure and presentation.
- Code and debug JavaScript and jQuery to develop interactive web pages.
- Code and debug PHP and MySQL to develop dynamic (database-integrated) web applications.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 211</td>
<td>Web Development I</td>
<td>3</td>
</tr>
<tr>
<td>CIS 213</td>
<td>Web Development II</td>
<td>3</td>
</tr>
<tr>
<td>CIS 215</td>
<td>JavaScript Web Programming</td>
<td>3</td>
</tr>
<tr>
<td>CIS 218</td>
<td>Introduction to Web Programming</td>
<td>3</td>
</tr>
<tr>
<td>CIS 219</td>
<td>PHP/MySQL Dynamic Web-Based Applications</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 15 units

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Demonstrate interpersonal skills in a diverse setting.
- Demonstrate effective communication in teaching and learning environments.
- Use arithmetical, algebraic, geometric and statistical methods to solve problems.
- Describe general principles of the political institutions and government of the United States.
- Assess how social issues are influenced by geographical and historical processes.
- Analyze basic concepts of physical and biological science to evaluate scientific information and solve scientific problems.
- Analyze the principle elements of representative examples of art, architecture, literature, theater, philosophy, music, dance, film, or other relevant areas of cultural and/or intellectual creative.
- Demonstrate an awareness of the historical and philosophical context of representative areas, movements, media, works, or styles of cultural and/or intellectual creativity.
- Demonstrate the ability to write effectively.
- Organize thoughts and ideas in both oral and written format.

Associate in Arts Degree Requirements:

Core Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 130</td>
<td>General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIO 131</td>
<td>General Biology I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CD 125</td>
<td>Child Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 115</td>
<td>Fundamentals of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>COMM 122</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>ED 200</td>
<td>Teaching as a Profession</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 120</td>
<td>College Composition and Reading</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 122</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 106</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 121</td>
<td>Physical Geography: Earth Systems Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 104</td>
<td>Earth Science</td>
<td>3</td>
</tr>
<tr>
<td>HIST 100</td>
<td>Early World History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 108</td>
<td>Early American History</td>
<td>3</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Structure and Concepts of Elementary Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>PHHC 110</td>
<td>Introductory Physics</td>
<td>4</td>
</tr>
<tr>
<td>POSC 121</td>
<td>Introduction to U.S. Government and Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Units for CSU Ge or IGETC-CSU General Education Requirements (all met): 37-39

List A

| ENGL 124 | Advanced Composition: Critical Reasoning and Writing | 3 |

List B: Select one:

| ART 100  | Art Appreciation               | 3     |
| MUS 110  | Great Music Listening          | 3     |
| THTR 110 | Introduction to the Theatre    | 3     |

List C: Select eight units:

| Any course in List B not selected: | 3 |
| ARBC 121 | Arabic II                      | 5     |
| ART 140  | History of Western Art I: Prehistoric to 1250 A.D. | 3 |
| ART 141  | History of Western Art II: Circa 1250 A.D. to Present Time | 3 |
| ASL 121  | American Sign Language II      | 4     |
| COMM 120 | Interpersonal Communication    | 3     |
| ES 253   | Physical Education in Elementary Schools | 3 |
| FREN 121 | French II                      | 5     |
| HED 105  | Health Education for Teachers  | 1     |
| ITAL 121 | Italian II                     | 5     |
| MATH 126 | Structure and Concepts of Elementary Mathematics II | 3 |
| MATH 128 | Children's Mathematical Thinking | 1.5 |
| MUS 118  | Introduction to Music          | 4     |
| PHIL 125 | Critical Thinking              | 3     |
| PHIL 130 | Logic                         | 3     |
| PHIL 140 | Problems in Ethics            | 3     |
| RELG 120 | World Religions               | 3     |
| RELG 130 | Scriptures of World Religions  | 3     |
| SPAN 121 | Spanish II                     | 5     |

Total Units for Major: 60 units

Total Units for CSU GE or IGETC-CSU General Education Requirements (all met): 37-39

Total Transferable Elective Units: 0

Total Units for Degree: 60 units

Please note: SDSU accepts this degree for students transferring into Liberal Studies Generalist Education.

II. ELEMENTARY EDUCATION

This degree program is designed to provide lower division preparation for transfer to San Diego State University as a Liberal Studies major. Because the degree emphasizes a strong general education approach, it may be an appropriate major for a variety of career options. Students are encouraged to refer to the San Diego State University catalog and/or consult with an academic advisor before selecting the various options listed below. Upon completion, students may request certification of lower division general education course work required by the California State University system. Students interested in transferring to another college or university should check the requirements of that institution.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Demonstrate global awareness and cultural sensitivity.
- Demonstrate interpersonal skills in a diverse setting.
- Demonstrate effective communication in teaching and learning environments.
- Demonstrate technological awareness.
- Be prepared to request certification of lower division general education course work required by the California State University system.

CAREER OPPORTUNITIES

* Administrator
* Audiovisual Specialist
* School Clerical Worker
* Counselor
* Educational Consultant
* Educational Psychologist
* Educational Therapist
* Educational Writer
* Food Service
* Guidance Worker
* Librarian
* Library Technician
* Social Psychologist
* Speech Pathologist/Audiologist
* Teacher
* Teacher’s Aide
* Tutor
* Bachelor Degree or higher required
12. Human Growth and Development (choose one option):

- **Option I:**
  - CD 125 Child Growth and Development 3

- **Option II:**
  - PSY 120 Introductory Psychology 3
  - PSY 150 Developmental Psychology 3

13. General Education/Humanities (choose one option):
- **Option I:**
  - ARBC 121, ASL 121, FREN 121, ITAL 121 or SPAN 121 4-5

- **Option II:**
  - PHIL 140 or RELG 120 or RELG 130 (choose this option only if 3 years of foreign language have been taken in high school) 3
  - HED 105 Health Education for Teachers 1
  - ES Activity (at least two courses marked with an asterisk) 2-3

**Recommended Elective:**
- PSC 100T Physical Science for Elementary Education 3

*Offered at Grossmont College, required for major at SDSU*

**ENGINEERING**

This degree program is designed to cover the first two years of a four-year program leading to the bachelor's degree in engineering at most four-year colleges and universities. While the bachelor's degree is usually the minimum needed to practice as an engineer, the associate degree will permit an individual to find work in most engineering firms as an engineering aide. The certificate will permit an individual to work as an engineering technician.

**CAREER OPPORTUNITIES**
- Aerospace Engineer
- Agricultural Engineer
- Architectural Engineer
- Biomedical Engineer
- CAD/CAM Engineer
- Chemical Engineer
- Civil Engineer
- Civil Engineering Technician
- Computer Engineer
- Electrical Engineer
- Electrical Engineering Technician
- Environmental Engineer
- Geological Engineer
- Industrial Engineer
- Industrial Engineering Technician
- Manufacturing Engineer
- Marine Engineer
- Materials Engineer
- Mechanical Engineer
- Mechanical Engineering Technician
- Mining Engineer
- Nuclear Engineer
- Petroleum Engineer
- Structural Engineer
- Systems Engineer
- Robotics Engineer
- Bachelor's degree or higher required

**I. CIVIL ENGINEERING**

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
- Visualize 3D objects and draw them in 2D, both by sketching and through the use of computer-aided drafting software; produce a complete set of drawings sufficient to manufacture a part, including dimensions and tolerances.
- Solve engineering problems through computer modeling, employing an engineering computer language such as Matlab.
- Design a rigid structure such as a bridge, determining forces in each part of the structure. Determine the weight and location of the center of gravity of the structure.
- Design a dynamic system such as a piston or linkage, and compute forces, accelerations, and speeds of all components of the system.
- Apply the tools of surveying, including total station instruments, to analyze the topography of land, construction staking, and setting property boundaries.
- Model vibrating systems using systems of 2nd order differential equations.
- Analyze experimental data to determine summary statistics (e.g., mean, variance), apply appropriate statistical tests to data sets, and design statistical experiments.

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
---|---|---
MATH 100 | Introduction to engineering and engineering mechanics | 3

**Program Learning Outcomes**
Upon successful completion of this certificate, students will be able to:
- Visualize 3D objects and draw them in 2D, both by sketching and through the use of computer-aided drafting software; produce a complete set of drawings sufficient to manufacture a part, including dimensions and tolerances.
- Solve engineering problems through computer modeling, employing an engineering computer language such as Matlab.
- Design a rigid structure such as a bridge, determining forces in each part of the structure. Determine the weight and location of the center of gravity of the structure.
- Design a dynamic system such as a piston or linkage, and compute forces, accelerations, and speeds of all components of the system.
- Apply the tools of surveying, including total station instruments, to analyze the topography of land, construction staking, and setting property boundaries.
Model vibrating systems using systems of 2nd order differential equations.
• Analyze experimental data to determine summary statistics (e.g., mean, variance), apply appropriate statistical tests to data sets, and design statistical experiments.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 127 Survey Drafting Technology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 141 General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>ENGR 100 Introduction to Engineering and Design</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 119 Basic Engineering CAD</td>
<td>3</td>
</tr>
<tr>
<td>CADD 120 Introduction to Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 120 Engineering Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 200 Engineering Mechanics--Statics</td>
<td>3</td>
</tr>
<tr>
<td>ENG8UR28 Plane Surveying</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 220 Engineering Mechanics--Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 180 Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 280 Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 200 Electricity and Magnetism</td>
<td>5</td>
</tr>
<tr>
<td>Total Required</td>
<td>42</td>
</tr>
</tbody>
</table>

Certificate of Achievement

Students who complete the certificate requirements above qualify for a Certificate in Civil Engineering. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. ELECTRICAL AND COMPUTER ENGINEERING

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Visualize 3D objects and sketch them accurately in 2D.
• Solve engineering problems through computer modeling, employing a computer language such as C or Java.
• Design and write computer programs that employ linked list memory management, stacks, tree data structures, and searching and sorting algorithms.
• Determine the DC and steady-state AC voltages and currents everywhere in an electric circuit composed of passive components.
• Model linear systems of arbitrary size and complexity using linear algebra.
• Model transient and steady-state electrical systems using systems of 2nd order differential equations.
• Apply Green’s theorem, Stokes’ theorem, and Maxwell’s equations to solve simple problems in electrostatics and electromagnetism.
• Analyze and design combinational and sequential digital logic systems of arbitrary complexity, including (for example) Moore and Mealy sequential machines.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CADD 126 Electronic Drafting</td>
<td>3</td>
</tr>
<tr>
<td>CS 181 Introduction to C++ Programming</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>CS 182 Introduction to Java Programming</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>CS 281 Intermediate C++ Programming</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>CS 282 Intermediate Java Programming</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MATH 100 Introduction to Engineering and Design</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>PHYC 119 Basic Engineering CAD</td>
<td>3</td>
</tr>
<tr>
<td>CADD 120 Introduction to Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 210 Electric Circuits</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 270 Digital Design</td>
<td>4</td>
</tr>
<tr>
<td>ET 110 Introduction to Basic Electronics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 180 Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 280 Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 284 Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 200 Electricity and Magnetism</td>
<td>5</td>
</tr>
<tr>
<td>Total Required</td>
<td>52</td>
</tr>
</tbody>
</table>

Certificate of Achievement

Students who complete the certificate requirements above qualify for a Certificate in Electrical and Computer Engineering. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

IV. ELECTRICAL AND COMPUTER ENGINEERING

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:
• Visualize 3D objects and sketch them accurately in 2D.
• Solve engineering problems through computer modeling, employing a computer language such as C or Java.
• Design and write computer programs that employ linked list memory management, stacks, tree data structures, and searching and sorting algorithms.
• Determine the DC and steady-state AC voltages and currents everywhere in an electric circuit composed of passive components.
• Model linear systems of arbitrary size and complexity using linear algebra.
• Model transient and steady-state electrical systems using systems of 2nd order differential equations.
• Apply Green’s theorem, Stokes’ theorem, and Maxwell’s equations to solve simple problems in electrostatics and electromagnetism.
• Analyze and design combinational and sequential digital logic systems of arbitrary complexity, including (for example) Moore and Mealy sequential machines.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 281 Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 284 Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 285 Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 200 Electricity and Magnetism</td>
<td>5</td>
</tr>
<tr>
<td>Total Required</td>
<td>54</td>
</tr>
</tbody>
</table>

Certificate of Achievement

Students who complete the certificate requirements above qualify for a Certificate in Electrical and Computer Engineering. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

V. MECHANICAL AND AEROSPACE ENGINEERING

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Visualize 3D objects and draw them in 2D, both by sketching and through the use of computer-aided drafting software; produce a complete set of drawings sufficient to manufacture a part, including dimensions and tolerances.
• Solve engineering problems through computer modeling, employing an engineering computer language such as Matlab.
• Design a rigid structure such as a bridge, determining forces in each part of the structure. Determine the weight and location of the structure’s center of gravity.
• Design a dynamic system such as a piston or linkage and compute forces, accelerations, and speeds of all components of the system.
• Select an appropriate material for manufacturing a part or product and determine the appropriate material processing techniques to produce the part. Justify the choice of material on the basis of macroscopic mechanical properties as well as microstructure.
• Determine the DC and steady-state AC voltages and currents everywhere in an electric circuit composed of passive components.
• Model vibrating systems using systems of 2nd order differential equations.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 141 General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>ENGR 100 Introduction to Engineering and Design</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 120 Engineering Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 200 Engineering Mechanics--Statics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 210 Electric Circuits</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 220 Engineering Mechanics--Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 260 Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>MATH 180 Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 280 Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 284 Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 200 Electricity and Magnetism</td>
<td>5</td>
</tr>
<tr>
<td>PHYC 210 Wave Motion and Modern Physics</td>
<td>5</td>
</tr>
<tr>
<td>Total Required</td>
<td>56</td>
</tr>
</tbody>
</table>

Plus General Education Requirements

Certificate of Achievement

Students who complete the certificate requirements above qualify for a Certificate in Mechanical and Aerospace Engineering. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

VI. MECHANICAL AND AEROSPACE ENGINEERING

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:
• Visualize 3D objects and draw them in 2D, both by sketching and through the use of computer-aided drafting software; produce a complete set of drawings sufficient to manufacture a part, including dimensions and tolerances.
• Solve engineering problems through computer modeling, employing an engineering computer language such as Matlab.
• Design a rigid structure such as a bridge, determining forces in each part of the structure. Determine the weight and location of the structure’s center of gravity.
• Design a dynamic system such as a piston or linkage and compute forces, accelerations, and speeds of all components of the system.
• Select an appropriate material for manufacturing a part or product and
determine the appropriate material processing techniques to produce the part. Justify the choice of material on the basis of macroscopic mechanical properties as well as microstructure.

• Determine the DC and steady-state AC voltages and currents everywhere in an electric circuit composed of passive components.

• Model vibrating systems using systems of 2nd order differential equations.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 141 General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>ENGR 100 Introduction to Engineering and Design</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 119 Basic Engineering CAD</td>
<td>3</td>
</tr>
<tr>
<td>or CADD 120 Introduction to Computer-Aided Drafting and Design</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 120 Engineering Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 200 Engineering Mechanics–Statics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 200 Engineering Mechanics–Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 260 Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>MATH 180 Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 280 Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYC 190 Mechanics and Heat</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Required: 41

Certificate of Achievement
Students who complete the certificate requirements above qualify for a Certificate in Mechanical and Aerospace Engineering. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

ENGLISH

Associate Degree for Transfer™

I. ENGLISH FOR TRANSFER (AA-T)
The study of English gives lifelong pleasure to students in exploring and understanding how language works to express human ideas and feelings. English course work also helps people succeed in such diverse fields as teaching, writing, editing, journalism, advertising, public relations, law, film and video work, politics, business and medicine.

The following is required for the AA-T in English for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of “C” or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Demonstrate the ability to express themselves effectively in largely error-free writing in multiple modes and genres.

• Demonstrate the ability to analyze a variety of texts including fiction and non-fiction.

• Utilize the writing process to approach, complete and refine writing projects.

• Demonstrate familiarity with major British, American, and world authors and literary movements.

• Locate, evaluate, and effectively integrate outside research into their writing to support their explicit theses while avoiding plagiarism and adhering to scholarly standards for citation of information.

