



SANTIAGO CANYON COLLEGE

COLLEGE CREDIT INSTRUCTIONAL PROGRAMS

Programs of study leading to the certificate or the associate degree or certification in specialized vocational areas are alphabetically arranged.

Programs which lead to transfer to universities and four-year colleges do not necessarily reflect the transfer requirements of specific schools. If the student wishes to receive an associate degree in a specific discipline, the requirements as set forth must be met. However, in planning a program for transfer, it should be noted that the transfer requirements for both the major and general education vary widely. Hence it is recommended that the student review the catalog of the school of transfer and consult with the counseling staff at Santiago Canyon College in planning transfer objectives.

All Associate Degrees and Certificates of Achievement will have a unique identification code in parentheses next to them in the College Credit Instructional Programs Section. Any certificates that do not have a unique identification code will not appear on your transcript.



ACCOUNTING

The associate degree and certificate of achievement in accounting prepares students for entry-level positions and promotional opportunities in accounting and administrative departments of businesses in public and private sector areas such as manufacturing, merchandising, financial service, wholesale trades, and government. Specialized training in accounting and finance principles and practices enables students to maintain accounting records and develop financial reports and make effective use of financial information for analysis and decision making. Entry-level employment opportunities include positions in accounts receivable/payable, payroll, income tax preparation, cost accounting, and a number of trainee positions. Promotional opportunities include higher-level responsibilities in these areas and the areas of general ledger, financial statement preparation and financial statement analysis.

Accounting Degree (11858)

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H, Financial Accounting	4
Accounting 102/102H, Managerial Accounting	4
Computer Information Systems 101, Intro. to Microsoft Office	3
Computer Information Systems 106, Microsoft Excel	3
Accounting 204, Managerial Cost Accounting	
OR	3
Accounting 205, Intermediate Accounting	
Business 222, Business Writing	
OR	3
Management 122, Business Communications	
TOTAL	20

Accounting Certificate of Achievement (21631)

Major requirements for the certificate of achievement:

Course	Units
Accounting 101/101H, Financial Accounting	4
Accounting 102/102H, Managerial Accounting	4
Computer Information Systems 101, Intro. to Microsoft Office	3
Computer Information Systems 106, Microsoft Excel	3
Accounting 204, Managerial Cost Accounting	
OR	3
Accounting 205, Intermediate Accounting	
Business 222, Business Writing	
OR	3
Management 122, Business Communications	
TOTAL	20

Students intending to obtain a bachelor's degree in Accounting are advised to meet with a SAC or SCC counselor, and to also look at the Business Administration requirements listed in the catalog of the transfer university of their choice. Students planning to transfer to CSUF should strongly consider taking Business 222, Business Writing, to meet the communication requirement above and taking Business 150, Introduction to Computing and Application Software to meet the Associate Degree requirements for computer skills and knowledge.

General Accounting Certificate

Requirements for the certificate:

Course	Units
Accounting 101/101H, Financial Accounting	4
Accounting 102/102H, Managerial Accounting	4
Computer Information Systems 101, Introduction to Microsoft Office (3)	
OR	3-4
Business 150, Introduction to Computing and Application Software (4)	
Management 122, Business Communications	
OR	3
Business 222, Business Writing	
TOTAL	14-15

Computerized Accounting Certificate

Requirements for the certificate:

Course	Units
Accounting 035, QuickBooks	1.5
Accounting 101/101H, Financial Accounting	4
Computer Information Systems 106, Microsoft Excel	3
Computer Information Systems 108, Microsoft Access	3
TOTAL	11.5

AMERICAN SIGN LANGUAGE

(See *Sign Language*)

ANTHROPOLOGY

Anthropology Degree (11939)

The associate degree in anthropology is designed as a program of basic courses for students considering professional careers as archeologists, ethnographers, linguists, physical anthropologists; for those preparing to become social science teachers in elementary or secondary schools; for such diverse fields as psychology, medicine, law, political science, international relations, economics, or history; and for individuals who plan public service careers in social work, health and welfare programs, foreign service. Students should consult with faculty members for advice in selecting course offerings best suited to the individual's particular career objectives. The associate of arts degree prepares the student to move into a curriculum at a four-year institution leading to a baccalaureate degree in these careers.

Major requirements* for the associate in arts degree:

Course	Units
Anthropology 100/100H, Introduction to Cultural Anthropology	3
Anthropology 101, Introduction to Physical Anthropology	3
Anthropology 103, Introduction to Archeology	3
Anthropology 104, Language and Culture	3
Electives	6
TOTAL	18

Electives should be chosen from Category A, if emphasis is Cultural Anthropology, and Category B, if emphasis is Physical Anthropology.

Category A, Cultural Anthropology Emphasis

Economics 120; Ethnic Studies 101; Geography 100/100H, 102; History 101/101H; Psychology 100/100H; Sociology 100/100H; Women's Studies 101.



Category B, Physical Anthropology Emphasis

Biology 109/109H, 109L, 149, 177, 210 or 211, 212;
Geology 101, 101L, 201.

It is strongly recommended that anthropology majors transferring to the CSU or UC system complete Foreign Language courses at the 201 and 202 level, and Social Sciences 219/219H or Mathematics 219/219H.

APPRENTICESHIP BARBERING

Apprenticeship Barbering Certificate of Achievement (11992)

The program in Apprenticeship Barbering prepares students to obtain their master's license. The program offers related and supplemental classroom instruction as outlined by the apprenticeship agreement provided by the Division of Apprenticeship Standards. The student will learn proper public relations techniques and sound business management operations in addition to specialized barbering skills. All students must be indentured by the State of California. Interested apprentices should contact the Apprenticeship Office at Santiago Canyon College and the Division of Apprenticeship Standards.