Associate in Arts Degree Requirements:

Core Curriculum:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 122 Introduction to Literature</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 124 Advanced Composition: Critical Reasoning and Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

List A: Select two of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 221 British Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 222 British Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 231 American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 232 American Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 270 World Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 271 World Literature II</td>
<td>3</td>
</tr>
</tbody>
</table>

List B: Select one of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 126 Creative Writing</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 202 Introduction to Film as Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 217 Fantasy and Science Fiction</td>
<td>3</td>
</tr>
</tbody>
</table>

Any course from List A not selected above 3

List C: Select one of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAM 120 Aramaic I</td>
<td>5</td>
</tr>
<tr>
<td>ARAM 121 Aramaic II</td>
<td>5</td>
</tr>
<tr>
<td>ARAM 220 Aramaic III</td>
<td>5</td>
</tr>
<tr>
<td>ARBC 120 Arabic I</td>
<td>5</td>
</tr>
<tr>
<td>ARBC 121 Arabic II</td>
<td>5</td>
</tr>
<tr>
<td>ARBC 220 Arabic III</td>
<td>5</td>
</tr>
<tr>
<td>ARBC 221 Arabic IV</td>
<td>5</td>
</tr>
<tr>
<td>ASL 120 American Sign Language I</td>
<td>4</td>
</tr>
<tr>
<td>ASL 121 American Sign Language II</td>
<td>4</td>
</tr>
<tr>
<td>ASL 220 American Sign Language III</td>
<td>4</td>
</tr>
<tr>
<td>ASL 221 American Sign Language IV</td>
<td>4</td>
</tr>
<tr>
<td>BUS 128 Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 201 Images of Women in Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 207 Romance Fiction</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 214 Masterpieces of Drama</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 275 Literary Period</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 276 Major Author</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 277 Literary Theme</td>
<td>3</td>
</tr>
<tr>
<td>FREN 120 French I</td>
<td>5</td>
</tr>
<tr>
<td>FREN 121 French II</td>
<td>5</td>
</tr>
<tr>
<td>FREN 220 French III</td>
<td>5</td>
</tr>
<tr>
<td>FREN 221 French IV</td>
<td>5</td>
</tr>
<tr>
<td>HUM 110 Principles of the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>ITAL 120 Italian I</td>
<td>5</td>
</tr>
<tr>
<td>ITAL 121 Italian II</td>
<td>5</td>
</tr>
<tr>
<td>ITAL 220 Italian III</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 120 Spanish I</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 121 Spanish II</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 220 Spanish III</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 221 Spanish IV</td>
<td>5</td>
</tr>
<tr>
<td>THTR 110 Introduction to the Theatre</td>
<td>3</td>
</tr>
</tbody>
</table>

Any course from Lists A or B not selected above 3

Total Units for Major (6 units may double counted with GE) 18-20

Total Units for CSU GE Breadth or IGETC-CSU 37-39

Total Transferable Elective Units 10-17

Total Units for Degree 60

Please note: SDSU accepts this degree for students transferring into English-Applied Arts and Sciences major.

II. ENGLISH
This major fulfills lower division requirements at most four-year colleges and universities and thus provides a broad-based foundation for transfer. For particular requirements, transfer students should consult the appropriate four-year college or university catalog.

The study of English gives lifelong pleasure to students in exploring and understanding how language works to express human ideas and feelings. English course work also helps people succeed in such diverse fields as teaching, writing, editing, journalism, advertising, public relations, law, film and video work, politics, business and medicine.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Demonstrate the ability to express themselves effectively in largely error-free writing in multiple modes and genres.

• Demonstrate the ability to analyze a variety of texts including fiction and non-fiction.

• Utilize the writing process to approach, complete and refine writing projects.

• Demonstrate familiarity with major British, American, and world authors and literary movements.

• Locate, evaluate, and effectively integrate outside research into their own writing to support their explicit theses while avoiding plagiarism and adhering to scholarly standards for citation of information.

CAREER OPPORTUNITIES

Actor/Actress
* College English Professor
* Copywriter
* Editor
* Fiction/Fiction Writer
* Foreign Service Officer
* Freelance Writer
* Lawyer
* Librarian
* Media Planner
* Museum Curator
* Newspaper Writer
* Publisher
* Reporter
* Researcher
* Secondary School Teacher
* Bachelor Degree or higher required
* Bachelor Degree normally recommended

Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 120 College Composition and Reading</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 122 Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 124 Advanced Composition: Critical Reasoning and Writing</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 221 British Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 222 British Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 231 American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 270 World Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 271 World Literature II</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 221 British Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 222 British Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 231 American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 232 American Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 270 World Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 271 World Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 275 Literary Period</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 276 Major Author</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 277 Literary Theme</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Units for Degree: 18-20

Associate Degree Programs and Certificates
Select one of the following:

ENGL 201 Images of Women in Literature 3
ENGL 202 Introduction to Film as Literature 3
ENGL 207 Romance Fiction 3
ENGL 214 Masterpieces of Drama 3
ENGL 217 Fantasy and Science Fiction 3

Select one of the following:

ANTH 120 Cultural Anthropology 3
HIST 100 Early World History 3
HIST 101 Modern World History 3
HIST 105 Early Western Civilization 3
HIST 106 Modern Western Civilization 3
HUM 120 European Humanities 3
HUM 140 American Humanities 3
HUM 155 Mythology 3
PHIL 115 History of Philosophy I: Ancient 3
PHIL 117 History of Philosophy II: Modern and Contemporary 3
RELG 215 Introduction to the New Testament 3

Total Required 30
Plus General Education Requirements

Certificate of Achievement

Students who complete the major requirements above qualify for a Certificate in English. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

ENTREPRENEURSHIP - SMALL BUSINESS MANAGEMENT

This degree program provides a course of study for students who are interested in developing an appreciation and understanding of the functional areas within the small business environment. The degree provides a working knowledge of small business operations to both the prospective small business owner and the owner of an existing business, and is co-sponsored by the Small Business Administration.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

• Demonstrate entrepreneurial thinking as it applies to their chosen discipline by successfully completing practicum in which they apply principles of innovation to a project or develop an idea for a new business outside of the practicum.
• Understand what it takes to start a new venture, including the basics of finance, marketing, and management for a new and growing business.
• Learn how to identify their personal strengths as an entrepreneur and how to build an effective leadership team for a new business.

CAREER OPPORTUNITIES

Administrative Assistant
Assistant Manager
Bookkeeper
Small Business Owner/Manager

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 109 Elementary Accounting 3</td>
<td></td>
</tr>
<tr>
<td>BUS 120 Financial Accounting 4</td>
<td></td>
</tr>
<tr>
<td>BUS 110 Introduction to Business 3</td>
<td></td>
</tr>
<tr>
<td>BUS 111 Entrepreneurship: Starting and Developing a Business 3</td>
<td></td>
</tr>
<tr>
<td>BUS 125 Business Law: Legal Environment of Business 3</td>
<td></td>
</tr>
<tr>
<td>BUS 128 Business Communication 3</td>
<td></td>
</tr>
</tbody>
</table>

Total Required 15-16

Select two of the following:

BUS 156 Principles of Management 3
BUS 176 Computerized Accounting Applications 2
CIS 212 Introduction to Web Development 3

Select at least three units from the following:

BOT 100 Basic Keyboarding 1
BOT 101AB Keyboarding/Document Processing I-I 3
BOT 102AB Intermediate Keyboarding/Document Processing I-II 3
BOT 114 Essential Word 1
BOT 115 Essential Excel 1
BOT 116 Essential Access 1
BOT 117 Essential PowerPoint 1
CIS 105 Introduction to Computing 3
CIS 110 Principles of Information Systems 4

Total Required 23-25
Plus General Education Requirements

Certificate of Achievement

Students who complete the major requirements above qualify for a Certificate in Entrepreneurship–Small Business Management. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT

This degree and certificate program provides entry level skills as well as upgrading and/or refining of existing skills of individuals employed in the field of Environmental Health and Safety Management. The curriculum prepares students for transfer to four-year institutions in an environmental technology or related major. Courses are designed for students pursuing careers in Environmental Management and Occupational Safety and Health with an emphasis on training, regulatory compliance and program development, consulting, pollution prevention, recycling, remediation, conservation, and program management.

CAREER OPPORTUNITIES

* Air Quality Engineer
  Asbestos Materials Building Remover
  Associate Toxic Waste Specialist
  Chemical Handler
* Environmental Engineer
  Environmental Hazardous Material Technician
  Environmental Health and Safety Specialist
  Environmental Journalist
  Environmental Lawyer
  Environmental Manager
* Environmental Protection Specialist
  Environmental Research – Test Technician
  Game and Fishery Technician
* Geologist
  Health and Safety Technician
  Industrial Hygiene Technician

Land Use and Planning Technician
Mold Remediation Technician
Occupational Health and Safety Technician
Pollution Control Technician
Recycling Coordinator
Risk Management Officer
Risk Management Technician
Safety Officer
Safety Specialist
* Soils Analyst
Solar Energy Installer
Wastewater Treatment Operator
Water Treatment Operator
* Bachelor Degree or higher required

I. ENVIRONMENTAL MANAGEMENT

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

• Identify and interpret Federal, State and local regulations related to Environmental Health and Safety Management.
• Understand and analyze historical environmental laws and regulations which impact hazardous material management and their effect on the environment.
• Identify and interpret Federal, state and local regulations related to air pollution.
• Define and describe the components of the Hazard Communication Standards required “Hazardous Communication Plan.”
• Identify and describe components of Storm Water Pollution Prevention Plans in accordance with the Clean Water Act.
• Describe and define Regional Water Quality Control Board roles in Clean Water Act over site and enforcement of National Pollution Discharge Elimination System (NPDES) permitting and inspections.
• Understand and analyze historical environmental laws and regulations which impact hazardous material management and their effect on the environment.
• Describe and apply terms common to the hazardous materials industry.
• Describe agencies that regulate specific hazardous materials.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 112 Contemporary Issues in Environmental Resources 3</td>
<td></td>
</tr>
<tr>
<td>BIO 130 General Biology I 3</td>
<td></td>
</tr>
<tr>
<td>BIO 131 General Biology I Laboratory 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 115 Fundamentals of Chemistry 4</td>
<td></td>
</tr>
<tr>
<td>EHS 100 Introduction to Environmental and Occupational Health and Safety (OSH) Technology 4</td>
<td></td>
</tr>
<tr>
<td>EHS 110 Pollution Prevention 3</td>
<td></td>
</tr>
<tr>
<td>EHS 150 Hazardous Waste Management Applications 4</td>
<td></td>
</tr>
<tr>
<td>EHS 200 Hazardous Materials Management (HMM) Applications 4</td>
<td></td>
</tr>
<tr>
<td>EHS 210 Industrial Wastewater and Stormwater Management 4</td>
<td></td>
</tr>
<tr>
<td>EHS 215 Air Quality Management 3</td>
<td></td>
</tr>
<tr>
<td>EHS 230 Safety and Emergency Response 4</td>
<td></td>
</tr>
<tr>
<td>EHS 240 Cooperative Work Experience 1-4</td>
<td></td>
</tr>
</tbody>
</table>

Total Required 38-41

Select one of the following:

CIS 110 Principles of Information Systems 4
COMM 122 Public Speaking 3
SPAN 120 Spanish I 5

3-5

Total Required 41-48
Plus General Education Requirements
II. ENVIRONMENTAL TECHNICIAN

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
• Identify and interpret Federal, State and local regulations related to Environmental Health and Safety Management.
• Understand and analyze historical environmental laws and regulations which impact hazardous material management and their effect on the environment.
• Identify and interpret Federal, state and local regulations related to air pollution.
• Define and describe the components of the Hazard Communication Standards required “Hazardous Communication Plan.”
• Identify and describe components of Storm Water Pollution Prevention Plans in accordance with the Clean Water Act.
• Describe and define Regional Water Quality Control Board role in Clean Water Act over site and enforcement of National Pollution Discharge Elimination System (NPDES) permitting and inspections.
• Understand and analyze historical environmental laws and regulations which impact hazardous material management and their effect on the environment.
• Define and apply terms common to the hazardous materials industry.
• Describe agencies that regulate specific hazardous materials.

Certificate Requirements:
Course Title Units
EHSM 100 Introduction to Environmental and Occupational Safety and Health (OSH) Technology 4
EHSM 110 Pollution Prevention 3
EHSM 150 Hazardous Waste Management Applications 4
EHSM 200 Hazardous Materials Management (HMM) Applications 4
EHSM 210 Industrial Wastewater and Stormwater Management 4
EHSM 215 Air Quality Management 3
EHSM 230 Safety and Emergency Response 4
EHSM 240 Cooperative Work Experience 1-3
Total Required 27-29

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Occupational Safety and Health (OSH) Technician. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. OCCUPATIONAL SAFETY AND HEALTH (OSH) MANAGEMENT

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Define and apply “safe work practices”, “worker Right to Know” and Community Right to Know” requirements.
• Identify and evaluated hazardous material routes of entry, toxic effect, risk evaluation and control measures to reduce their exposure and effects.
• Identify key mandatory components of an Injury Illness Prevention Plan (IIPP) in compliance with SB198.

Associate in Science Degree Requirements:
Course Title Units
BIO 130 General Biology I 3
BIO 131 General Biology I Laboratory 1
CHEM 115 Fundamentals of Chemistry 4
EHSM 100 Introduction to Environmental and Occupational Safety and Health (OSH) Technology 4
EHSM 130 Environmental/Occupational Health Effects of Hazardous Materials 3
EHSM 135 General Industry Safety Standards 3
EHSM 145 Construction Safety Standards 3
EHSM 200 Hazardous Materials Management (HMM) Applications 4
EHSM 201 Introduction to Industrial Hygiene and Occupational Health 4
EHSM 205 Safety and Risk Management Administration 4
EHSM 230 Safety and Emergency Response 4
EHSM 240 Cooperative Work Experience 1-4
Total Required 38-41

Select one of the following:
CIS 110 Principles of Information Systems 4
COMM 122 Public Speaking 3
SPAN 120 Spanish I 4
Total Required 41-46

Plus General Education Requirements

IV. OCCUPATIONAL SAFETY AND HEALTH (OSH) TECHNICIAN

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
• Identify and evaluated hazardous material routes of entry, toxic effect, risk evaluation and control measures to reduce their exposure and effects.
• Describe and apply terms common to the hazardous materials industry.
• Apply California and Federal safety standards to assess worksites and recognize hazardous conditions and/or noncompliance.
• Assess and evaluate job processes to identify and implement appropriate risk management strategies.
• Describe agencies that regulate specific hazardous materials.
• Interpret Federal, State and Local regulations governing Construction Safety.
• Define and apply “safe work practices”, “worker Right to Know” and Community Right to Know” requirements.
• Identify and evaluated hazardous material routes of entry, toxic effect, risk evaluation and control measures to reduce their exposure and effects.
• Identify key mandatory components of an Injury Illness Prevention Plan (IIPP) in compliance with SB198.

Certificate Requirements:
Course Title Units
EHSM 100 Introduction to Environmental and Occupational Safety and Health (OSH) Technology 4
EHSM 130 Environmental/Occupational Health Effects of Hazardous Materials 3
EHSM 135 General Industry Safety Standards 3
EHSM 200 Hazardous Materials Management (HMM) Applications 4
EHSM 201 Introduction to Industrial Hygiene and Occupational Health 4
EHSM 240 Cooperative Work Experience 1-4

Select two of the following:
EHSM 145 Construction Safety Standards 3
EHSM 205 Safety and Risk Management Administration 4
EHSM 230 Safety and Emergency Response 4
Total Required 26-30

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Occupational Safety and Health (OSH) Technician. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

EXERCISE SCIENCE

This degree program is designed to prepare students for a variety of careers including education, physical therapy, coaching, personal training and other allied health professions by providing classes oriented toward fitness, wellness and health promotion throughout the lifespan. The major also provides preparation for transfer to a four-year college in physical education, exercise physiology, kinesiology, nutrition or athletic training, as well as teacher credentialing programs.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• List and define the five basic components of physical fitness.
• Describe the concepts of frequency, intensity and time, and how they relate to personal fitness goals.
• Outline a basic strategy for achieving fitness through the lifespan.
• List options within the community for continued lifelong physical activity.
• List benefits of daily physical activity.
• Demonstrate competence in acquiring sound nutritional information.
• Demonstrate improvement in sport skills.
• Outline appropriate goals and activities for increasing the fitness of children.
• Describe appropriate preventive measures as well as treatments for various sport injuries.
• List and describe opportunities for employment in the field.
• Describe their field of interest and a course of instruction that will meet their professional needs.

CAREER OPPORTUNITIES
-- Aerobics Instructor
-- Athletics Coach
-- Athletics Trainer
-- Cardiovascular Rehabilitation College Professor
-- Elementary School Teacher
-- Exercise Physiologist
-- Health Club Manager
-- Personal Trainer
-- Physical Therapist/Assistant
-- Registered Dietician
-- Secondary School Teacher
-- Teaching
-- Bachelor Degree or higher required
Association in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 130</td>
<td>General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIO 131</td>
<td>General Biology I Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIO 140</td>
<td>Human Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 115</td>
<td>Fundamentals of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CMN 122</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>ES 014ABC</td>
<td>Body Building</td>
<td>1.5</td>
</tr>
<tr>
<td>ES 250</td>
<td>Introduction to Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>ES 255</td>
<td>Care and Prevention of Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>HED 158</td>
<td>Nutrition for Fitness and Sports</td>
<td>3</td>
</tr>
<tr>
<td>or HED 255</td>
<td>Science of Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>PSY 120</td>
<td>Introductory Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 120</td>
<td>Introductory Sociology</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 215</td>
<td>Statistics for Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
<tr>
<td>PSY 215</td>
<td>Statistics for the Behavioral Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following (fulfills the activity requirement for the associate degree):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES 001</td>
<td>Adapted Physical Exercise</td>
<td>1</td>
</tr>
<tr>
<td>ES 009ABC</td>
<td>Aerobic Dance Exercise</td>
<td>1</td>
</tr>
<tr>
<td>ES 019ABC</td>
<td>Physical Fitness</td>
<td>1.5</td>
</tr>
<tr>
<td>ES 060ABC</td>
<td>Badminton</td>
<td>1</td>
</tr>
<tr>
<td>ES 076ABC</td>
<td>Tennis</td>
<td>1</td>
</tr>
<tr>
<td>ES 125ABC</td>
<td>Golf</td>
<td>1-1.5</td>
</tr>
<tr>
<td>ES 155ABC</td>
<td>Basketball</td>
<td>1</td>
</tr>
<tr>
<td>ES 170ABC</td>
<td>Soccer</td>
<td>1</td>
</tr>
<tr>
<td>ES 171ABC</td>
<td>Softball</td>
<td>1</td>
</tr>
<tr>
<td>ES 175ABC</td>
<td>Volleyball</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Required: 37.5-39.5, Plus General Education Requirements

Students planning to transfer to SDSU must take HED 255.

CERTIFICATE OF SPECIALIZATION:

RECREATIONAL LEADERSHIP–SCHOOL-BASED PROGRAMS

This certificate offers specific training for entry-level positions or for advancement in school care and outdoor programs for children and families. It is designed to demonstrate an area of expertise that may be used to attain employment in areas of school-based recreation and fitness programs.

Program Learning Outcomes

Upon successful completion of this certificate, students will be able to:

- Describe the ability to plan school-based recreational programs which deliberately intend to advance, stimulate or otherwise enhance children’s physical, social and emotional development in ways which are appropriate to their developmental level.
- Describe tested and proven teaching approaches to analyze and enhance movement competencies.

Career Opportunities

Students may find positions in an elementary or middle school, YMCA, recreation center, day or residential camp, or after school day care program. This is a great stepping-stone training for those who want to major in exercise science, recreation, elementary education or child development. Provides students with the expertise to enter the entry-level job market with knowledge of sound principles of fitness and developmentally appropriate recreation.

Students who complete the requirements below and hold a current First Aid/CPR certification qualify for a Certificate in Recreational Leadership–School-Based Programs. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 125</td>
<td>Child Growth and Development</td>
<td>3</td>
</tr>
<tr>
<td>CD 134</td>
<td>Health, Safety and Nutrition of Young Children</td>
<td>3</td>
</tr>
<tr>
<td>ES 253</td>
<td>Physical Education in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>ES 270</td>
<td>Cooperative Games</td>
<td>1</td>
</tr>
<tr>
<td>ES 271</td>
<td>Fitness Walking with Children</td>
<td>1</td>
</tr>
<tr>
<td>ES 272</td>
<td>Issues in Childhood Obesity</td>
<td>1</td>
</tr>
<tr>
<td>ES 273</td>
<td>Field Experience in School-Based Recreational Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 15

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Demonstrate the ability to write effectively.
- Demonstrate the ability to locate relevant, reliable information and read it effectively.
- Organize thoughts and ideas in both oral and written format.
- Communicate effectively with diverse audiences.

Communication

BUS 128
COMM 110, 120, 122, 123, 124, 130, 135, 136, 137, 145

Language Arts

ARAM 120, 121, 220, 221
ARBC 120, 121, 220, 221, 250, 251
ASL 120, 121, 220, 221
BUS 128
BNG 120, 124, 126, 201, 202, 207, 214, 217, 221, 222, 231, 232, 270, 271, 275, 276, 277
FREN 120, 121, 220, 221, 250, 251
ITAL 120, 121, 220
LIR 110
NAYK 120, 121, 220
SPAN 120, 121, 220, 221, 250, 251

The Associate Degree in General Studies with an Area of Emphasis provides an opportunity for students to design a program of study meaningful and appropriate to their own needs and academic interests. The degree includes general education and a focused area of study. Students may choose to earn this degree for preparation for employment or for personal development.

REQUIREMENTS

To meet the General Studies degree requirements, a student must complete the following:

I. AS or AA General Education Requirements (see Degree Requirements and Transfer Information section)

AND

II. Areas of Emphasis

Choose a minimum of 18 units from one Area of Emphasis:

A. Business and Technology
B. Communication and Language Arts
C. Humanities and Fine Arts
D. Lifelong Health, Well-Being and Self-Development
E. Science and Mathematics
F. Social and Behavioral Sciences

The Associate in Science in General Studies with an Emphasis in Business and Technology will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses emphasize the study of how language works to express human ideas and feelings. Students will explore and analyze written and verbal communication methods, as well as develop and advance their oral and written communication skills. Students must complete a minimum of six units in Communication and six units in Language Arts. The remaining six units may be taken from either category.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Communicate effectively with diverse audiences.
- Demonstrate the ability to write effectively.
- Demonstrate the ability to locate relevant, reliable information and read it effectively.
- Organize thoughts and ideas in both oral and written format.
- Communicate effectively with diverse audiences.

Communication

BUS 128
COMM 110, 120, 122, 123, 124, 130, 135, 136, 137, 145

BUS 128
BNG 120, 124, 126, 201, 202, 207, 214, 217, 221, 222, 231, 232, 270, 271, 275, 276, 277
FREN 120, 121, 220, 221, 250, 251
ITAL 120, 121, 220
LIR 110
NAYK 120, 121, 220
SPAN 120, 121, 220, 221, 250, 251

The Associate in Science in General Studies with an Emphasis in Business and Technology will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses emphasize the study of business transaction theory and practice, the operations and strategies of business decisions, legal concepts, and the place of business in the American and global economy as a whole. Students will apply mathematical and quantitative reasoning skills to the discipline’s methodologies, as well as evaluate and interpret basic economic principles and theories related to performance and specific economic sectors. Students must take a minimum of three units from each area. The remaining units may be taken from any area.
C. Humanities and Fine Arts
The Associate in Arts in General Studies with an Emphasis in Humanities and Fine Arts will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses emphasize the study of cultural, humanistic activities and artistic expression of human beings. Students will evaluate and interpret the ways in which people through the ages in different cultures have responded to themselves and the world around them through artistic and cultural creation. Students will develop an aesthetic awareness and incorporate these concepts when constructing value judgments. Students must complete a minimum of six units in Humanities and six units in Fine Arts. The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Analyze the principle elements of representative examples of art, architecture, literature, theater, philosophy, music, dance, film, or other relevant areas of cultural and/or intellectual creativity.
• Demonstrate an awareness of the historical and philosophical contexts of representative areas, movements, media, works, or styles of cultural and/or intellectual creativity.
• Employ the language, concepts and methods of interpretive criticism as applicable to the representative categories of human creativity.
• When applicable, apply artistic processes and skills as a creative expression, using a variety of media to communicate meaning and intent in original works of art.

Humanities
ARAM 120, 121, 220
ARBIC 120, 121, 220, 221, 250, 251
ASL 120, 121, 140, 220, 221
ENGL 122, 201, 202, 207, 214, 217, 221, 222, 231, 232, 270, 271, 275, 276, 277
FREN 120, 121, 220, 221, 250, 251
HIST 100, 101, 105, 106
HUM 110, 115, 120, 149, 150
ITAL 120, 121, 220
NAKY 120, 121, 220
PHIL 110, 115, 117
RELG 120, 130, 210, 215
SPAN 120, 121, 220, 221, 250, 251

Fine Arts
ART 100, 120, 121, 124, 125, 129, 135, 140, 141, 143, 148, 150, 220, 221, 222, 224, 225, 230, 231, 232, 233, 235, 236
MUS 110, 111, 114, 115, 116, 117
THTR 110, 120, 121

D. Lifelong Health, Well-Being and Self-Development
The Associate in Arts in General Studies with an Emphasis in Lifelong Health, Well-Being and Self-Development will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses focus on the improvement of health and well-being and are designed to provide knowledge and tools of how to obtain optimal physical, psychological and emotional health and well-being throughout the lifespan. Potential entry-level positions of employment that students will be prepared for upon completion include those in recreation, education, and health fields. Students must take a minimum of three units in Health, three units in Exercise Science, three units in Nutrition, and three units in Self-Development. The remaining six units may be taken from any category. A maximum of one course may be earned from any combination of ES 206, 209, 213, 218, 224, 227, 230 and 249.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Demonstrate an understanding of optimal health and fitness in daily life through informed decision-making.
• Describe basic principles of nutrition.
• Value the importance of physical activity through the lifespan.

Health
BIO 115
HED 105, 120, 201, 202, 203, 251

Exercise Science

Nutrition
HED 155, 158, 255

Self-Development
CON 110, 120, 130, 140, 150

E. Science and Mathematics
The Associate in Science in General Studies with an Emphasis in Science and Mathematics will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses emphasize the study of mathematical and quantitative reasoning skills and apply the facts and principles that form the foundations of living and non-living systems. Students will recognize and utilize the methodologies of science as investigative tools, as well as the limitations of science. Students will use mathematical skills to solve numerical problems encountered in daily life, and more advanced skills for applications in the physical and life sciences. Students must complete a minimum of six units in Science and six units in Mathematics (limitation of one statistics course). The remaining six units may be taken from any category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Use algebraic methods to solve problems.
• Interpret basic mathematical models and draw inferences from them.
• Represent mathematical information symbolically, visually, numerically and verbally.
• Use the scientific method of inquiry and techniques to answer questions about the natural world.
• Use scientific information and solve scientific problems.

Science
ANTH 120
ASTR 110, 112
BIO 112, 115, 122, 124, 130, 131, 132, 140, 141, 141L, 152, 230, 240, 251
CHEM 102, 105, 113, 115, 116, 120, 141, 142, 230, 231, 240, 251
ET 110
GEOG 120, 121
GEOG 106, 122, 130, 132
PSYC 120, 121, 124, 130, 140
SOC 120, 125, 130
SPAN 145

Behavioral Science
CD 115, 125, 131
COMM 110, 124
HED 201, 203, 251

Psychology
PSY 120, 125, 134, 138, 140, 150, 170, 220

CADD and Engineering
CADD 115, 120, 125, 129, 131
ENGR 100, 119, 120, 125, 129, 131, 175, 176, 218, 270

Computer Science
CS 119, 119L, 180, 181, 182, 280, 281, 282

F. Social and Behavioral Sciences
The Associate in Arts in General Studies with an Emphasis in Social and Behavioral Sciences will be awarded to students upon completion of general education degree requirements and 18 units in this area. These courses emphasize the study and understanding of human behavior. Students will evaluate and interpret human societies; the institutions, organizations and groups that form them; the ways in which individuals and groups relate to one another; and various approaches and methodologies of the disciplines. Students must complete a minimum of six units in Social Science and six units in Behavioral Science. The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Describe general principles of the political institutions and government of the United States.
• Demonstrate an understanding and appreciation of social, political, and economic institutions within a historical perspective.
• Evaluate the ways people act and interact in cultures, societies and social subgroups.
• Assess how social issues are influenced by geographical and historical processes.
• Apply knowledge of social and behavioral sciences theories and scientific methods in an assessment of real-world problems.

Social Science
ANTH 120
ARBC 145
CD 145
ECON 110, 120, 121
GEOG 106, 122, 130, 132
PSOC 120, 121, 124, 130, 140
SOC 120, 125, 130
SPAN 145

GRAPHIC DESIGN
Students in this degree program develop entry-level skills in design aesthetics, typography, illustration, digital imaging, page layout, web design and professional business practices. The course work provides training with state of the art computer hardware and software used in the graphic design profession. Students develop a professional portfolio for job interviews. Designed for a two-year degree or certificate only. Students interested in pursuing a bachelor’s degree should refer to the Art–Graphic Design degree; please consult the catalog of the transfer institution for specific requirements.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Analyze the historical and cultural context of graphic design.
• Apply the principles of design and use the design process to create graphic works.


HISTORY FOR TRANSFER (AA-T)

I. DIGITAL PHOTOGRAPHY

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

- Create photographic images applying the principles of design.
- Evaluate the aesthetic qualities and criticize works of photography.
- Demonstrate the use of digital cameras and scanners.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GD 110</td>
<td>3</td>
</tr>
<tr>
<td>GD 126</td>
<td>3</td>
</tr>
<tr>
<td>GD 130</td>
<td>3</td>
</tr>
<tr>
<td>GD 210</td>
<td>3</td>
</tr>
<tr>
<td>GD 211</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required 15

II. WEB GRAPHICS

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

- Create graphic images in the proper formats for use on the web.
- Develop web pages using proper typographic treatment and navigational devices.

Certificate Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 211</td>
<td>3</td>
</tr>
<tr>
<td>GD 110</td>
<td>3</td>
</tr>
<tr>
<td>GD 217</td>
<td>3</td>
</tr>
<tr>
<td>GD 222</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required 15

5. Certified completion of the California State University General Education (CSU GE) Breadth pattern or the Intersegmental General Education Transfer Curriculum (IGETC) pattern, see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Recognize theories of historical interpretation.
- Describe historical and philosophical underpinnings of government systems and ideologies.
- Demonstrate how literature and the arts help us understand the past.
- Define historical periods and transitions.
- Distinguish between primary and secondary sources.

Associate in Arts Degree Requirements

Core Curriculum:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 108</td>
<td>3</td>
</tr>
<tr>
<td>HIST 109</td>
<td>3</td>
</tr>
</tbody>
</table>

List A: Select six units:

- HIST 100 Early World History 3
- HIST 105 Early Western Civilization 3
- HIST 101 Modern World History 3
- HIST 106 Modern Western Civilization 3

List B: Select one course from each group:

Group 1: Select one of the following diversity courses:

- ARBC 145
- HIST 118, 119, 130, 131, 132, 180, 181, or HIST 100 or 101 if not selected above
- MUS 116
- RELG 120, 130
- SPAN 141, 145
- Or a world language course that fulfills CSU GE Area C2

Total Units for Major 18 units may be double-counted with GE 18-20

Group 2: Select one course related to history:

- ANTH 120
- ART 100, 140, 141, 143, 144, 145
- ENGL 122, 201, 202, 207, 214, 221, 222, 231, 232
- HIST 122, 123, 124, or any history course not selected above
- HUM 110, 120, 140, 155
- MUS 110, 111, 114, 115, 117
- PHIL 160, 170
- POSC 120, 121, 123, 130, 140
- RELG 210, 215
- THT 110

Total Units for Major 18 units may be double-counted with GE 18-20

TOTAL UNITS FOR MAJOR: 60

Please note: SDSU accepts this degree for students transferring into History B.A.
Associate Degree Programs and Certificates

II. HISTORY
This major prepares students for transfer to four-year institutions for continued study in the field of history. The degree program fulfills the lower division requirements for most majors in the history department at San Diego State University and is typical of requirements at other four-year schools. For special requirements, transfer students should consult the catalog of the college or university of their choice. History courses provide useful background for students in such fields as history, education, political science and law.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
- Recognize theories of historical interpretation.
- Describe historical and philosophical underpinnings of government systems and ideologies.
- Demonstrate how literature and the arts help us understand the past.
- Define historical periods and transitions.
- Distinguish between primary and secondary sources.

CAREER OPPORTUNITIES
- Anthropologist
- Archaeologist
- Attorney
- Cartographer
- College History Professor
- Historian
- Intelligence Analyst
- Journalist
- Legislative Assistant
- Politician
- Research Historian
- Secondary School Teacher
- Travel Advisor
- Technical Writer
- Textbook Writer/Editor
- Bachelor Degree or higher required

Associate in Arts Degree Requirements:
Select twelve units from any two of the following sequences:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 100 Early World History</td>
<td>6</td>
</tr>
<tr>
<td>HIST 101 Modern World History</td>
<td>6</td>
</tr>
<tr>
<td>HIST 105 Early Western Civilization</td>
<td>6</td>
</tr>
<tr>
<td>HIST 106 Modern Western Civilization</td>
<td>6</td>
</tr>
<tr>
<td>HIST 108 Early American History</td>
<td>6</td>
</tr>
<tr>
<td>HIST 109 Modern American History</td>
<td>6</td>
</tr>
</tbody>
</table>

Select six units from the following:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 118 U.S. History: Chicano/Chicana Perspectives I</td>
<td>3</td>
</tr>
<tr>
<td>HIST 119 U.S. History: Chicano/Chicana Perspectives II</td>
<td>3</td>
</tr>
<tr>
<td>HIST 122 Women in Early American History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 123 Women in Modern American History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 124 History of California</td>
<td>3</td>
</tr>
<tr>
<td>HIST 180 U.S. History: Black Perspectives I</td>
<td>3</td>
</tr>
<tr>
<td>HIST 181 U.S. History: Black Perspectives II</td>
<td>3</td>
</tr>
<tr>
<td>HIST 210 Women in Western Civilization</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 18

Recommended Electives: ART 140, 141; ENGL 221, 222, 231, 232; GEOG 130; POSC 121, 124, 140; RELGS 120, 130

INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM (CSU OR UC)

Certificate of Achievement
The Certificate of Achievement in Intersegmental General Education Transfer Curriculum (IGETC) may be awarded upon completion of the IGETC requirements (see Degree Requirements and Transfer Information section). Students must complete a minimum of 39 units, which are distributed among six areas. IGETC requirements are designed to be taken with a major area of concentration and elective courses in preparation for transfer to the California State University or the University of California.