Requirements for the certificate:

Course	Units
Apprenticeship Barbering 021, Barbering Apprentice 1	3
Apprenticeship Barbering 022, Barbering Apprentice 2	3
Apprenticeship Barbering 023, Barbering Apprentice 3	3
Apprenticeship Barbering 024, Barbering Apprentice 4	3
TOTAL	12

APPRENTICESHIP CARPENTRY

Apprenticeship Carpentry-Concrete

The associate degree and certificate of achievement in carpentry-concrete is designed to provide the related and supplemental instruction required for carpentry apprentices. Concrete finishers place and finish concrete floors, driveways, sidewalks, curbs, bridge decks and other concrete structures. They apply architectural exposed, patterned or stamped, broomed and smooth finishes on concrete surfaces. They are skilled at repairing, waterproofing and restoring concrete surfaces. Successful completion results in journeyworker status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Concrete Degree (13235)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025A, Foundations and Flatwork	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 026A, Tilt-Up Panel Construction	2
Apprenticeship Carpentry 026B, Wall Forming	2
Apprenticeship Carpentry 026C, Gang Forms/Columns	2
Apprenticeship Carpentry 026D, Abutments	2
Apprenticeship Carpentry 027C, Beam and Deck Forming	2
Apprenticeship Carpentry 027D, Stairs and Ramp Forming	2

Apprenticeship Carpentry 028A, Bridge Construction	2
Apprenticeship Carpentry 029A, Rigging	2
TOTAL	30

Concrete Certificate of Achievement (21657)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025A, Foundations and Flatwork	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 026A, Tilt-Up Panel Construction	2
Apprenticeship Carpentry 026B, Wall Forming	2
Apprenticeship Carpentry 026C, Gang Forms/Columns	2
Apprenticeship Carpentry 026D, Abutments	2
Apprenticeship Carpentry 027C, Beam and Deck Forming	2
Apprenticeship Carpentry 027D, Stairs and Ramp Forming	2
Apprenticeship Carpentry 028A, Bridge Construction	2
Apprenticeship Carpentry 029A, Rigging	2
TOTAL	30

Apprenticeship Carpentry-Drywall Finisher

The associate degree and certificate of achievement in carpentry-drywall finisher is designed to provide related and supplemental instruction including the technical skills required in the trade. Successful completion may result in journeyworker status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Drywall Finisher Degree (13234)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 071A, Orientation	2
Apprenticeship Carpentry 071B, Safety and Health Certifications	2
Apprenticeship Carpentry 072A, Basic Metal Framing	2
Apprenticeship Carpentry 074A, Printreading	2
Apprenticeship Carpentry 076A, Basic Hand Finishing	2
Apprenticeship Carpentry 076B, Automatic Finishing Tools	2
Apprenticeship Carpentry 077A, Drywall Installation/Finish Trims	2
Apprenticeship Carpentry 077B, Advanced Hand Finishing	2
Apprenticeship Carpentry 077C, Advanced Automatic Finishing Tools	2
Apprenticeship Carpentry 078B, Advanced Metal Framing	2
Apprenticeship Carpentry 078C, Wet Wall Finishes	2
Apprenticeship Carpentry 078D, Ceiling and Soffit Finishing	2
Apprenticeship Carpentry 079A, Drywall/Acoustical Ceilings	2
Apprenticeship Carpentry 082B, Firestopping Procedures	2
Apprenticeship Carpentry 082C, Decorative Trims and Textures	2
TOTAL	30

Drywall Finisher Certificate of Achievement (21663)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 071A, Orientation	2
Apprenticeship Carpentry 071B, Safety and Health Certifications	2
Apprenticeship Carpentry 072A, Basic Metal Framing	2

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Carpentry 074A, Printreading	2
Apprenticeship Carpentry 076A, Basic Hand Finishing	2
Apprenticeship Carpentry 076B, Automatic Finishing Tools	2
Apprenticeship Carpentry 077A, Drywall Installation/Finish Trims	2
Apprenticeship Carpentry 077B, Advanced Hand Finishing	2
Apprenticeship Carpentry 077C, Advanced Automatic Finishing Tools	2
Apprenticeship Carpentry 078B, Advanced Metal Framing	2
Apprenticeship Carpentry 078C, Wet Wall Finishes	2
Apprenticeship Carpentry 078D, Ceiling and Soffit Finishing	2
Apprenticeship Carpentry 079A, Drywall/Acoustical Ceilings	2
Apprenticeship Carpentry 082B, Firestopping Procedures	2
Apprenticeship Carpentry 082C, Decorative Trims and Textures	2
TOTAL	30

Apprenticeship Carpentry-Drywall/Lather

The associate degree and certificate of achievement in carpentry-drywall/lather provides the related and supplemental instruction required for interior systems apprentices. Drywall/Lathers install metal stud framing, drywall, and lath according to layout plans, blueprints, and specifications. They frame and construct walls and ceilings to the necessary height and dimensions, and complete the construction for the interior/exterior of a building including the heavy gage framing and application for the exterior of the project. Successful completion results in journeyworker status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Drywall/Lather Degree (11988)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 071A, Orientation	2
Apprenticeship Carpentry 071B, Safety and Health Certifications	2
Apprenticeship Carpentry 072A, Basic Metal Framing	2
Apprenticeship Carpentry 072B, Basic Lathing	2
Apprenticeship Carpentry 073A, Framing Ceilings and Soffits	2
Apprenticeship Carpentry 073B, Framing Suspended Ceilings	2
Apprenticeship Carpentry 073C, Framing Curves and Arches	2
Apprenticeship Carpentry 074A, Printreading	2
Apprenticeship Carpentry 075A, Light Gage Welding AWS	2
Plus 6 units from supplemental course list below	6
TOTAL	24

Supplemental courses: Apprenticeship Carpentry 030, 040, 041, 074B, 075B, 083, 085, 086A, 089, 090.