Courses completed at California Community Colleges and participating institutions will be certified based on approval at the original campus. Courses taken at other colleges and universities; i.e. out-of-state, private, may be used in the certification under certain conditions. Although this certificate recognizes the completion of lower division general education requirements for IGETC, it does not guarantee admission to a four-year institution. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
- Exhibit proficiency in written communication in English.
- Demonstrate critical thinking skills.
- Analyze, criticize and advocate ideas and reach well-supported conclusions.
- Show skills and understanding beyond the level of intermediate algebra, and apply mathematical concepts to solve problems.
- Analyze and appreciate works of philosophical, historical, literary, aesthetic and cultural importance.
- Demonstrate understanding of major civilizations and cultures, both Western and non-Western.
- Recognize the contributions to knowledge, civilization, and society that have been made by various ethnic or cultural groups.
- Evaluate the basic concepts of physical and biological sciences.
- Use the scientific method of inquiry and techniques to answer questions about physical and biological processes.
- Demonstrate proficiency in English equal to two years of high school study (IGETC-UC).

KINESIOLOGY FOR TRANSFER (AA-T)

The Associate in Arts in Kinesiology for Transfer degree is designed to prepare students for transfer to a California State University (CSU) by fulfilling lower-division requirements for the disciplines of Kinesiology, Exercise Science and Physical Education. This major provides preparation for careers in physical therapy, coaching, personal training, and other allied health professions by including classes oriented toward fitness, wellness, and health promotion throughout the lifespan.

The following is required for the AA-T in Kinesiology for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of “C” or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
- List and define the five basic components of physical fitness.
- Describe the concepts of frequency, intensity, and time and how they relate to personal fitness goals.
- Outline a basic strategy for achieving fitness through the lifespan.
- List options within the community for continued lifelong physical activity.
- List benefits of daily physical activity.
- Demonstrate competence in acquiring sound nutritional information.
- Demonstrate improvement in sport skills.
- Outline appropriate goals and activities for increasing the fitness of children.
- Describe appropriate preventive measures as well as treatments for various sport injuries.
- List and describe opportunities for employment in the field.
- Describe their field of interest and a course of instruction that will meet their professional needs.
**Certificate Requirements:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 132</td>
<td>Cultural Ethnobotany</td>
<td>3</td>
</tr>
<tr>
<td>HIST 132</td>
<td>Kumeyaay History I: Precontact-1900</td>
<td>3</td>
</tr>
<tr>
<td>NAKY 120</td>
<td>Kumeyaay I</td>
<td>5</td>
</tr>
</tbody>
</table>

Select one of the following:

**BIO 133**  
Ethnology  
**HIST 133**  
Kumeyaay History II: 1900-Present  
**HUM 116**  
Kumeyaay Arts and Culture  
**NAKY 121**  
Kumeyaay II  
**NAKY 220**  
Kumeyaay III  

Total Required: 11-16

### MANAGEMENT

This degree program is designed to provide students with the skills necessary to be successful as a manager in today's demanding organizational climate. The curriculum is beneficial to men or women who aspire to mid-level or higher management positions in any type of organization including business, government and service organizations.

**Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

- Identify the differences in leadership and management theories and how they can facilitate the overall effectiveness of domestic and multinational business operations.
- Evaluate the importance of human capital and how it can be used for tactical and strategic initiatives.
- Identify the skills needed and used to assess business-related problems from a subordinate and managerial perspective.
- Explain the different functions of ethical and socially responsible business practices.
- Differentiate between the various functions of groups and teams and how they interact from a cross-functional approach.

**CAREER OPPORTUNITIES**

- Bank Officer  
- Claim Adjuster  
- Computer Operations Supervisor  
- Director, Research and Development  
- Employment Interviewer  
- Financial Planner  
- Hospital Administrator  
- Import-Export Agent  
- Management Trainee  
- Management Consultant  
- Office Manager  
- Stock Broker  
- Teacher, College  
- Bachelor Degree or higher required  
- Bachelor Degree normally recommended

**Select one of the following:**

**BUS 110**  
Introduction to Business  
**BUS 121**  
Managerial Accounting  
**BUS 159ACD**  
Management Internship  
**BUS 195**  
Personal Finance  
**ECON 120**  
Principles of Macroeconomics

Total Required: 3-4

**Certificate of Achievement**

Students who complete only the major requirements above qualify for a Certificate in Management. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

**Mathematics**

This program is designed to prepare students for transfer to a California State University (CSU) with the intent of earning a B.S. degree in Mathematics. Since jobs requiring mathematical skills such as data analysis, problem solving, pattern recognition, statistics, and probability are in high demand, the mathematics major may benefit both educationally and economically from developing and pursuing an interest in mathematics. Mathematical skills and statistical methods are employed regularly by researchers testing hypotheses, by workers applying quality control in manufacturing, and by informed citizens who must evaluate information from the media in tabular, graphical, and report form in order to reach solutions. This major offers a foundation in these necessary skills. The emphasis is to prepare students for transfer to a four-year institution and/or for career preparation in a vocational or professional field.

The following is required for the AS-T in Mathematics for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of "C" or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

**Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

- Apply mathematical reasoning and problem solving strategies to analyze, interpret, and model applications from degree and transfer-level courses and programs in math, science, engineering, business, and technology.
- Select and apply appropriate definitions, postulates, and theorems to prove mathematical statements.
**I. MUSIC FOR TRANSFER (AA-T)**

The AA-T in Music for Transfer is designed to prepare students to transfer to a California State University (CSU) with the intent of earning a B.A. in music. Students who earn this degree will have the fundamental knowledge and skills necessary to succeed in a music degree at the baccalaureate level. The curriculum combines music theory, applied studies, and performance at the lower division level.

The following is required for the AA-T in Music for Transfer degree:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 105 Music Theory and Practice I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 106 Music Theory and Practice II</td>
<td>4</td>
</tr>
<tr>
<td>MUS 205 Music Theory and Practice III</td>
<td>4</td>
</tr>
<tr>
<td>MUS 206 Music Theory and Practice IV</td>
<td>4</td>
</tr>
<tr>
<td>MUS 190 Performance Studies</td>
<td>5</td>
</tr>
<tr>
<td>MUS 191 Performance Studies</td>
<td>5</td>
</tr>
<tr>
<td>MUS 290 Performance Studies</td>
<td>5</td>
</tr>
<tr>
<td>MUS 291 Performance Studies</td>
<td>5</td>
</tr>
</tbody>
</table>

Choose four units from the following large ensemble courses:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>MUS 112 Chamber Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MUS 113 Chamber Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MUS 214 Chamber Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MUS 215 Chamber Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MUS 152 Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MUS 153 Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MUS 252 Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MUS 253 Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MUS 158 Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MUS 159 Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MUS 258 Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MUS 259 Chorus</td>
<td>1</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Units for Major</td>
<td>22-24</td>
</tr>
<tr>
<td>Total Required</td>
<td>22-24</td>
</tr>
<tr>
<td>Plus General Education Requirements</td>
<td></td>
</tr>
</tbody>
</table>

Please note: SDSU accepts this degree for students transferring into Music B.A.
### III. MUSIC INDUSTRY STUDIES

This degree program provides lower division preparation for students wishing to transfer to a four-year program in Music Industry Studies. The curriculum combines training in music theory, literature and performance with studies in music technology and business. Transfer students should select the CSU GE Breadth or the IGETC transfer pattern (see Degree Requirements and Transfer Information section).

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze a musical score to determine its key, harmonic structure, musical style, and form.
- Use the piano keyboard to demonstrate musical concepts and play beginning level compositions.
- Use a digital audio workstation to record and edit digital audio files and notate musical ideas.
- Identify musical elements in performances and relate them to their cultural and historical contexts.
- Describe the structure, components, and various career paths of the music industry.
- Demonstrate proficiency on either a musical instrument or with the voice.

### CAREER OPPORTUNITIES

- Advertising Jingle Writer
- Artist and Repertoire Manager
- Artist Representative
- Arts Administrator
- Attorney specializing in Performing Arts
- Composer
- Concert Producer
- Copyist
- Instrumentalist
- Musical Instrument Manufacturer Representative
- Music Publisher
- Music Retail Manager
- Professional Songwriter
- Publicist
- Radio Programmer
- Record Company representative
- Record Producer
- Recording Studio Engineer
- Teacher
- Video Game Composer
- Vocalist

* Bachelor Degree or higher required

### Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 105</td>
<td>Music Theory and Practice I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 106</td>
<td>Music Theory and Practice II</td>
<td>4</td>
</tr>
<tr>
<td>MUS 110</td>
<td>Great Music Listening</td>
<td>3</td>
</tr>
<tr>
<td>MUS 116</td>
<td>Introduction to World Music</td>
<td>3</td>
</tr>
<tr>
<td>MUS 119</td>
<td>Cooperative Work Experience in Music Education</td>
<td>1</td>
</tr>
<tr>
<td>MUS 120</td>
<td>Introduction to Music Technology</td>
<td>3</td>
</tr>
<tr>
<td>MUS 126</td>
<td>Class Guitar I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 132</td>
<td>Class Piano I</td>
<td>3</td>
</tr>
<tr>
<td>MUS 133</td>
<td>Class Piano II</td>
<td>3</td>
</tr>
<tr>
<td>MUS 170</td>
<td>Class Voice</td>
<td>2</td>
</tr>
<tr>
<td>MUS 190</td>
<td>Performance Studies</td>
<td>.5</td>
</tr>
<tr>
<td>MUS 191</td>
<td>Performance Studies</td>
<td>.5</td>
</tr>
<tr>
<td>MUS 232</td>
<td>Class Piano III</td>
<td>3</td>
</tr>
<tr>
<td>MUS 233</td>
<td>Class Piano IV</td>
<td>3</td>
</tr>
<tr>
<td>MUS 230</td>
<td>Performance Studies</td>
<td>5</td>
</tr>
<tr>
<td>MUS 205</td>
<td>Music Theory and Practice I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 210</td>
<td>Music Theory and Practice II</td>
<td>4</td>
</tr>
<tr>
<td>MUS 120</td>
<td>Introduction to Music Technology</td>
<td>3</td>
</tr>
<tr>
<td>MUS 121</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 122</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 133</td>
<td>Class Piano II</td>
<td>3</td>
</tr>
<tr>
<td>MUS 134</td>
<td>Class Piano III</td>
<td>3</td>
</tr>
<tr>
<td>MUS 161</td>
<td>Cooperative Work Experience in Music Industry</td>
<td>1</td>
</tr>
<tr>
<td>MUS 221</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 222</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

Select four of the following:

- MUS 108 Rock, Pop and Soul Ensemble
- MUS 109 Rock, Pop and Soul Ensemble
- MUS 130A World Music Ensemble: African Percussion
- MUS 130B World Music Ensemble: Sundanese Gamelan
- MUS 130C World Music Ensemble: Latin American Music
- MUS 131A World Music Ensemble: African Percussion
- MUS 131B World Music Ensemble: Sundanese Gamelan
- MUS 131C World Music Ensemble: Latin American Music
- MUS 136 Chamber Singers
- MUS 137 Chamber Singers
- MUS 152 Concert Band
- MUS 153 Concert Band
- MUS 154 Jazz Ensemble
- MUS 155 Jazz Ensemble
- MUS 156 Chorus
- MUS 157 Chorus
- MUS 190 Performance Studies
- MUS 191 Performance Studies
- MUS 208 Rock, Pop and Soul Ensemble
- MUS 209 Rock, Pop and Soul Ensemble
- MUS 230A World Music Ensemble: African Percussion
- MUS 230B World Music Ensemble: Sundanese Gamelan
- MUS 230C World Music Ensemble: Latin American Music
- MUS 231A World Music Ensemble: African Percussion
- MUS 231B World Music Ensemble: Sundanese Gamelan
- MUS 231C World Music Ensemble: Latin American Music
- MUS 236 Chamber Singers
- MUS 237 Chamber Singers
- MUS 252 Concert Band
- MUS 253 Concert Band
- MUS 254 Jazz Ensemble
- MUS 255 Jazz Ensemble
- MUS 258 Chorus
- MUS 259 Chorus

**Select two of the following:**

- MUS 110 Great Music Listening
- MUS 111 History of Jazz
- MUS 114 Music in the United States
- MUS 115 History of Rock Music
- MUS 116 Introduction to World Music
- MUS 117 Introduction to Music History and Literature
- MUS 184 Digital Audio Recording and Production

### Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 104</td>
<td>Introduction to the Music Industry</td>
<td>3</td>
</tr>
<tr>
<td>MUS 105</td>
<td>Music Theory and Practice I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 106</td>
<td>Music Theory and Practice II</td>
<td>4</td>
</tr>
<tr>
<td>MUS 120</td>
<td>Introduction to Music Technology</td>
<td>3</td>
</tr>
<tr>
<td>MUS 121</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 122</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 133</td>
<td>Class Piano II</td>
<td>3</td>
</tr>
<tr>
<td>MUS 134</td>
<td>Class Piano III</td>
<td>3</td>
</tr>
<tr>
<td>MUS 161</td>
<td>Cooperative Work Experience in Music Industry</td>
<td>1</td>
</tr>
<tr>
<td>MUS 221</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MUS 222</td>
<td>Music Industry Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

Select four of the following:

- MUS 108 Rock, Pop and Soul Ensemble
- MUS 109 Rock, Pop and Soul Ensemble
- MUS 130A World Music Ensemble: African Percussion
- MUS 130B World Music Ensemble: Sundanese Gamelan
- MUS 130C World Music Ensemble: Latin American Music
- MUS 131A World Music Ensemble: African Percussion
- MUS 131B World Music Ensemble: Sundanese Gamelan
- MUS 131C World Music Ensemble: Latin American Music
- MUS 136 Chamber Singers
- MUS 137 Chamber Singers
- MUS 152 Concert Band
- MUS 153 Concert Band
- MUS 154 Jazz Ensemble
- MUS 155 Jazz Ensemble
- MUS 156 Chorus
- MUS 157 Chorus
- MUS 190 Performance Studies
- MUS 191 Performance Studies
- MUS 208 Rock, Pop and Soul Ensemble
- MUS 209 Rock, Pop and Soul Ensemble
- MUS 230A World Music Ensemble: African Percussion
- MUS 230B World Music Ensemble: Sundanese Gamelan
- MUS 230C World Music Ensemble: Latin American Music
- MUS 231A World Music Ensemble: African Percussion
- MUS 231B World Music Ensemble: Sundanese Gamelan
- MUS 231C World Music Ensemble: Latin American Music
- MUS 236 Chamber Singers
- MUS 237 Chamber Singers
- MUS 252 Concert Band
- MUS 253 Concert Band
- MUS 254 Jazz Ensemble
- MUS 255 Jazz Ensemble
- MUS 258 Chorus
- MUS 259 Chorus

**Select two of the following:**

- MUS 110 Great Music Listening
- MUS 111 History of Jazz
- MUS 114 Music in the United States
- MUS 115 History of Rock Music
- MUS 116 Introduction to World Music
- MUS 117 Introduction to Music History and Literature
- MUS 184 Digital Audio Recording and Production

### ORENOIL HORTICULTURE

This degree program provides students with entry-level skills, upgrading of existing skills, and preparation for further training. It is designed for those interested in careers in nursery and greenhouse management, landscape design and construction, grounds management, retail nursery operations, irrigation system design, installation and maintenance of interior plantcaping, arboriculture and other related fields. Students will learn modern horticultural methods and procedures as well as the use of tools and equipment common to the field.

### CAREER OPPORTUNITIES

- Agricultural Inspector
- Agricultural Researcher
- Arboriculture Technician
- Botanical Illustrator
I. ARBORICULTURE

This major encompasses urban forestry, professional tree care, and tree trimming. Students will learn care and pruning of landscape trees, palms and related plants as well as common fruit trees. Course work includes skill development in tree climbing and pruning techniques, basic tree maintenance, and principles of urban forestry. Graduates are employed by private tree care companies, public agencies, landscape contractors, wholesale and retail nurseries, or may be self-employed.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Describe proper and safe principles and practices of tree climbing.
• Describe the principles of tree biology and physiology for growth management.
• Demonstrate proper tree pruning procedures per industry standards.
• Identify common biotic and abiotic problems for trees common to Southern California landscapes and list appropriate control measures.
• Conduct a visual tree assessment for tree risk or value appraisal.
• Draft a tree preservation plan for a construction site.

Select nine units from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>OH 102</td>
<td>Xeriscape: Water Conservation in the Landscape</td>
<td>2</td>
</tr>
<tr>
<td>OH 172</td>
<td>Introduction to Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>OH 174</td>
<td>Turf and Ground Cover Management</td>
<td>3</td>
</tr>
<tr>
<td>OH 221</td>
<td>Landscape Construction: Irrigation and Carpentry</td>
<td>3</td>
</tr>
<tr>
<td>OH 235</td>
<td>Principles of Landscape Irrigation</td>
<td>4</td>
</tr>
<tr>
<td>OH 250</td>
<td>Landscape Water Management</td>
<td>2</td>
</tr>
<tr>
<td>OH 255</td>
<td>Sustainable Urban Landscapes Principles and Practices</td>
<td>3</td>
</tr>
<tr>
<td>OH 275</td>
<td>Diagnosing Horticultural Problems</td>
<td>1.5</td>
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<tr>
<td>OH 278</td>
<td>Horticultural Equipment Repair and Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>OH 278*</td>
<td>Business Management for Ornamental Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 120</td>
<td>Spanish I</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Required: 32

Select nine units from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>OH 278*</td>
<td>Cooperative Work Experience Education</td>
<td>3</td>
</tr>
<tr>
<td>OH 278*</td>
<td>Business Management for Ornamental Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>OH 290</td>
<td>Principles of Landscape Irrigation</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required: 24

II. FLORAL DESIGN

This degree program is designed for those individuals seeking careers in the floral industry, or for those seeking to upgrade their existing skills and prepare for further training. Course work is directed toward skills, concepts and practices used in the commercial floral industry, with an emphasis in hands-on training. There is also an emphasis on the business skills needed to succeed as a floral industry entrepreneur.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Identify and explain the principles and elements of design common to the retail floral industry and utilize these guidelines in the reproduction and construction of independent floral arrangements, events and décor.
• Identify, evaluate and discuss in context vocabulary fresh floral product and permanent botanical materials, hard goods, and trends in European and Asian design influence.
• Prepare an original event proposal based on site analysis for a special occasion to include an appropriate wholesale budget, estimate design recipes, fresh and hard goods product.
• Compare and contrast retail florist businesses in shop operations, workstations, sales and consultation areas, visual displays, customer relations, and typical business practices including labor relations, insurance, advertising, accounting and license requirements.

III. GOLF COURSE AND SPORTS TURF MANAGEMENT

Students in this major pursue careers as golf course superintendents or sports turf managers. The program is intended for those individuals wishing to enter the field as well as those who desire to upgrade their existing skills. Students may also transfer to a four-year degree program in agronomy, turf management, or related field. Course work is designed to study environmentally sound solutions for the efficient production and management of golf and sports turf.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:
• Demonstrate and practice standardized safety procedures as they apply to golf and sports turf management.
• Identify warm and cool season turf cultivars common to Southern California.
• Identify and manage primary and secondary noxious weeds.
• Identify and manage common biotic and abiotic problems associated with turf management in Southern California.
• Demonstrate knowledge of appropriate use and maintenance of equipment common to golf and sports turf management.
• Identify BB trees and shrubs common to Southern California.
• Demonstrate water quality impact on turfgrass and plant material species and the relationship to soil conditions.
• Demonstrate the impact of various water sources on golf course maintenance budgets.
• Using principles of irrigation hydraulics, calculate friction loss in pipe, determine proper pipe sizing using the friction factor and velocity limit method, and determine appropriate component sizing.
• Identify and describe the proper installation of irrigation system components.
• Using standard industry practices, develop guidelines and demonstrate the ability to perform proper fertilizing, pruning, mulch application and irrigation of Southern California landscapes.
• Identify and explain labor relations, business plans, and license requirements for the golf and sports turf industry.
• Demonstrate the ability to install concrete, masonry and plant material.
Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 156</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>OH 120</td>
<td>Fundamentals of Ornamental Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>OH 130</td>
<td>Plant Pest Control</td>
<td>3</td>
</tr>
<tr>
<td>OH 276</td>
<td>Horticultural Equipment Repair and</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td></td>
</tr>
<tr>
<td>OH 290*</td>
<td>Cooperative Work Experience/Education</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total Required</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Plus General Education Requirements</td>
<td></td>
</tr>
</tbody>
</table>

*Student must complete six units within the major at Cuyamaca College to be eligible for this course.

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Ornamental Horticulture.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Explain the relationships between plants and their soil and water environment including the use of recycled water.
- Demonstrate an understanding of landscape irrigation hydraulics.
- Identify irrigation system components and demonstrate their proper installation.
- Demonstrate a basic understanding of irrigation design principles.
- Demonstrate the ability to calculate an irrigation schedule.
- Demonstrate the ability to diagnose irrigation system problems related to valves, wiring, and hydraulics.
- Explain the importance of, and best practices for, water conservation in regards to water sources, water quality and regulations.
- Gain practical experience working in the landscape industry.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>OH 120</td>
<td>Xeriscape: Water Conservation in the Landscape</td>
<td>2</td>
</tr>
<tr>
<td>OH 120</td>
<td>Fundamentals of Ornamental Horticulture</td>
<td>3</td>
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<tr>
<td>OH 140</td>
<td>Soils</td>
<td>3</td>
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<tr>
<td>OH 221</td>
<td>Landscape Construction: Irrigation and</td>
<td>3</td>
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<tr>
<td></td>
<td>Carpentry</td>
<td></td>
</tr>
<tr>
<td>OH 235</td>
<td>Principles of Landscape Irrigation</td>
<td>4</td>
</tr>
<tr>
<td>OH 250</td>
<td>Landscape Water Management</td>
<td>2</td>
</tr>
<tr>
<td>OH 290*</td>
<td>Cooperative Work Experience/Education</td>
<td>5</td>
</tr>
</tbody>
</table>

Select one of the following:

| BUS 110 | Introduction to Business                   | 3     |
| BUS 111 | Entrepreneurship: Starting and Developing Business | 3     |
| BUS 125 | Business Law: Legal Environment of Business | 3     |

Select nine units from the following:

| OH 130  | Plant Pest Control                         | 3     |
| OH 170  | Plant Materials: Trees and Shrubs          | 3     |
| OH 171  | Landscape Drafting                         | 3     |
| OH 172  | Introduction to Landscape Design           | 3     |
| OH 174  | Turf and Ground Cover Management           | 3     |
| OH/CADD 200** | Introduction to Computer-Aided Landscape Design | 3     |
| OH 225  | Landscape Contracting                      | 3     |
| OH 238  | Irrigation System Design                   | 3     |
| OH 276  | Horticultural Equipment Repair and         | 3     |
|          | Maintenance                                |       |
| OH 278  | Business Management for Ornamental Horticulture | 3     |
| SPAN 120| Spanish I                                  | 5     |

Total Required 32

Plus General Education Requirements

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>OH 120</td>
<td>Xeriscape: Water Conservation in the Landscape</td>
<td>2</td>
</tr>
<tr>
<td>OH 120</td>
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<td>3</td>
</tr>
<tr>
<td>OH 140</td>
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<td>3</td>
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<tr>
<td>OH 221</td>
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</tr>
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<td></td>
<td>Carpentry</td>
<td></td>
</tr>
<tr>
<td>OH 235</td>
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<td>4</td>
</tr>
<tr>
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</tr>
<tr>
<td>OH 290*</td>
<td>Cooperative Work Experience/Education</td>
<td>5</td>
</tr>
</tbody>
</table>

Select one of the following:

| BUS 110 | Introduction to Business                   | 3     |
| BUS 111 | Entrepreneurship: Starting and Developing Business | 3     |
| BUS 125 | Business Law: Legal Environment of Business | 3     |

Select nine units from the following:

| OH 130  | Plant Pest Control                         | 3     |
| OH 170  | Plant Materials: Trees and Shrubs          | 3     |
| OH 171  | Landscape Drafting                         | 3     |
| OH 172  | Introduction to Landscape Design           | 3     |
| OH 174  | Turf and Ground Cover Management           | 3     |
| OH/CADD 200** | Introduction to Computer-Aided Landscape Design | 3     |
| OH 225  | Landscape Contracting                      | 3     |
| OH 238  | Irrigation System Design                   | 3     |
| OH 276  | Horticultural Equipment Repair and         | 3     |
|          | Maintenance                                |       |
| OH 278  | Business Management for Ornamental Horticulture | 3     |
| SPAN 120| Spanish I                                  | 5     |

Total Required 32

Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Landscape Design. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

V. LANDSCAPE DESIGN
This major provides students with a systematic, process-oriented approach to landscape design for residential landscapes. The curriculum is designed to investigate the current trends in landscape design and the technologies used in the construction of the projects. Course work is designed for entry level skills, upgrading of existing skills, and for transfer to four-year degree programs. Graduates are employed by landscape architects, landscape contractors, public agencies or may be self-employed.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Prepare conceptual landscape plans for residential clients.
- Measure a site then draft a site plan using hand drafting and computer aided drafting.
- Analyze project sites for assets and constraints.
- Create an aesthetically pleasing, sustainable, and feasible landscape design.
- Produce graphically pleasing landscape concept plans, elevations, and sections using both hand drafting and computer aided drafting techniques.
- Analyze site topography (including relief, slope and aspect) as required to prepare line grading plans.
- Identify and describe the palate of materials used in landscape construction.
- Identify at least 250 trees, shrubs, annuals, and perennials used in Southern California landscaping.
- Demonstrate the ability to locate plants appropriately on a planting plan.
- Apply water conserving and sustainable landscape ideas to designs.
- Quantify the irrigation needs of the specified plants and prepare effective irrigation plans.
- Identify and explain business practices and legal considerations associated with a developing a landscape business.
- Gain practical experience working in the landscape industry.

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Landscape Design. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

VI. LANDSCAPE TECHNOLOGY
Landscape installation and management forms the focus of this program. Students will learn the latest methods, materials and techniques in the landscape industry. Those seeking careers in landscape technology are entering a challenging career field that requires knowledge of plant material, turfgrass, landscape and irrigation design, soils, pest control and landscape construction. A professional in the field has the opportunity to be involved in working with people as well as plants as the manager must direct and supervise employees, deal with clients and suppliers, and may become involved in professional organizations. Students entering the landscape industry, those already employed but seeking to upgrade their skills, and those wishing to transfer to Cal Poly or other four-year degree programs will benefit from the curriculum. Graduates are employed by landscape contractors, public agencies or may be self-employed.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Understand the principles of plant structure function and plant growth.
- Identify 175 trees, shrubs, annuals, perennials and turf grass species commonly field used in Northern California landscapes.
• Using standard industry practices, develop guidelines and demonstrate the ability to perform proper fertilizing, pruning, mulch application and irrigation of Southern California landscapes.
• Understand the elements of water management of a large landscape site.
• Identify common biotic and abiotic problems common to Southern California landscapes and list appropriate control measures.
• Gain practical experience working in the landscape industry.

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
--- | --- | ---
OH 120 | Fundamentals of Ornamental Horticulture | 3
OH 130 | Plant Pest Control | 3
OH 140 | Soils | 3
OH 170 | Plant Materials: Trees and Shrubs | 3
OH 180 | Plant Materials: Annuals and Perennials | 3
OH 235 | Principles of Landscape Irrigation | 4
OH 250 | Landscape Water Management | 2
OH 290* | Cooperative Work Experience Education | 3

**Select one of the following:**

**BUS 110** Introduction to Business | 3
**BUS 111** Entrepreneurship: Starting and Developing a Business | 3
**BUS 125** Business Law: Legal Environment of Business | 3

**Select five units from the following:**

**OH 102** Xeriscape: Water Conservation in the Landscape | 2
**OH 172** Introduction to Landscape Design | 3
**OH 174** Turf and Ground Cover Management | 3
**OH 220** Landscape Construction: Concrete and Masonry | 3
**OH 221** Landscape Construction: Irrigation and Carpentry | 3
**OH 222** Japanese Garden Design and Construction | 1
**OH 225** Landscape Contracting | 1
**OH 255** Sustainable Urban Landscapes Principles and Practices | 3
**OH 260** Arboriculture | 3
**OH 276** Horticultural Equipment Repair and Maintenance | 3
**OH 278** Business Management for Ornamental Horticulture | 3
**SPAN 120** Spanish I | 5

**Total Required** | **32**
**Plus General Education Requirements** | **8**

*Student must complete six units within the major at Cuyamaca College to be eligible for this course.

**Certificate of Achievement**

Students who complete only the major requirements above qualify for a Certificate in Landscape Technology. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

**VII. NURSERY TECHNOLOGY**

Students enrolled in this major pursue careers in the wholesale production and retail sales of horticultural crops. Course work will focus on plant propagation, greenhouse plant production, and horticultural practices related to production and sales of landscape and greenhouse plant material. Students entering the nursery industry, those already employed but seeking upgraded skills, and those wishing to transfer to Cal Poly or other four-year degree programs will benefit from the curriculum. Graduates are employed by wholesale and retail nurseries, public agencies, or may be self-employed.

**Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

• Identify 250 trees, shrubs, annuals, perennials and turf grass species commonly used in Southern California landscapes.
• Explain the principles of plant structure function and plant growth.
• Demonstrate an understanding of common plant propagation practices.
• Cultivate horticultural crops in both natural and artificial environments common in the horticulture industry.
• Demonstrate an understanding of soil principles.
• Explain how to produce a business plan for the nursery industry.
• Gain practical experience working in the landscape industry.

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
--- | --- | ---
OH 120 | Fundamentals of Ornamental Horticulture | 3
OH 121 | Plant Propagation | 3
OH 130 | Plant Pest Control | 3
OH 140 | Soils | 3
OH 170 | Plant Materials: Trees and Shrubs | 3
OH 180 | Plant Materials: Annuals and Perennials | 3
OH 290* | Cooperative Work Experience Education | 3

**Select one of the following:**

**BUS 110** Introduction to Business | 3
**BUS 111** Entrepreneurship: Starting and Developing a Business | 3
**BUS 125** Business Law: Legal Environment of Business | 3

**Select eight units from the following:**

**BIO 122** The Secret Life of Plants | 4
**OH 102** Xeriscape: Water Conservation in the Landscape | 2
**OH 114** Floral Design I | 3
**OH 172** Introduction to Landscape Design | 3
**OH 240** Greenhouse Plant Production | 3
**OH 276** Horticultural Equipment Repair and Maintenance | 3
**OH 278** Business Management for Ornamental Horticulture | 3
**SPAN 120** Spanish I | 5

**Total Required** | **32**
**Plus General Education Requirements** | **8**

*Student must complete six units within the major at Cuyamaca College to be eligible for this course.

**Certificate of Achievement**

Students who complete only the major requirements above qualify for a Certificate in Nursery Technology. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

**VIII. SUSTAINABLE URBAN LANDSCAPES**

This curriculum is designed to investigate the current trends and provide practical experience in sustainable landscape design, construction and maintenance. Students will use technology, materials and methods that enhance the urban landscape with minimal input of labor and materials while reducing negative environmental impacts. Students entering the landscape industry, those already employed but seeking upgraded skills, and those wishing to transfer to four-year degree programs will benefit from the curriculum. Graduates are employed by landscape contractors, landscape architects and designers, public agencies, or are self-employed.

**Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

• Use industry accepted standards to conduct site evaluations and determine site assets and constraints for the development of aesthetically pleasing and sustainable landscapes.
• Identify common biotic and abiotic problems common to Southern California landscapes and list appropriate control measures.
• Utilize standard industry practices and principles of plant structure, function and plant growth to develop guidelines for the proper maintenance of Southern California landscapes.
• Demonstrate the ability to calculate an irrigation schedule.
• Explain the elements of water management of a large landscape site.
• Gain practical experience working in the landscape industry.