Drywall/Lather Certificate of Achievement (21664)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 071A, Orientation	2
Apprenticeship Carpentry 071B, Safety and Health Certifications	2
Apprenticeship Carpentry 072A, Basic Metal Framing	2
Apprenticeship Carpentry 072B, Basic Lathing	2
Apprenticeship Carpentry 073A, Framing Ceilings and Soffits	2
Apprenticeship Carpentry 073B, Framing Suspended Ceilings	2
Apprenticeship Carpentry 073C, Framing Curves and Arches	2
Apprenticeship Carpentry 074A, Printreading	2
Apprenticeship Carpentry 075A, Light Gage Welding AWS	2
Plus 6 units from supplemental course list below	6
TOTAL	24

Supplemental courses: Apprenticeship Carpentry 030, 040, 041, 074B, 075B, 083, 085, 086A, 089, 090.

Apprenticeship Carpentry-Finish Carpentry

The associate degree and certificate of achievement in carpentry-finish carpentry provides the related and supplemental instruction required in the trade. Finish carpenters cut, shape and assemble wood products, including moldings, panels and furniture. They also fabricate store fixtures, which includes the use of metal, plastics, and glass. Successful completion will result in journeyworker status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Finish Carpentry Degree (13231)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 033A, Cabinet Millwork and Assembly	2
Apprenticeship Carpentry 033B, Cabinet Installation	2
Apprenticeship Carpentry 033C, Show Case/Loose Store Fixture	2
Apprenticeship Carpentry 033D, Moldings and Trims	2
Apprenticeship Carpentry 034A, Plastic Laminates	2
Apprenticeship Carpentry 034B, Solid Surface	2
Apprenticeship Carpentry 034C, Stair Trim	2
Apprenticeship Carpentry 034D, Doors and Door Hardware	2
Apprenticeship Carpentry 035C, Exit and Electrical Security Devices	2
TOTAL	30

Finish Carpentry Certificate of Achievement (21658)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 033A, Cabinet Millwork and Assembly	2
Apprenticeship Carpentry 033B, Cabinet Installation	2
Apprenticeship Carpentry 033C, Show Case/Loose Store Fixture	2
Apprenticeship Carpentry 033D, Moldings and Trims	2
Apprenticeship Carpentry 034A, Plastic Laminates	2
Apprenticeship Carpentry 034B, Solid Surface	2
Apprenticeship Carpentry 034C, Stair Trim	2
Apprenticeship Carpentry 034D, Doors and Door Hardware	2
Apprenticeship Carpentry 035C, Exit and Electrical Security Devices	2
TOTAL	30

Apprenticeship Carpentry-Framing

The associate degree and certificate of achievement in carpentry-framing provides related and supplemental instruction including the technical skills and knowledge required in the trade. Framers work primarily on residential sites installing floor joists, interior and exterior walls, and roof trusses. They may also install exterior doors and windows, cornices, outside wall trim, and roof coverings.

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Successful completion will result in journeyworker status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Framing Degree (13232)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 022A, Commercial Floor Framing	2
Apprenticeship Carpentry 022B, Basic Stairs	2
Apprenticeship Carpentry 022C, Intermediate Stairs	2
Apprenticeship Carpentry 022D, Exterior Finish Details	2
Apprenticeship Carpentry 023B, Basic Roof Framing	2
Apprenticeship Carpentry 023C, Advanced Roof Framing	2
Apprenticeship Carpentry 023D, Metal Framing	2
Apprenticeship Carpentry 024A, Basic Commercial Framing	2
Apprenticeship Carpentry 024B, Advanced Commercial Framing	2
Apprenticeship Carpentry 024C, Panelized Roofing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025C, Advanced Stairs	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 028C, Intermediate Commercial Framing	2
Apprenticeship Carpentry 028D, Interior Elevations	2
TOTAL	38

Framing Certificate of Achievement (21659)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 004C, Printreading	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 022A, Commercial Floor Framing	2
Apprenticeship Carpentry 022B, Basic Stairs	2
Apprenticeship Carpentry 022C, Intermediate Stairs	2
Apprenticeship Carpentry 022D, Exterior Finish Details	2
Apprenticeship Carpentry 023B, Basic Roof Framing	2
Apprenticeship Carpentry 023C, Advanced Roof Framing	2
Apprenticeship Carpentry 023D, Metal Framing	2
Apprenticeship Carpentry 024A, Basic Commercial Framing	2
Apprenticeship Carpentry 024B, Advanced Commercial Framing	2
Apprenticeship Carpentry 024C, Panelized Roofing	2
Apprenticeship Carpentry 024D, Transit Level/Laser	2
Apprenticeship Carpentry 025C, Advanced Stairs	2
Apprenticeship Carpentry 025D, Advanced Printreading	2
Apprenticeship Carpentry 028C, Intermediate Commercial Framing	2
Apprenticeship Carpentry 028D, Interior Elevations	2
TOTAL	38

Apprenticeship Carpentry-Millwrighting

The associate degree and certificate of achievement in carpentry millwrighting provides the required related and supplemental classroom instruction in the technical skills and knowledge required in the trade for state-indentured apprentices. The work of the Millwright involves installing conveyor systems, escalators, giant electrical turbines and generators. Millwrights install and do maintenance on machinery in factories and do much of the precision work in nuclear power plants. Millwrights are skilled construction mechanics who study and interpret blueprints, and then put their

knowledge and expertise to work drilling, welding, bolting and doing whatever else is necessary to assure that the cogs of industry are in perfect working order. Interested apprentices should contact the Millwright Apprenticeship and Training Committee and the Apprenticeship Office at Santiago Canyon College.