**CAREER OPPORTUNITIES**

Irrigation Manager
Landscape Design Consultant
Landscape Maintenance Supervisor
Landscape Manager
Landscape Water Auditor
Water Conservation Specialist

**Associate in Science Degree Requirements:**

**Course** | **Title** | **Units**
--- | --- | ---
OH 120 | Fundamentals of Ornamental Horticulture | 3
OH 130 | Plant Pest Control | 3
OH 140 | Soils | 3
OH 170 | Plant Materials: Trees and Shrubs | 3
OH 180 | Plant Materials: Annuals and Perennials | 3
OH 290* | Cooperative Work Experience Education | 3

**Select one of the following:**

**BUS 110** Introduction to Business | 3
**BUS 111** Entrepreneurship: Starting and Developing a Business | 3
**BUS 125** Business Law: Legal Environment of Business | 3

**Select eight units from the following:**

**BIO 122** The Secret Life of Plants | 4
**OH 102** Xeriscape: Water Conservation in the Landscape | 2
**OH 114** Floral Design I | 3
**OH 172** Introduction to Landscape Design | 3
**OH 240** Greenhouse Plant Production | 3
**OH 276** Horticultural Equipment Repair and Maintenance | 3
**OH 278** Business Management for Ornamental Horticulture | 3
**SPAN 120** Spanish I | 5

**Total Required** | **32**
**Plus General Education Requirements** | **8**

*Student must complete six units within the major at Cuyamaca College to be eligible for this course.
Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Sustainable Urban Landscapes. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

CERTIFICATE OF SPECIALIZATION:

BASIC ORNAMENTAL HORTICULTURE
This certificate prepares students to work in the horticulture industry at an entry or intermediate level by providing them with basic knowledge of horticultural principles and practices. Upon completion, students will be prepared to work in one of many fields of horticulture, or choose to continue their studies and apply their earned credits to a degree or certificate of achievement.

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:

• Understand the basic principles of plant growth.
• Identify 125 trees and shrub species commonly used in Southern California landscapes.
• Understand the basic principles of soil science as they relate to plant growth and plant nutrition.
• Apply basic horticultural knowledge to specific field of study in ornamental horticulture.
• Understand business principles as they apply to working in ornamental horticulture.

Certificate Requirements:
Course Title Units
OH 120 Fundamentals of Ornamental Horticulture 3
OH 170 Plant Materials: Trees and Shrubs 3

Select one of the following:
OH 130 Plant Pest Control 3
OH 140 Soils 3
OH 180 Plant Materials: Annuals and Perennials 3

Select one of the following:
BUS 110 Introduction to Business 3
BUS 111 Entrepreneurship: Starting and Developing a Business 3
BUS 125 Business Law: Legal Environment of Business 3

Select one of the following:
OH 114 Floral Design I 3
OH 121 Plant Propagation 3
OH 172 Introduction to Landscape Design 3
OH 174 Turf and Ground Cover Management 3
OH 220 Landscape Construction: Concrete and Masonry 3
OH 221 Landscape Construction: Irrigation and Carpentry 3
OH 260 Arboriculture 3

Total Required 15

Select at least six units from the following:
PARA 120 Administrative Law 3
PARA 125 Business Organizations 1
PARA 140 Criminal Law and Procedures 3
PARA 145 Estate Planning and Administration of Estates 3
PARA 150 Family Law 3
PARA 160 Personal Injury 1
PARA 170 Worker's Compensation 1
PARA 250* Internship 1-3

PARALEGAL STUDIES

The legal profession has evolved, like the medical profession, into a profession of specialties. Based on this development, lawyers need qualified assistants to better help them provide legal services to their clients. Paralegals are trained, professional technicians able to provide this needed legal assistance.

This degree program is specifically designed to prepare and provide students with the analytical skills and written abilities necessary to assist attorneys in the practice of law. The technical curriculum goals and objectives emphasize three primary areas:

1. Legal Research, Analysis and Writing
2. Ethics and the Mechanics of Law
3. Integration of Substantive and Procedural Law

The successful paralegal degree candidate will possess a broad educational background with an opportunity to gain specialized skills in specific areas of law. The large curriculum offering also allows practicing paralegals to attend college refresher or new skills development courses.

This program does not prepare students for law school or the practice of law.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Apply the research, analytical skills and college-level writing abilities necessary to assist attorneys in the practice of law.
• Conduct oneself in an ethical and professional manner when confronted with a law office related conflict scenario.

CAREER OPPORTUNITIES

Claim Examiner
Compensation and Benefits Manager
Compliance and Enforcement Inspector
Contract Consultant
Forms and Procedures Specialist
Freelance Paralegal
Labor Relations Specialist
Law Clerk
Legal Aide
Legal Assistant
Legal Research Assistant
Legal Technician
Occupational Safety and Health Worker
Paralegal
Patent Agent
Title Examiner

*Student must complete 18 units within the major to be eligible for this course.

Recommended Elective: BUS 128

GENERAL EDUCATION REQUIREMENTS FOR THE PARALEGAL STUDIES DEGREE:

AREA A–LANGUAGE AND RATIONALITY
(Minimum of 6 semester units)
One course from each area:

1. Written Communication
   ENGL 120

2. Oral Communication and Analytical Thinking
   COMM 100, 122, 130, 137, 145
   ENGR 100
   MATH 101, 110
   PSY 125, 130

3. Integration of Substantive and Procedural Law
   BUS 128

AREA B–NATURAL SCIENCES
(Minimum of 4 semester units)
A course that includes a laboratory (laboratory courses are underlined):

ANTH 130
ASTR 110, 112
BIO 112, 115, 122, 124, 126, 130, 131, 140, 152, 230, 240
CHEM 102, 105, 115, 116, 120, 141
GEOG 120
PHYS 104, 110, 111
OCEA 112, 113
PHYS 110, 130, 150, 200, 210

*Students will not receive credit for more than one of the following courses: CHEM 113, 115, 120.

AREA C–HUMANITIES
(Minimum of 3 semester units)
One of the following courses:

ARAB 120, 121, 220
ARBC 120, 121, 145, 220, 221, 250, 251
ART 100, 120, 124, 129, 140, 141, 143, 144, 145, 146, 148
ASL 120, 121, 140, 220, 221
ENGL 122, 201, 202, 207, 214, 217, 221, 222, 231, 232, 270, 271, 275, 276, 277
FREN 120, 121, 220, 221, 250, 251
HIST 100, 101, 105, 106
HUM 110, 115, 116, 120, 140, 155
ITAL 120, 121, 220
MUS 110, 111, 114, 115, 116, 117
NAYK 120, 121, 220
PHIL 110, 115, 117, 140, 160, 170
RELG 120, 130, 210, 215
SPAN 120, 121, 141, 145, 220, 221, 250, 251
THTR 110, 120, 121
AREA D—SOCIAL AND BEHAVIORAL SCIENCES
(Minimum of 3 semester units)
One of the following courses:

ANTH 120
CD 115, 125, 131, 145
COMM 110, 124
ECON 110, 120, 121
EGEO 106, 130, 132
HED 120, 201
HIST 108, 109, 118, 119, 122, 123, 124, 130,
131, 132, 133, 180, 181
POSC 120, 121, 124, 130, 140
PSY 120, 125, 134, 138, 140, 150, 170, 220
SOC 120, 125, 130

ADDITIONAL REQUIREMENTS:
(Minimum 6 semester units)
Two additional courses from two different areas:

• Area B — Natural Sciences
• Area C — Humanities
• Area D — Social and Behavioral Sciences

DEGREE REQUIREMENTS:
Cuyamaca College will confer the Degree of Associate in Science in Paralegal Studies upon students who successfully complete the following requirements:

1. A minimum of 60 semester units of college work.
2. Competency Requirements
   A. Completion of ENGL 120 with a grade of “C” or better or “P”.
   B. Completion of MATH 103 or a higher numbered mathematics class, or a statistics course from another discipline that has intermediate algebra as a prerequisite, with a grade of “C” or better, or a grade of “P”* or completion of Accuplacer Assessment placing into a class higher than MATH 103 or 110.
3. Exercise Science Degree Requirements
   Two activity courses in exercise science are required for graduation from Cuyamaca College. These courses are marked with an asterisk in the Course Descriptions section.
   A. If medical reasons necessitate exclusion from exercise science, a medical statement must be on file with the Admissions and Records Office. Adaptive exercise science classes are available.
   B. Veterans who have completed at least one year of honorable active service will receive up to three units of credit for exercise science which will satisfy the activity requirement for graduation. To receive credit for military service, a DD-214 and appropriate military records must be submitted to the Admissions and Records Office.
4. Achievement of a “C” grade or better in all courses counted toward the major. (P/NP grading not accepted for the major.)
5. A maximum of 12 “P”* semester units taken in regular course work at this institution may be counted toward the 60 semester units required for graduation but shall not be included as part of the requirements for the major.

For more information regarding degree requirements, see Degree Requirements and Transfer Information section.

PHIL 115 History of Philosophy I: Ancient
PHIL 117 History of Philosophy II: Modern and Contemporary

The Associate in Arts in Philosophy for Transfer (AA-T in Philosophy) deals with fundamental issues that have long haunted thinkers for many centuries. The major explores and seeks to understand values and the nature of reality by examining and questioning existence and experience. The degree prepares students for undergraduate study in philosophy. The following is required for the AA-T in Philosophy for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of “C” or better in all courses required for the major.
5. Certification completion of the California State University General Education Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Identify and discuss the principle questions of universal concern raised in philosophy, including but not limited to the following: What is knowledge? Is there meaning to life? Does free will exist? Why should I be moral?
• Implement critical thinking techniques to enhance reading and writing skills.
• Identify, analyze and discuss cross-cultural perspectives relating to the philosophical issues being considered.
• Demonstrate philosophical thinking by correct use of terminology/argumentation in evaluating various themes discussed.

Associate in Arts Degree Requirements:
Core Curriculum: Select two:

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<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>PHIL 110 A General Introduction to Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 130 Logic</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 140 Problems in Ethics</td>
<td>3</td>
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</table>

List A: Select one:

<table>
<thead>
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<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>PHIL 115 History of Philosophy I: Ancient</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 117 History of Philosophy II: Modern and Contemporary</td>
<td>3</td>
</tr>
</tbody>
</table>

List B: Select two:

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<tr>
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<tbody>
<tr>
<td>HIST 105 Early Western Civilization</td>
<td>3</td>
</tr>
<tr>
<td>HIST 106 Modern Western Civilization</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 170 Philosophy of Religion: A Cross-Cultural Introduction</td>
<td>3</td>
</tr>
</tbody>
</table>

List C: Select one:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 125 Critical Thinking</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Units for Major (6-15 units may be double-counted with GE) 18
Total Units for CSU GE Breadth or IGETC-CSU 37-39
Total Transferable Elective Units 11-18
Total Units for Degree 60

Please note: SDSU accepts this degree for students transferring into Philosophy B.A.

PHYSICAL SCIENCE

The physical science major is designed to give students working toward a bachelor’s degree a well-balanced, lower division program. The curriculum emphasizes fundamental concepts and problem solving. The degree requirements are typical of what four-year colleges and universities require; see www.assist.org for requirements of specific transfer institution.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

• Analyze how astronomers obtain information about stars, what information can be obtained and how the information is used.
• Predict periodic trends in ionization energy, atomic size, electron affinity and acid-base properties.
• Calculate changes in enthalpy, entropy, and free energy for chemical reactions, phase changes, solution processes, and elementary molecular processes using tables of thermodynamic data.
• Write systematic names for carbon based compounds.
• Working knowledge of the Theory of Plate Tectonics as it relates to sea floor spreading, subduction, continental drift and the evolution of ocean basins, continents and mountains.
• Evaluate the derivatives of algebraic, trigonometric, logarithmic and exponential functions.
• Evaluate integrals using appropriate techniques (such as: by parts, trig substitution, etc.)
• Apply Green’s, Stokes’ and Gauss' Theorems.
• Use conservation of energy and conservation of momentum concepts.
• Use Maxwell’s Equations to solve problems in electricity and magnetism.
• Use the basic concepts of modern physics: special relativity, photon behavior, matter waves, the uncertainty principle, quantum mechanics in one and three dimensions, statistical physics and nuclear physics.
CAREER OPPORTUNITIES
This degree program trains students for a wide variety of diverse professions such as technical administration in industry and government, legal work with patents, scientific librarianship, scientific journalism, and physical science teacher.

* Astronomer
* Cartographic Technician
* Chemist
* Geodetic Technician
* Geologist
* Meteorologist
* Meteorological Technician
* Oceanographer
* Patent Lawyer
* Physical Science Teacher
* Physical Science Technician
* Physicist
* Range Technician
* Soil Conservation Technician
* Bachelor Degree or higher required

ASSOCIATE IN SCIENCE DEGREE REQUIREMENTS:

Course Title Units
ASTR 110 Descriptive Astronomy 3
CHEM 141 General Chemistry I 5
CHEM 142 General Chemistry II 5
CHEM 231 Organic Chemistry I 5
CHEM 110 General Geology 3
MATH 180 Analytical Geometry and Calculus I 5
MATH 280 Analytical Geometry and Calculus II 4
MATH 281 Multivariable Calculus 4
PHV 190 Mechanics and Heat 5
PHV 200 Electricity and Magnetism 5
PHV 210 Wave Motion and Modern Physics 5

Total Units for IGETC-CSU 37

Total Transferable Elective Units 2
Total Units for Degree 60

Please note: SDSU accepts this degree for students transferring into the B.S. Physics (General) or B.S. Physics (Modern Optics Emphasis).

II. PHYSICS

Physics is the study of the relationship between matter and energy in the universe. The curriculum is designed to provide students working toward a bachelor’s degree a well-balanced, lower division program by emphasizing fundamental concepts and problem solving. The degree requirements are typical of what four-year colleges and universities require; see www.assist.org for requirements of specific transfer institution.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

1. Predict periodic trends in ionization energy, atomic size, electron affinity and acid-base properties.
2. Calculate changes in enthalpy, entropy, and free energy for chemical reactions, phase changes, solution processes, and elementary molecular processes using tables of thermodynamic data.
3. Write systematic names for carbon based compounds.
4. Evaluate derivatives of algebraic, trigonometric, logarithmic and exponential functions.
5. Evaluate integrals using appropriate techniques (such as: by parts, trig substitution, etc.)
6. Apply Green’s, Stokes’ and Gauss’ Theorems.
7. Use conservation of energy and conservation of momentum concepts.
8. Use Maxwell’s Equations to solve problems in electricity and magnetism.
9. Use the basic concepts of modern physics: special relativity, photon behavior, matter waves, the uncertainty principle, and quantum mechanics in one and three dimensions, statistical physics and nuclear physics.

ASSOCIATE IN SCIENCE DEGREE REQUIREMENTS:

Course Title Units
MATH 180 Analytic Geometry and Calculus I 5
MATH 280 Analytic Geometry and Calculus II 4
MATH 281 Multivariable Calculus 4
PHV 190 Mechanics and Heat 5
PHV 200 Electricity and Magnetism 5
PHV 210 Wave Motion and Modern Physics 5

Total Required 49
Plus General Education Requirements

III. PHYSICS FOR TRANSFER (AS-T)

Physics is the study of the relationship between matter and energy in the universe. The curriculum is designed to provide students working toward a bachelor’s degree a well-balanced, lower division program by emphasizing fundamental concepts and problem solving. The degree requirements are typical of what four-year colleges and universities require; see www.assist.org for requirements of specific transfer institution.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

1. Evaluate derivatives of algebraic, trigonometric, logarithmic and exponential functions.
2. Evaluate integrals using appropriate techniques (such as: by parts, trig substitution, etc.)
3. Apply Green’s, Stokes’ and Gauss’ Theorems.
4. Use conservation of energy and conservation of momentum concepts.
5. Use Maxwell’s Equations to solve problems in electricity and magnetism.
6. Use the basic concepts of modern physics: special relativity, photon behavior, matter waves, the uncertainty principle, and quantum mechanics in one and three dimensions, statistical physics and nuclear physics.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Discuss major theories and concepts of political science.
• Analyze political issues and formulate solutions.
• Participate knowledgeably as a U.S. citizen in civic-oriented environments.
• Demonstrate an understanding of U.S. and world politics.
• Comprehend enduring political thoughts and ideas throughout history.

Associate in Arts Degree Requirements:
Core Curriculum:
Course | Title                                                                 | Units
-------|-----------------------------------------------------------------------|------
POSC 121 | Introduction to U.S. Government and Politics                      | 3    
List A: Select three of the following:
POSC 120 | Introduction to Politics and Political Analysis           | 3    
POSC 124 | Introduction to Comparative Government and Politics          | 3    
POSC 130 | Introduction to International Relations                      | 3    
MATH 160 | Elementary Statistics                                             | 4    
or
PSY 215 | Statistics for the Behavioral Sciences                       | 3    
List B: Select two of the following:
HIST 108 | Early American History                                            | 3    
HIST 109 | Modern American History                                           | 3    
Any course from List A not selected above | 3-4
Total Units for Major (9-12 units may be double-counted with GE) | 18-19
Total Units for CSU GE Breadth or IGETC-CSU | 37-39
Total Transferable Elective Units | 2-5
Total Units for Degree | 60

*One course, HIST 108 or 109, meets CSU American Ideals requirement, along with Core of POSC 121.

Please note: SDSU accepts this degree for students transferring into Political Science B.A.

The following is required for the AA-T in Psychology for Transfer degree:
1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of “C” or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.
• Understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.
• Respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.
• Understand and apply psychological principles to personal, social, and organizational issues.
• Weigh evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinnings of psychology as a discipline.

Associate in Arts Degree Requirements:
Core Curriculum:
Course | Title                                                                 | Units
-------|-----------------------------------------------------------------------|------
POSC 120 | Introductory Psychology                                              | 3    
PSY 205 | Research Methods in Psychology                                       | 3    
PSY 215 | Statistics for the Behavioral Sciences                               | 3    
List A: Select one of the following:
BIO 130 | General Biology I                                                    | 3    
PSY 140 | Physiological Psychology                                            | 3    
List B: Select two of the following:
PSY 150 | Development Psychology                                              | 3    
PSY 220 | Learning                                                              | 3    
Any course not selected above | 3
Total Units for Major | 18
Total Units for CSU GE Breadth or IGETC-CSU | 37-39
Total Transferable Elective Units | 3
Total Units for Degree | 60

Please note: SDSU accepts this degree for students transferring into Psychology (Applied).

REAL ESTATE

I. REAL ESTATE
This degree program is designed to prepare students for employment in real estate or related fields. It also meets the educational requirements for the California Real Estate Broker’s License and helps prepare both the salesperson and broker for the state examination. Most real estate classes also meet educational requirements for appraisal licensing.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Describe the essential elements and legal effects of a real estate contract and secured note.
• Apply the steps involved in opening, processing, and closing an escrow.
• Explain the various alternate mortgage instruments and various sources of real estate financing.
• Apply various real estate valuation techniques.
• Explain how leverage affects real estate investment risk and describe the legal aspects of real properties.
• Describe the basic process of real estate development or its risks and returns.

CAREER OPPORTUNITIES
Agent
• Appraiser
• Builder/Developer
• Economist
• Escrow Officer/Trust Manager
• Investor
• Lender/Financial Institution
• Property Manager
• Salesperson
• Title Officer
• *Bachelor Degree or higher required

†Office of Real Estate Appraisal License required

Associate in Science Degree Requirements:
Course | Title                                                                 | Units
-------|-----------------------------------------------------------------------|------
RE 190 | Real Estate Principles                                                | 3    
RE 191 | Real Estate Practice                                                  | 3    
RE 192 | Real Estate Finance                                                   | 3    
RE 193 | Real Estate Legal Aspects                                             | 3    
RE 194 | Real Estate Appraisal                                                 | 3    
Total required | 22-26
Plus General Education Requirements | 0

Select three of the following including one Accounting or Economics course:
BUS 110 | Introduction to Business                                             | 3    
BUS 120 | Financial Accounting                                                 | 4    
ECON 110 | Economic Issues and Policies                                          | 3    
econ 120 | Principles of Macroeconomics                                          | 3    
econ 121 | Principles of Microeconomics                                          | 3    
RE 197 | Real Estate Economics                                                 | 3    
RE 201 | Real Estate Property Management                                       | 3    
RE 250 | Real Estate Internship                                                | 1-4
RE 294 | Advanced Real Estate Appraisal                                        | 3    
Elective (select one elective from below) | 3
Total | 7-11

Electives:
BUS 125 | Business Law: Legal Environment of Business                         | 3    
RE 125 | Escrow Procedures I                                                  | 3    
RE 204 | Real Estate Office Administration                                     | 3    
RE 292 | Mortgage Loan Brokering and Lending                                  | 3    
Total Required | 22-26

*Non-Department of Real Estate Licensing course

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Real Estate. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
II. BROKER’S LICENSE

Program Learning Outcomes
Upon successful completion of this certificate, students will be able to:
• Describe the essential elements and legal effects of a real estate contract and secured note.
• Apply the steps involved in opening, processing, and closing an escrow.
• Explain the various alternate mortgage instruments and various sources of real estate financing.
• Apply various real estate valuation techniques.
• Explain how leverage affects real estate investment risk and describe the legal aspects of real properties.
• Describe the basic process of real estate development or its risks and returns.

Students may satisfy the California State Education requirement for a Broker’s License by completing the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE 190</td>
<td>Real Estate Principles</td>
<td>3</td>
</tr>
<tr>
<td>RE 191</td>
<td>Real Estate Practice</td>
<td>3</td>
</tr>
<tr>
<td>RE 192</td>
<td>Real Estate Finance</td>
<td>3</td>
</tr>
<tr>
<td>RE 193</td>
<td>Real Estate Legal Aspects</td>
<td>3</td>
</tr>
<tr>
<td>RE 194</td>
<td>Real Estate Appraisal</td>
<td>3</td>
</tr>
<tr>
<td>One Accounting or Economics course</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Electives (select two electives from above)</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Total Required</td>
<td></td>
<td>24-25</td>
</tr>
</tbody>
</table>

Certificate of Achievement
Students who complete the requirements above qualify for a Certificate in Broker’s License. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

SOCIAL WORK

This degree offers lower division preparation for students who wish to pursue a bachelor’s degree in social work. The program is designed to prepare students for transfer to four-year social work programs.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Apply critical thinking to the research, effects and planning in the field and practice of social work.
• Investigate social worker duties in dealing with a wide variety of difficult social situations including discrimination, oppression, maltreatment, poverty, and injustice.
• Analyze situations and determine the proper role of a social worker and the various factors influencing the situation.

CAREER OPPORTUNITIES
• Administration
• Child Welfare
• Clinical:
  * Counseling, Therapy
• Community Organizations:
  * Advocacy, Politics, Education
• Criminal Justice/Corrections
• Developmental Disabilities
• Gerontology
• Health Care
• Occupational:
  * Counseling
  * Organizational Development
  * Teaching
  * Wellness Promotion
• Human Resources

Public Welfare:
* Social Work
* Research
* Bachelor degree or higher recommended

Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 130</td>
<td>General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 121</td>
<td>Principles of Microeconomics</td>
<td></td>
</tr>
<tr>
<td>HED 201</td>
<td>Introduction to Public Health</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
<tr>
<td>or PSY 215</td>
<td>Statistics for the Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>or BIO 215</td>
<td>Statistics for Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>or PSY 120</td>
<td>Introductory Psychology</td>
<td>3</td>
</tr>
<tr>
<td>or SOC 120</td>
<td>Introductory Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SW 110</td>
<td>Social Work Fields of Service</td>
<td>3</td>
</tr>
<tr>
<td>SW 120</td>
<td>Introduction to Social Work</td>
<td>3</td>
</tr>
<tr>
<td>Total Required</td>
<td></td>
<td>24-25</td>
</tr>
</tbody>
</table>

Plus General Education Requirements

Please note: SDSU accepts this degree for students transferring into Sociology B.A.

SPANISH

I. SPANISH FOR TRANSFER (AA-T)
The Associate in Arts in Spanish for Transfer degree is designed to provide students with communicative skills in Spanish, as well as a greater understanding of Spanish culture and civilization. This degree prepares students to transfer to a California State University.

The following is required for the AA-T in Spanish for Transfer degree:
1. Minimum of 60 semester or 90 quarter units required for the major.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of “C” or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Utilize more complex vocabulary and grammatical structures to communicate and discuss hypothetical situations dealing with nature, city, life, health and well-being, professions and occupations, the arts, current events, and politics.
• Use language and vocabulary skills developed in class to read, analyze, and interpret authentic texts.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 160</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
<tr>
<td>PSY 138</td>
<td>Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 120</td>
<td>Introductory Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 125</td>
<td>Marriage, Family and Alternative Lifestyles</td>
<td>3</td>
</tr>
<tr>
<td>SOC 130</td>
<td>Contemporary Social Problems</td>
<td>3</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>38</td>
</tr>
</tbody>
</table>

List A: Select one of the following:
- ANTH 120 Cultural Anthropology | 3 |
- PSY 120 Introductory Psychology | 3 |

Total Units for Major: 37-39
Total Units for CSU GE Breadth or IGETC-CSU: 37-39
Total Transferable Elective Units: 3
Total Units for Degree: 60
II. SPANISH

This degree program is designed to provide students with communicative skills in understanding, speaking, reading, and writing Spanish. It also gives students a greater understanding of Spanish culture and civilization, and prepares them for greater international and domestic career opportunities. For the suggested sequence of courses to be taken and/or assistance in transferring to a four-year institution, contact the Counseling Center or the Department of World Languages.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

• Utilize more complex vocabulary and grammatical structures to write about situations dealing with nature, city, life, health, and well-being, professions and occupations, the arts, current events, and politics.

• Use language and vocabulary skills developed in class to read, analyze, and interpret authentic texts.

CAREER OPPORTUNITIES

Bilingual Aide
Border Patrol Officer
Buyer
Court Interpreter
Counseling
Customs Agent/Inspector
Foreign Exchange Clerk
* Foreign Student Advisor
Interpreter
* Journalist
* Museum Curator
* Physician

*Scientific Linguist
Tour Guide
Tutor

* Bachelor Degree or higher required

Associate in Arts Degree Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 120</td>
<td>Spanish I</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 121</td>
<td>Spanish II</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 220</td>
<td>Spanish III</td>
<td>5</td>
</tr>
<tr>
<td>SPAN 221</td>
<td>Spanish IV</td>
<td>5</td>
</tr>
<tr>
<td>Total Units</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

List A: Select one of the following:

HIST 118 U.S. History: Chicano/Chicana
Perspectives I 3

HIST 119 U.S. History: Chicano/Chicana
Perspectives II 3

SPAN 141 Spanish and Latin American Cultures 3

SPAN 145 Hispanic Civilizations 3

SPAN 250* Conversational Spanish I 3

SPAN 251* Conversational Spanish II 3

Total Units for Degree 60

*Substitution Courses:
SPAN 250 may be substituted for SPAN I for students placing at the level of SPAN II.
SPAN 251 may be substituted for SPAN II for students placing into SPAN III.

Please note: SDSU accepts this degree for students transferring into Spanish B.A.

The Associate Degree in University Studies with an Area of Emphasis is intended to accommodate the differing requirements of a wide variety of transfer institutions and major options. Because admission and major preparation requirements vary at each four-year transfer institution, courses used to complete this degree should be selected with the assistance of a counselor. The completion of the University Studies Degree does not guarantee acceptance into either a baccalaureate major or a four-year institution.

REQUIREMENTS:

1. California State University (CSU) General Education Breadth
   1. Complete CSU General Education Breadth (see Degree Requirements and Transfer Information section).
   2. Earn a grade of “C” or better in 30 of the required 39 semester units of general education to include all courses in Area A and the Mathematical/Quantitative Reasoning courses in Area B.
   3. Credit earned through external examinations, i.e., AP, will be applied towards general education in accordance with Cuyamaca College policies. Please note: This may be different than how the external exam is used on a CSU certification.
   4. Complete a minimum of 18 units in an Area of Emphasis (listed below).
   5. Complete a minimum of 60 degree applicable CSU transferable semester units.
   6. Earn a cumulative GPA of 2.0 in all college course work completed.
   7. Meet Cuyamaca College residence requirements for graduation (see Admission Information).

OR

II. Intersegmental General Education Transfer Curriculum (IGETC) for CSU or UC

1. Complete IGETC Certification (see Degree Requirements and Transfer Information section).
2. Earn a grade of “C” or better in all IGETC courses.

Certificate of Achievement

Students who complete only the major requirements above qualify for a Certificate in Spanish. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.
3. Credit earned through external examinations, i.e., AP, will be applied in accordance with Cuyamaca College policies. Please note: This may be different than how the external exam is divided on an IGETC certification.
4. Complete a minimum of 18 units in an Area of Emphasis (listed below).
5. Complete a minimum of 60 degree applicable UC transferable semester units for UC University Studies.
6. Earn a cumulative GPA of 2.0 in all college coursework completed.
7. Meet Cuyamaca College residence requirements for graduation (see Admission Information).

III. Area of Emphasis
A. Business and Economics
Courses for the Associate in Science in University Studies with an Emphasis in Communication and Language Arts focus on the study of how language works to express human ideas and feelings. Students will explore and analyze written and verbal communication methods, as well as develop and advance their oral and written communication skills. Students completing this area may be interested in the following baccalaureate majors: communication, English, foreign language, literature, journalism, and linguistics. Students must complete a minimum of six units in Communication and six units in Language Arts. The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Demonstrate the ability to write effectively.
• Demonstrate the ability to locate relevant, reliable information and read it effectively.
• Organize thoughts and ideas in both oral and written format.
• Communicate effectively with diverse audiences.

Communication
BUS 128*
COMM 110, 120, 122, 123, 124, 130*, 137, 145

Language Arts
ARAB 120, 121, 220
ARBC 120, 121, 220, 221
ASL 120, 121, 220, 221
BUS 128*
ENGL 122, 124, 126, 201, 202, 207, 214, 221, 222, 231, 232, 270, 271
FREN 120, 121, 220, 221, 250, 251
ITAL 120, 121, 220
NAKY 120, 121, 220
SPAN 120, 121, 220, 221, 250, 251

C. Humanities and Fine Arts
Courses for the Associate in Science in University Studies with an Emphasis in Humanities and Fine Arts focus on the study of cultural, humanistic activities, and artistic expression of human beings. Students will evaluate and interpret the ways in which people through the ages in different cultures have responded to themselves and the world around them through artistic and cultural creation. Students will develop an aesthetic awareness and incorporate these concepts when constructing value judgments. Students completing this area may be interested in the following baccalaureate majors: art, humanities, music, philosophy, religious studies, and theatre arts. Students must complete a minimum of six units in Humanities and six units in Fine Arts. The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Analyze the principle elements of representative examples of art, architecture, literature, theater, philosophy, music, dance, film, or other relevant areas of cultural and/or intellectual creativity.

D. Science and Mathematics
Courses for the Associate in Science in University Studies with an Emphasis in Science and Mathematics focus on the study of mathematical and quantitative reasoning skills and the application of facts and principles that form the foundations of living and non-living systems. Students will recognize and utilize the methodologies of science as investigative tools, as well as the limitations of science. Students will use mathematical skills to solve numerical problems encountered in daily life, as well as more advanced skills for applications in the physical and life sciences. Students completing this area may be interested in the following baccalaureate majors: astronomy, biological sciences, chemistry, computer science, engineering, geography, geology, mathematics, oceanography, physical science, and physics. Students must complete a minimum of six units in Science and six units in Mathematics (limitation of one statistics course). The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Use arithmetical, algebraic, geometric and statistical methods to solve problems.
• Interpret mathematical models such as formulas, graphs, tables and schematics, and draw inferences from them.
• Represent mathematical information symbolically, visually, numerically and verbally.
• Use the scientific method of inquiry and techniques to answer questions about physical and biological processes.
• Analyze basic concepts of physical and biological science to evaluate scientific information and solve scientific problems.
Science
ANTH 130
ASTR 110, 112
BIO 115, 122, 124, 130, 131, 133, 140, 141, 141L, 1527, 230, 240, 251
CHEM 102, 105*, 113, 115, 116, 120, 141, 142, 231
CS 119, 119L, 180, 181, 182, 280, 281, 282
GEOG 120, 121
GEOL 104, 110, 111
OCEA 112, 113
PHYS 110, 130, 131, 190, 200, 210
Mathematics
BIOS 215
MATH 160, 170*, 175, 176, 178, 180, 245, 280, 281, 284, 285
PSY 215

E. Social and Behavioral Sciences
Courses for the Associate in Science in University Studies with an Emphasis in Social and Behavioral Sciences focus on the study and understanding of human behavior. Students will evaluate and interpret human societies; the institutions, organizations, and the groups that form them; the ways in which individuals and groups relate to one another; and various approaches and methodologies of the disciplines. Students completing this area may be interested in the following baccalaureate majors: anthropology, child development, education, history, nutrition, political science, psychology, social work, and sociology. Students must complete a minimum of six units in Social Science and six units in Behavioral Science. The remaining six units may be taken from either category.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:
• Describe general principles of the political institutions and government of the United States.
• Demonstrate an understanding and appreciation of social, political, and economic institutions within a historical perspective.
• Evaluate the ways people act and interact in cultures, societies and social subgroups.
• Assess how social issues are influenced by geographical and historical processes.
• Apply knowledge of social and behavioral sciences theories and scientific methods in an assessment of real-world problems.