Millwrighting Degree (11986)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 051, Orientation	3
Apprenticeship Carpentry 052, Transit Level/Laser	3
Apprenticeship Carpentry 053, Machinery Installation and Erection	3
Apprenticeship Carpentry 054, Drive Systems and Alignment	3
Apprenticeship Carpentry 055, Hydraulic Systems and Machinery Bases	3
Apprenticeship Carpentry 056, Pneumatic Systems and Compressors	3
Apprenticeship Carpentry 057, Turbines and Generators	3
Apprenticeship Carpentry 058, System Design and Fabrication	3
Apprenticeship Carpentry 059, Structural Welding-AWS/L.A. City	3
Apprenticeship Carpentry 060, Welding Fabrication	3
TOTAL	30

Millwrighting Certificate of Achievement (21662)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 051, Orientation	3
Apprenticeship Carpentry 052, Transit Level/Laser	3
Apprenticeship Carpentry 053, Machinery Installation and Erection	3
Apprenticeship Carpentry 054, Drive Systems and Alignment	3
Apprenticeship Carpentry 055, Hydraulic Systems and Machinery Bases	3
Apprenticeship Carpentry 056, Pneumatic Systems and Compressors	3
Apprenticeship Carpentry 057, Turbines and Generators	3
Apprenticeship Carpentry 058, System Design and Fabrication	3
Apprenticeship Carpentry 059, Structural Welding-AWS/L.A. City	3
Apprenticeship Carpentry 060, Welding Fabrication	3
TOTAL	30

Apprenticeship Carpentry-Tilt-Up

The associate degree and certificate of achievement in carpentry-tilt-up is designed to provide related and supplemental instruction including the technical skills and knowledge required in the trade. Tilt-up apprentices work with slabs of concrete which after attaining proper strength, are lifted (tilted) with a crane and set on prepared foundations to form the exterior walls of a building. The erected panels are temporarily braced, connected, and the joints between them caulked. Tilt-up workers may construct and attach the roof structure to the walls to complete the building shell. Tilt-up construction is used for nearly every type of one- to four-story building. Successful completion results in journeyman status. Interested apprentices should contact the Carpentry Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Tilt-Up Degree (13233)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Carpentry 002A, Building Layout/Transit/Laser Level	2
Apprenticeship Carpentry 002B, Slabs/Interior-Exterior Footings	2
Apprenticeship Carpentry 003A, Tilt-Up Introduction	2

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Carpentry 003B, Printreading-Panel Layout	2
Apprenticeship Carpentry 003D, Printreading-Panel Construction	2
Apprenticeship Carpentry 004A, Lifting and Bracing Safety	2
Apprenticeship Carpentry 004B, Pour-in-Place Wall Forms	2
Apprenticeship Carpentry 005A, Wall-Columns/Cutting and Burning	2
Apprenticeship Carpentry 005B, Site Work/Curb and Gutter	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 022A, Commercial Floor Framing	2
Apprenticeship Carpentry 023A, Commercial Roof Framing	2
Apprenticeship Carpentry 025A, Foundations and Flatwork	2
Apprenticeship Carpentry 027D, Stairs and Ramp Forming	2
TOTAL	32

Tilt-Up Certificate of Achievement (21660)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Carpentry 002A, Building Layout/Transit/Laser Level	2
Apprenticeship Carpentry 002B, Slabs/Interior-Exterior Footings	2
Apprenticeship Carpentry 003A, Tilt-Up Introduction	2
Apprenticeship Carpentry 003B, Printreading-Panel Layout	2
Apprenticeship Carpentry 003D, Printreading-Panel Construction	2
Apprenticeship Carpentry 004A, Lifting and Bracing Safety	2
Apprenticeship Carpentry 004B, Pour-in-Place Wall Forms	2
Apprenticeship Carpentry 005A, Wall-Columns/Cutting and Burning	2
Apprenticeship Carpentry 005B, Site Work/Curb and Gutter	2
Apprenticeship Carpentry 021A, Orientation	2
Apprenticeship Carpentry 021B, Safety and Health Certifications	2
Apprenticeship Carpentry 021C, Basic Wall Framing	2
Apprenticeship Carpentry 022A, Commercial Floor Framing	2
Apprenticeship Carpentry 023A, Commercial Roof Framing	2
Apprenticeship Carpentry 025A, Foundations and Flatwork	2
Apprenticeship Carpentry 027D, Stairs and Ramp Forming	2
TOTAL	32

APPRENTICESHIP COSMETOLOGY

Apprenticeship Cosmetology Certificate of Achievement (11991)

The certificate program in Apprenticeship Cosmetology prepares students to obtain their license. The program is designed to offer the required related and supplemental classroom instruction as outlined by the apprenticeship agreement provided by the Division of Apprenticeship Standards and the State Board of Barbering and Cosmetology. All students must be indentured by the State of California. Interested apprentices should contact the Apprenticeship Office at Santiago Canyon College and the Orange County Barber and Cosmetology Joint Apprenticeship Committee.

Requirements for the certificate:

Course	Units
Apprenticeship Cosmetology 035, Cosmetology Apprentice	14
TOTAL	14

APPRENTICESHIP ELECTRICITY

Apprenticeship Electricity-Industrial

The associate degree in industrial electricity provides the required related and supplemental instruction for state-indentured electrical inside wiremen apprentices. They install conduit, electrical wiring,

fixtures and electrical apparatus inside commercial buildings and in a multitude of industrial settings. They use many different kinds of tools, ranging from simple one- and two-hand tools to power-assisted tools. Interested apprentices should contact the Orange County Electrical Apprenticeship Training Committee and the Apprenticeship Office at Santiago Canyon College. Successful completion leads to state journeyworker status. Meets the state requirements as an electrician trainee program.

Industrial Degree (11985)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Electrician 051, Inside Wireman 1	3
Apprenticeship Electrician 052, Inside Wireman 2	3
Apprenticeship Electrician 053, Inside Wireman 3	3
Apprenticeship Electrician 054, Inside Wireman 4	3
Apprenticeship Electrician 055, Inside Wireman 5	3
Apprenticeship Electrician 056, Inside Wireman 6	3
Apprenticeship Electrician 057, Inside Wireman 7	3
Apprenticeship Electrician 058, Inside Wireman 8	3
Apprenticeship Electrician 059, Inside Wireman 9	3
Apprenticeship Electrician 060, Inside Wireman 10	3
Apprenticeship Electrician 061, Electrical Safety and First Aid	1.5
TOTAL	31.5

Industrial Certificate of Achievement (21661)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Electrician 051, Inside Wireman 1	3
Apprenticeship Electrician 052, Inside Wireman 2	3
Apprenticeship Electrician 053, Inside Wireman 3	3
Apprenticeship Electrician 054, Inside Wireman 4	3
Apprenticeship Electrician 055, Inside Wireman 5	3
Apprenticeship Electrician 056, Inside Wireman 6	3
Apprenticeship Electrician 057, Inside Wireman 7	3
Apprenticeship Electrician 058, Inside Wireman 8	3
Apprenticeship Electrician 059, Inside Wireman 9	3
Apprenticeship Electrician 060, Inside Wireman 10	3
Apprenticeship Electrician 061, Electrical Safety and First Aid	1.5
TOTAL	31.5

Apprenticeship Electricity-Intelligent Transportation Systems Electrician

The associate degree and certificate of achievement in intelligent transportation systems electrician provides related and supplemental instruction for electrical apprentices. The program is designed to train apprentices in the process of planning, installing and maintaining intelligent transportation signal systems beginning with the rudimentary elements of construction housekeeping and safety, and then continuing on through the more advanced techniques of job planning, layout, installation and start-up. Apprentices will learn to use the National Electrical Safety codes, Caltrans installation plans and specifications and IMSA standards and practices. Apprentices will receive hand-on training as well as instruction in electrical theory. Apprentices who successfully complete this program will be eligible for Intelligent Transportation Systems Electrician Journeyworker status. They will have the skills necessary to work for signatory Intelligent Transportation/Traffic Signal contractors and will be qualified to train apprentices.

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Intelligent Transportation Systems Electrician Degree (22271)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Electrician 031, Intelligent Traffic Systems Electrician Apprentice 1	3
Apprenticeship Electrician 032, Intelligent Traffic Systems Electrician Apprentice 2	3
Apprenticeship Electrician 033, Intelligent Traffic Systems Electrician Apprentice 3	3
Apprenticeship Electrician 034, Intelligent Traffic Systems Electrician Apprentice 4	3
Apprenticeship Electrician 035, Intelligent Traffic Systems Electrician Apprentice 5	3
Apprenticeship Electrician 036, Intelligent Traffic Systems Electrician Apprentice 6	3
Apprenticeship Electrician 037, Intelligent Traffic Systems Electrician Apprentice 7	3
Apprenticeship Electrician 038, Intelligent Traffic Systems Electrician Apprentice 8	3
TOTAL	<u>24</u>

Intelligent Transportation Systems Electrician Certificate of Achievement (22270)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Electrician 031, Intelligent Traffic Systems Electrician Apprentice 1	3
Apprenticeship Electrician 032, Intelligent Traffic Systems Electrician Apprentice 2	3
Apprenticeship Electrician 033, Intelligent Traffic Systems Electrician Apprentice 3	3
Apprenticeship Electrician 034, Intelligent Traffic Systems Electrician Apprentice 4	3
Apprenticeship Electrician 035, Intelligent Traffic Systems Electrician Apprentice 5	3
Apprenticeship Electrician 036, Intelligent Traffic Systems Electrician Apprentice 6	3
Apprenticeship Electrician 037, Intelligent Traffic Systems Electrician Apprentice 7	3
Apprenticeship Electrician 038, Intelligent Traffic Systems Electrician Apprentice 8	3
TOTAL	<u>24</u>

Apprenticeship Electricity-Power Lineman

The associate degree and certificate of achievement in Apprenticeship Electricity-Power Lineman provides the required related and supplemental instruction for power lineman apprentices. The work of the Power Lineman involves erecting and maintaining power lines, climbing power poles and working on communication lines. It's highly skilled work that requires a great deal of concentration, skill, and knowledge. Interested apprentices should contact the California/Nevada Training Trust and the Apprenticeship Office at Santiago Canyon College.