Social Science
ANTH 120
ECON 110, 120, 121
GEOG 106, 130, 132
HIST 100, 101, 105, 106, 108, 109, 118, 119, 122, 123, 130, 131, 132, 180, 181, 275, 276, 277
POSC 120, 121, 124, 130, 140
SOC 120, 125, 130
SPAN 145*

Behavioral Science
CD 115, 125, 131, 145*
COMM 110, 124
HED 201, 203, 203L*
PSY 120, 125, 134, 138, 140, 150, 170, 220
*Course not UC-transferable

WATER/WASTEWATER TECHNOLOGY
California’s 40 million residents and businesses rely upon our State’s complex water and wastewater infrastructure to perform its functions more than one billion times per day. With the State’s population projected to reach 80 million by 2050, it is essential that our water resources be more effectively managed and our wastewater be reclaimed and recycled for beneficial uses. Nothing is more vital to the State’s economic development and quality of life than water and wastewater services. In order to reduce Southern California’s reliance on imported water, it is imperative that we diversify our water resources portfolio through expanded water conservation efforts, wastewater reclamation and reuse, grey water utilization, improving watershed management practices, tapping groundwater reserves, and employing new technologies for seawater desalination. Having a pool of well-trained candidates ready to fill the large number of job vacancies that are being created by the exodus of Baby Boomers from this field is essential to the efficient operation of our State’s critical water and wastewater infrastructure. This is especially true here in Southern California, where our natural occurring water resources are so scarce.

The Water and Wastewater Technology (WWTR) program at Cuyamaca College is the oldest continuously operating educational program for this critical industry sector in the entire California Community College system. With nearly 25 different courses leading to Certificates of Achievement and/or Associate of Science degrees in six majors, the WWTR program is easily the most comprehensive of its type in the State.

Careers in water/wastewater technology involve the administration, operation, and maintenance of drinking water and wastewater treatment facilities, drinking water distribution systems, and wastewater collection systems. The courses, certificates and degrees in this major are designed to prepare students for employment by municipal drinking water and wastewater agencies and private industrial treatment facilities. To supplement their regular classroom learning activities, students have opportunities to visit key water and wastewater facilities, hear guest speakers from the industry, and participate in internship and/or cooperative work experience programs.

Many water and wastewater industry jobs require specialized certifications. Many of our WWTR courses specifically prepare students for these certification examinations administered by the State of California as well as those administered by professional associations supporting the water and wastewater industry. In addition to providing the necessary training for entry-level water and wastewater industry workers, the program is also heavily utilized by incumbent employees already working in the field to gain the additional knowledge, skills and abilities necessary to earn higher levels of certification and prepare them for promotional opportunities to advance their careers.

CAREER OPPORTUNITIES
Backflow Program Manager
* Chemist
Construction Inspector
Construction Laborer/Supervisor
Cross Connection Control Specialist
Electronic Technician
* Engineer, Civil
* Engineer, Electrical
Engineering Technician
Equipment Technician
Equipment Maintenance Operator
Field Operations Supervisor
GIS/Mapping Specialist
Groundwater Management Specialist
Inspector
Instrumentation and Control Technician
Instrumentation and Control Supervisor
Irrigation Consultant
Irrigation System Designer
Laboratory Analyst
Landscape Water Auditor
Leak Detection Technician
* Marine Biologist
Mechanical Systems Technician
Meter Maintenance Technician
Meter Reader
Water Treatment Plant Operator
Plant Process Control Technician
Plant Process Control Supervisor
Reclaimed Water Specialist
Reservoir Keeper
* Safety and Risk Manager
Survey Technician
Utility Worker
Wastewater Plant Operator
Wastewater Reclamation Plant Operator
Wastewater Treatment Supervisor
Water Distribution System Operator
Water Quality Lab Technician
* Water Quality and Treatment Manager
Water Systems Technician
* Bachelor Degree recommended

I. WATER RESOURCES MANAGEMENT
This major prepares students to design, implement and evaluate water conservation/ water resources management programs and to assist in developing more diversified water resource portfolios in the water and wastewater sector or in the landscape and property management field. Emphasis is on emerging technologies and methods that lead to long-term sustainability of our water and wastewater resources. Attaining a certificate or degree in this major will prepare students to enter careers in water conservation, watershed management, water resources and groundwater, public information, and community education. Careers in landscape and facilities maintenance, irrigation system design, urban water management, and landscape design are also options. Students successfully completing the core requirements for this major will qualify to take the American Water Works Association’s Water Use Efficiency Practitioner certification examination, the Landscape Water Management certification offered by the California Landscape Contractor’s Association, and the Certified Landscape Water Manager certification offered by the Irrigation Association. In addition to preparing students for entry level jobs in the water and wastewater field, courses in this major prepare students to transfer to a number of four-year college or university degree programs, including Water Resources, Environmental Sciences, and Natural Resources Management.
Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Describe the essential uses of water, the infrastructure that has been developed to meet demand, and the problems the water industry faces.
- Identify a specified number of legal and financial constraints which complicate efficient and effective water resource management.
- Explain the success and importance of water portfolio diversification.
- Describe the political/organizational structures and list the major agencies involved in providing water in the greater San Diego region.
- Compare and contrast the sources of wastewater, the major collection/transportation networks, and the major wastewater treatment/reclamation facilities operating in San Diego County.
- Identify the major regulatory agencies that monitor and regulate the water/wastewater industry.
- Explain how the current carbon footprint of the water and wastewater infrastructure significantly impacts California’s energy and power demands.
- Compare and contrast a specified number of resource recovery/alternative treatment methods.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
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<tbody>
<tr>
<td>OH 120 Fundamentals of Ornamental Horticulture</td>
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<tr>
<td>OH 170 Plant Materials: Trees and Shrubs</td>
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<tr>
<td>OH 221 Landscape Construction: Irrigation and Carpentry</td>
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<tr>
<td>OH 250 Landscape Water Management</td>
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<td>WWTR 101 Fundamentals of Water/Wastewater Technology</td>
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<tr>
<td>WWTR 103 Introduction to Water Resources Management</td>
<td>3</td>
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<tr>
<td>WWTR 105 Principles and Practices of Water Conservation</td>
<td>3</td>
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<tr>
<td>WWTR 115 Wastewater Reclamation and Reuse</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 290 Cooperative Work Experience</td>
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<tr>
<td>OH 290 Cooperative Work Experience Education</td>
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Select two of the following:

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<th>Course Title</th>
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<tr>
<td>WWTR 102 Calculations in Water/Wastewater Technology</td>
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<td>WWTR 112 Basic Plant Operations: Water Treatment</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 114 Basic Plant Operations: Wastewater Treatment</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 130 Water Distribution Systems</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 280 Backflow Tester Training</td>
<td>2</td>
</tr>
<tr>
<td>WWTR 282 Cross Connection Control Specialist</td>
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<tr>
<td>WWTR 284 Cross Connection Control Specialist-Recycled Water</td>
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Select two of the following:

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<tr>
<th>Course Title</th>
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<td>OH 140 Soils</td>
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<td>OH 174 Turf and Ground Cover Management</td>
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<td>OH 220 Landscape Construction: Concrete and Masonry</td>
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<td>OH 235 Principles of Landscape Irrigation</td>
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<tr>
<td>OH 238 Irrigation System Design</td>
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<tr>
<td>OH 255 Sustainable Urban Landscape Principles and Practices</td>
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</tbody>
</table>

Total Required | 34-38

Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Water Resources Management. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

II. WATER TREATMENT PLANT OPERATOR

Students enrolled in this major learn the key steps, processes, and current technology involved in operating modern water treatment plants. Students who satisfactorily complete the required courses in this certificate and/or degree program will qualify to take the California Department of Public Health (CDPH) Grade T-1 and T-2 Water Treatment Plant Operator examinations required for certification and employment at water treatment plants.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Identify in detail characteristics and sources of ground water and surface water supplies, including the chemical, physical and bacterial characteristics, and explain the effects on quality of geological formations, stratifications, and watershed management.
- Compare and contrast the basic principles of each water treatment process and list them in order performed.
- Identify and classify water distribution system components.
- Explain pump cavitation, corrosion, cross-connection, air valves, head loss and main flushing in relation to water and wastewater collection, distribution, and treatment.
- Compare and contrast the basic principles of each water treatment process and list them in order performed.
- Explain and prepare a plan for the use of chlorine including the characteristics of and methods for storing, feeding and measuring chlorine including the effects of moisture, pH and temperature on feed rate, and the health and safety effects, procedures and personal protective requirements.
- Demonstrate through testing basic knowledge of the regulations for monitoring water quality and performing water treatment.
- Perform basic mathematical calculations and conversions relating to water flow, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.
- Demonstrate appropriate safety procedures applicable to service and operation of water treatment and distribution systems including potential problems.

Associate in Science Degree Requirements:

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<thead>
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<tbody>
<tr>
<td>WWTR 101 Fundamentals of Water/Wastewater Technology</td>
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<tr>
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<td>3</td>
</tr>
<tr>
<td>WWTR 104 Applied Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 106 Introduction to Electrical and Instrumentation Processes</td>
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</tr>
</tbody>
</table>

WWTR 110 Laboratory Analysis for Water/Wastewater | 3
WWTR 112 Basic Plant Operations: Water Treatment | 3
WWTR 117 Advanced Plant Operations: Water Treatment | 3

Select at least nine units from the following:

<table>
<thead>
<tr>
<th>Course Title</th>
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<td>3</td>
</tr>
<tr>
<td>WWTR 105 Principles and Practices of Water Conservation</td>
<td>3</td>
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<tr>
<td>WWTR 114 Basic Plant Operations: Wastewater Treatment</td>
<td>3</td>
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<tr>
<td>WWTR 115 Wastewater Reclamation and Reuse</td>
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<tr>
<td>WWTR 130 Water Distribution Systems</td>
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<tr>
<td>WWTR 132 Wastewater Collection Systems</td>
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<tr>
<td>WWTR 134 Mechanical Maintenance</td>
<td>3</td>
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<tr>
<td>WWTR 268 Introduction to Membrane Plant Operation</td>
<td>3</td>
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<tr>
<td>WWTR 270 Public Works Supervision</td>
<td>2</td>
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<td>WWTR 280 Backflow Tester Training</td>
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<td>WWTR 282 Cross Connection Control Specialist</td>
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<tr>
<td>WWTR 290 Cooperative Work Experience</td>
<td>2</td>
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</table>

Total Required | 30
Plus General Education Requirements

Certificate of Achievement
Students who complete only the major requirements above qualify for a Certificate in Water Treatment Plant Operator. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

III. WATER DISTRIBUTION SYSTEMS OPERATIONS

Students in this major learn the methods, processes, technology, and current practices involved in operating and maintaining modern, complex water distribution systems. Students who satisfactorily complete the required courses for this certificate and/or degree program will qualify to take the CDPH Grade D-1 through D-5 Water Distribution Operator examinations required for certification and employment with a water district.

Program Learning Outcomes
Upon successful completion of this program, students will be able to:

- Identify sources and characteristics of water common to water distribution systems.
- Compare and contrast the different types of water distribution systems currently used in the United States.
- Identify drinking water public health hazards and water quality standards common to the industry.
- Using calculations and conversions, determine water flow, pressure, volume, velocity and force, and chemical dosage used in water distribution systems.
- Identify and compare methods used to handle, install and repair water distribution pipes.
- Explain principles of pump operation for the types of pumps used in water distribution systems, including common problems, necessary adjustments, and typical packing gland problems.
- Explain the electrical principles involved in control circuits common to water distribution systems.
- Explain the required safe handling and storage of chlorine used in water distribution systems.
- Check and utilize water maps and drawings to determine location, type and characteristics of water distribution systems.
Associate in Science Degree Requirements:

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<td>WWTR 106 Introduction to Electrical and Instrumentation Processes</td>
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<td>WWTR 130 Water Distribution Systems</td>
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<td>WWTR 134 Mechanical Maintenance</td>
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<td>WWTR 265 Water Distribution Systems II</td>
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<tr>
<td>WWTR 284 Cross Connection Control</td>
<td>3</td>
</tr>
<tr>
<td>WWTR 290 Cooperative Work Experience</td>
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</tr>
</tbody>
</table>

Total Required 30

Plus General Education Requirements

Certificate of Achievement

Students who complete the major requirements above qualify for a Certificate in Water Distribution Systems Operations. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

IV. WASTEWATER COLLECTION SYSTEMS

Students completing the required courses for this major will qualify to take nearly a dozen wastewater related certification examinations offered by the California Water Environment Association (CWEA). Although current State regulations do not require certification of wastewater collection system personnel, many public sector employers either require or prefer job applicants who have obtained the CWEA Wastewater Collection and Maintenance certifications.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Define common terminology pertaining to collections system components, design, and management as well as inspection and quality control.
- Identify the types and functions of pipes and fittings used in wastewater collection system design and management.
- Given a wastewater collection map book, identify pipeline dimensions, pipe construction materials, direction of flow, and location of valves, services and lift stations.
- Describe in detail basic underground location and leak detection, trenching and shoring, and backfill and compaction methods of construction used in the field.
- Describe the nine basic cleaning methods and basic principles involved in hydraulic and mechanical cleaning methods.
- List and describe the operation of common valves used in a wastewater collection system.
- Perform basic mathematical computations and conversions relating to wastewater collection systems, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.

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</table>

Total Required 30

Plus General Education Requirements

Certificate of Achievement

Students who complete the major requirements above qualify for a Certificate in Wastewater Collection Systems. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

V. WASTEWATER TREATMENT OPERATOR

Students who complete the required courses for this certificate and/or degree program will qualify to take the SWRCB certification examination for the Grade I Wastewater Plant Operator as well as nearly a dozen wastewater related certification examinations offered by CWEA. There are over 80 wastewater treatment and reclamation facilities in San Diego County that are currently licensed and regulated by the SWRCB.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Describe wastewater collection system components.
- Identify the characteristics and sources of municipal sewage.
- Define wastewater collection system and wastewater treatment plant terminology.
- Describe the basic principles of conventional wastewater treatment.
- Compare and contrast wastewater treatment unit processes including preliminary, primary, secondary and tertiary treatment.
- Explain the basic principles of preliminary, primary, secondary and tertiary treatment.
- Perform basic mathematical calculations and conversions relating to water flow, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.
- Recognize and comment on safety procedures applied to service and operation of wastewater collection and treatment systems, including potential problems.

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<td>WWTR 290 Cooperative Work Experience</td>
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</tbody>
</table>

Total Required 30

Plus General Education Requirements

Certificate of Achievement

Students who complete the major requirements above qualify for a Certificate in Wastewater Treatment Operator. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.

VI. BACKFLOW AND CROSS CONNECTION CONTROL

Students will study the technical processes, procedures, and methods used in the production, use, and distribution of recycled and reclaimed wastewater, including backflow protection, legal, administrative and permitting issues, the treatment process, health and safety concerns, and the cross connection control (shut down) test as performed in San Diego County. The courses consist of both classroom and demonstration sessions which cover all aspects of cross connection control and recycled water shut down testing.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Differentiate between different backflow prevention devices and methods.
- Compare and contrast the effective uses of backflow devices and explain their limitations.
- Describe the specifications, installation, and operation of typical devices used in backflow prevention and testing and explain their proper installation.
• Perform accurate backflow prevention tests using proper test equipment.
• Analyze backflow prevention test results using standardized test reporting forms.
• Evaluate backflow testing device malfunctions.
• Articulate the importance of proper backflow testing equipment selection and use.
• Cite specific laws pertaining to cross connection control programs.
• Complete basic backflow testing device repairs requiring breakdown and reassembly.
• Articulate the AWWA and ABPA testing standards.

Associate in Science Degree Requirements:

<table>
<thead>
<tr>
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<td>WWTR 102</td>
<td>Calculations in Water/Wastewater Technology</td>
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<td>WWTR 104</td>
<td>Applied Hydraulics</td>
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<td>WWTR 130</td>
<td>Water Distribution Systems</td>
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<td>WWTR 280</td>
<td>Backflow Tester Training</td>
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<td>WWTR 282</td>
<td>Cross Connection Control Specialist</td>
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<tr>
<td>WWTR 284</td>
<td>Cross Connection Control Specialist–Recycled Water</td>
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</tbody>
</table>

Select at least nine units from the following:

- WWTR 103 Introduction to Water Resources Management 3
- WWTR 105 Principles and Practices of Water Conservation 3
- WWTR 106 Introduction to Electrical and Instrumentation Processes 3
- WWTR 110 Laboratory Analysis for Water/Wastewater 3
- WWTR 115 Wastewater Reclamation and Reuse 3
- WWTR 132 Wastewater Collection Systems 3
- WWTR 134 Mechanical Maintenance 3
- WWTR 290 Cooperative Work Experience 2

Total Required 29

Certificate of Achievement

Students who complete only the major requirements above qualify for a Certificate in Backflow and Cross Connection Control. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.