Power Lineman Degree (11981)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Power Lineman 020, Orientation	3
Apprenticeship Power Lineman 021, Power Lineman Apprentice 1	3
Apprenticeship Power Lineman 022, Power Lineman Apprentice 2	3

Apprenticeship Power Lineman 023, Power Lineman Apprentice 3	3
Apprenticeship Power Lineman 024, Power Lineman Apprentice 4	3
Apprenticeship Power Lineman 025, Power Lineman Apprentice 5	3
Apprenticeship Power Lineman 026, Power Lineman Apprentice 6	3
Apprenticeship Power Lineman 041, Work Methods Training	1
Apprenticeship Power Lineman 042, Rubber Gloves Training	1
Apprenticeship Power Lineman 043, Hot Sticks Training	1
TOTAL	<u>24</u>

Power Lineman Certificate of Achievement (21652)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Power Lineman 020, Orientation	3
Apprenticeship Power Lineman 021, Power Lineman Apprentice 1	3
Apprenticeship Power Lineman 022, Power Lineman Apprentice 2	3
Apprenticeship Power Lineman 023, Power Lineman Apprentice 3	3
Apprenticeship Power Lineman 024, Power Lineman Apprentice 4	3
Apprenticeship Power Lineman 025, Power Lineman Apprentice 5	3
Apprenticeship Power Lineman 026, Power Lineman Apprentice 6	3
Apprenticeship Power Lineman 041, Work Methods Training	1
Apprenticeship Power Lineman 042, Rubber Gloves Training	1
Apprenticeship Power Lineman 043, Hot Sticks Training	1
TOTAL	<u>24</u>

Apprenticeship Electricity-Sound Installer

The associate degree in sound installer provides related and supplemental instruction for electrical apprentices who have been recommended by the Joint Apprenticeship Committee. Interested apprentices should contact the committee and the Apprenticeship Office at Santiago Canyon College. Successful completion may lead to state journeyworker certification.

Sound Installer Degree (19588)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Electrician 021, Sound and Communication Apprentice 1	3
Apprenticeship Electrician 022, Sound and Communication Apprentice 2	3
Apprenticeship Electrician 023, Sound and Communication Apprentice 3	3
Apprenticeship Electrician 024, Sound and Communication Apprentice 4	3
Apprenticeship Electrician 025, Sound and Communication Apprentice 5	3
Apprenticeship Electrician 026, Sound and Communication Apprentice 6	3
TOTAL	<u>18</u>

Sound Installer Certificate of Achievement (19587)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Electrician 021, Sound and Communication Apprentice 1	3
Apprenticeship Electrician 022, Sound and Communication Apprentice 2	3
Apprenticeship Electrician 023, Sound and Communication Apprentice 3	3
Apprenticeship Electrician 024, Sound and Communication Apprentice 4	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Electrician 025, Sound and Communication Apprentice 5	3
Apprenticeship Electrician 026, Sound and Communication Apprentice 6	3
TOTAL	18

Apprenticeship Electricity-Sound Technician

The associate degree in sound technician provides related and supplemental instruction for electrical apprentices who have been recommended by the Joint Apprenticeship Committee. Interested apprentices should contact the committee and the Apprenticeship Office at Santiago Canyon College. Successful completion will lead to state journeyworker certification.

Sound Technician Degree (19590)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Electrician 021, Sound and Communication Apprentice 1	3
Apprenticeship Electrician 022, Sound and Communication Apprentice 2	3
Apprenticeship Electrician 023, Sound and Communication Apprentice 3	3
Apprenticeship Electrician 024, Sound and Communication Apprentice 4	3
Apprenticeship Electrician 025, Sound and Communication Apprentice 5	3
Apprenticeship Electrician 026, Sound and Communication Apprentice 6	3
Apprenticeship Electrician 027, Sound and Communication Apprentice 7	3
Apprenticeship Electrician 028, Sound and Communication Apprentice 8	3
TOTAL	24

Sound Technician Certificate of Achievement (19589)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Electrician 021, Sound and Communication Apprentice 1	3
Apprenticeship Electrician 022, Sound and Communication Apprentice 2	3
Apprenticeship Electrician 023, Sound and Communication Apprentice 3	3
Apprenticeship Electrician 024, Sound and Communication Apprentice 4	3
Apprenticeship Electrician 025, Sound and Communication Apprentice 5	3
Apprenticeship Electrician 026, Sound and Communication Apprentice 6	3
Apprenticeship Electrician 027, Sound and Communication Apprentice 7	3
Apprenticeship Electrician 028, Sound and Communication Apprentice 8	3
TOTAL	24

APPRENTICESHIP MAINTENANCE MECHANIC

The associate degree and certificate of achievement in Apprenticeship Maintenance Mechanic, Maintenance Mechanic Apprentice I and II, provides the related and supplemental instruction required for MWD Maintenance Mechanic apprentices who have been selected by the apprenticeship committee. Those interested should contact the Maintenance Mechanic apprenticeship committee or the Apprenticeship Office at Santiago Canyon College.

Apprenticeship Maintenance Mechanic-Apprentice I

Maintenance Mechanic Apprentice I Degree (16839)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Maintenance Mechanic 021, Maintenance Mechanic Apprentice, Level 1	4.5
Apprenticeship Maintenance Mechanic 022, Maintenance Mechanic Apprentice I, Level 2	4.5
Apprenticeship Maintenance Mechanic 043, Maintenance Mechanic Apprentice I, Level 3	4.5
Apprenticeship Maintenance Mechanic 044, Maintenance Mechanic Apprentice I, Level 4	4.5
Apprenticeship Maintenance Mechanic 045, Maintenance Mechanic Apprentice I, Level 5	4.5
Apprenticeship Maintenance Mechanic 046, Maintenance Mechanic Apprentice I, Level 6	4.5
Apprenticeship Maintenance Mechanic 047, Maintenance Mechanic Apprentice I, Level 7	4.5
Apprenticeship Maintenance Mechanic 048, Maintenance Mechanic Apprentice I, Level 8	4.5
TOTAL	36

Maintenance Mechanic Apprentice I Certificate of Achievement (21651)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Maintenance Mechanic 021, Maintenance Mechanic Apprentice, Level 1	4.5
Apprenticeship Maintenance Mechanic 022, Maintenance Mechanic Apprentice I, Level 2	4.5
Apprenticeship Maintenance Mechanic 043, Maintenance Mechanic Apprentice I, Level 3	4.5
Apprenticeship Maintenance Mechanic 044, Maintenance Mechanic Apprentice I, Level 4	4.5
Apprenticeship Maintenance Mechanic 045, Maintenance Mechanic Apprentice I, Level 5	4.5
Apprenticeship Maintenance Mechanic 046, Maintenance Mechanic Apprentice I, Level 6	4.5
Apprenticeship Maintenance Mechanic 047, Maintenance Mechanic Apprentice I, Level 7	4.5
Apprenticeship Maintenance Mechanic 048, Maintenance Mechanic Apprentice I, Level 8	4.5
TOTAL	36

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Maintenance Mechanic-Apprentice II

Maintenance Mechanic Apprentice II Degree (11982)

Major requirements* for the associate degree in science:

Course	Units
Apprenticeship Maintenance Mechanic 021, Maintenance Mechanic Apprentice, Level 1	4.5
Apprenticeship Maintenance Mechanic 052, Maintenance Mechanic Apprentice II, Level 2	4.5
Apprenticeship Maintenance Mechanic 053, Maintenance Mechanic Apprentice II, Level 3	4.5
Apprenticeship Maintenance Mechanic 054, Maintenance Mechanic Apprentice II, Level 4	4.5
Apprenticeship Maintenance Mechanic 055, Maintenance Mechanic Apprentice II, Level 5	4.5
Apprenticeship Maintenance Mechanic 056, Maintenance Mechanic Apprentice II, Level 6	4.5
Apprenticeship Maintenance Mechanic 057, Maintenance Mechanic Apprentice II, Level 7	4.5
Apprenticeship Maintenance Mechanic 058, Maintenance Mechanic Apprentice II, Level 8	4.5
TOTAL	36

Maintenance Mechanic Apprentice II Certificate of Achievement (21653)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Maintenance Mechanic 021, Maintenance Mechanic Apprentice, Level 1	4.5
Apprenticeship Maintenance Mechanic 052, Maintenance Mechanic Apprentice II, Level 2	4.5
Apprenticeship Maintenance Mechanic 053, Maintenance Mechanic Apprentice II, Level 3	4.5
Apprenticeship Maintenance Mechanic 054, Maintenance Mechanic Apprentice II, Level 4	4.5
Apprenticeship Maintenance Mechanic 055, Maintenance Mechanic Apprentice II, Level 5	4.5
Apprenticeship Maintenance Mechanic 056, Maintenance Mechanic Apprentice II, Level 6	4.5
Apprenticeship Maintenance Mechanic 057, Maintenance Mechanic Apprentice II, Level 7	4.5
Apprenticeship Maintenance Mechanic 058, Maintenance Mechanic Apprentice II, Level 8	4.5
TOTAL	36

APPRENTICESHIP OPERATING ENGINEERS

Apprenticeship Operating Engineers-Heavy Duty Repairer

The associate degree and certificate of achievement in heavy duty repairer provides the required related and supplemental instruction for state-indentured operating engineer apprentices. Interested apprentices should contact the Operating Engineers Joint Apprenticeship and Training Committee and the Apprenticeship Office at Santiago Canyon College. Successful completion may lead to journeyworker status.

Heavy Duty Repairer Degree (17687)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Operating Engineers 031, Heavy Duty Repairer 1	4
Apprenticeship Operating Engineers 032, Heavy Duty Repairer 2	4
Apprenticeship Operating Engineers 033, Hydraulics	4
Apprenticeship Operating Engineers 034, Advanced Hydraulics	4
Apprenticeship Operating Engineers 035, Heavy Duty Repairer 5	4
Apprenticeship Operating Engineers 036, Disassembly and Assembly	4
TOTAL	24

Heavy Duty Repairer Certificate of Achievement (21654)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Operating Engineers 031, Heavy Duty Repairer 1	4
Apprenticeship Operating Engineers 032, Heavy Duty Repairer 2	4
Apprenticeship Operating Engineers 033, Hydraulics	4
Apprenticeship Operating Engineers 034, Advanced Hydraulics	4
Apprenticeship Operating Engineers 035, Heavy Duty Repairer 5	4
Apprenticeship Operating Engineers 036, Disassembly and Assembly	4
TOTAL	24

Apprenticeship Operating Engineers-Heavy Equipment Operator

The associate degree and certificate of achievement for the heavy equipment operator is for operating engineer apprentices who have been recommended by the Joint Apprenticeship Committee. Interested apprentices should contact the committee and the Apprenticeship Office at Santiago Canyon College. Successful completion may lead to journeyman status.

Heavy Equipment Operator Degree (11983)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Operating Engineers 041, Equipment Operator 1	4
Apprenticeship Operating Engineers 042, Grade Checking	4
Apprenticeship Operating Engineers 043, Equipment Operator 3	4
Apprenticeship Operating Engineers 044, Plan Reading	4
Apprenticeship Operating Engineers 045, Equipment Operator 5	4
Apprenticeship Operating Engineers 046, Hazmat 6	4
TOTAL	24

Heavy Equipment Operator Certificate of Achievement (21655)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Operating Engineers 041, Equipment Operator 1	4
Apprenticeship Operating Engineers 042, Grade Checking	4
Apprenticeship Operating Engineers 043, Equipment Operator 3	4
Apprenticeship Operating Engineers 044, Plan Reading	4
Apprenticeship Operating Engineers 045, Equipment Operator 5	4
Apprenticeship Operating Engineers 046, Hazmat 6	4
TOTAL	24

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Operating Engineers-Plant Equipment/Rock, Sand and Gravel

The degree and certificate of achievement in plant equipment/rock, sand and gravel provides the required related and supplemental instruction for state-indentured operating engineer apprentices. Interested apprentices should contact the Operating Engineers Joint Apprenticeship and Training Committee and the Apprenticeship Office at Santiago Canyon College. Successful completion will result in journeyworker status.

Plant Equipment/Rock, Sand and Gravel Degree (17686)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Operating Engineers 021, Plant Equipment Operator 1	4
Apprenticeship Operating Engineers 022, Plant Equipment Operator 2	4
Apprenticeship Operating Engineers 023, Plant Equipment Operator 3	4
Apprenticeship Operating Engineers 024, Plant Equipment Operator 4	4
Apprenticeship Operating Engineers 025, Plant Equipment Operator 5	4
Apprenticeship Operating Engineers 026, Plant Equipment Operator 6	4
TOTAL	24

Plant Equipment/Rock, Sand and Gravel Certificate of Achievement (21656)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Operating Engineers 021, Plant Equipment Operator 1	4
Apprenticeship Operating Engineers 022, Plant Equipment Operator 2	4
Apprenticeship Operating Engineers 023, Plant Equipment Operator 3	4
Apprenticeship Operating Engineers 024, Plant Equipment Operator 4	4
Apprenticeship Operating Engineers 025, Plant Equipment Operator 5	4
Apprenticeship Operating Engineers 026, Plant Equipment Operator 6	4
TOTAL	24

Apprenticeship Operating Engineers-Special Inspector

The associate degree and certificate of achievement in operating engineer special inspector provides the required related and supplemental instruction for state-indentured operating engineer apprentices. Interested apprentices should contact the Operating Engineers Joint Apprenticeship and Training Committee and the Apprenticeship Office at Santiago Canyon College. Successful completion leads to journeyworker status.

Special Inspector Degree (17688)

Major requirements* for the associate in science degree:

Courses	Units
Apprenticeship Operating Engineers 075A, Soils Inspection and Testing	4

Apprenticeship Operating Engineers 076A, Structural Plan Reading for Inspectors	4
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Plus 4 courses from the following:

Apprenticeship Operating Engineers 071A, Reinforced Concrete	
Apprenticeship Operating Engineers 072A, Prestressed Concrete	
Apprenticeship Operating Engineers 073A, Structural Steel/Welding	
Apprenticeship Operating Engineers 074A, Structural Masonry	
Apprenticeship Operating Engineers 077A, ICC Soils Special Inspector	16
TOTAL	24

Special Inspector Certificate of Achievement (21665)

Major requirements for the certificate of achievement:

Courses	Units
Apprenticeship Operating Engineers 075A, Soils Inspection and Testing	4
Apprenticeship Operating Engineers 076A, Structural Plan Reading for Inspectors	4
Plus 4 courses from the following:	
Apprenticeship Operating Engineers 071A, Reinforced Concrete	
Apprenticeship Operating Engineers 072A, Prestressed Concrete	
Apprenticeship Operating Engineers 073A, Structural Steel/Welding	
Apprenticeship Operating Engineers 074A, Structural Masonry	
Apprenticeship Operating Engineers 077A, ICC Soils Special Inspector	16
TOTAL	24

APPRENTICESHIP SURVEYING

Apprenticeship Surveying-Chainman

The associate in science degree and certificate of achievement in chainman surveying prepares students for a career in surveying and provides the related and supplemental instruction required for apprentice surveyors. Successful completion leads to journeyworker certification. Employers include land surveying and civil engineering firms, and general construction contractors throughout Southern California. Those interested should contact the Southern California Surveying Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Chainman Degree (13230)

Major requirements* for the associate degree:

Course	Units
Apprenticeship Surveying 030, Labor Relations	0.5
Apprenticeship Surveying 040, Standard First Aid	0.2
Apprenticeship Surveying 041, Chainman Apprentice 1	4
Apprenticeship Surveying 042, Chainman Apprentice 2	4
Apprenticeship Surveying 043, Chainman Apprentice 3	4
Apprenticeship Surveying 044, Chainman Apprentice 4	4
Apprenticeship Surveying 045, Chainman Apprentice 5	4
TOTAL	20.7

Chainman Certificate of Achievement (21667)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Surveying 030, Labor Relations	0.5
Apprenticeship Surveying 040, Standard First Aid	0.2
Apprenticeship Surveying 041, Chainman Apprentice 1	4

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Apprenticeship Surveying 042, Chainman Apprentice 2	4
Apprenticeship Surveying 043, Chainman Apprentice 3	4
Apprenticeship Surveying 044, Chainman Apprentice 4	4
Apprenticeship Surveying 045, Chainman Apprentice 5	4
TOTAL	20.7

Apprenticeship Surveying-Chief of Party

The associate in science degree and certificate of achievement in surveying technology prepares students for career advancement in surveying. If combined with appropriate field experience, completion of the program may lead to employment as party chief and eventually to professional California state licensing as a land surveyor. The Chief of Party leads the work of a survey party in surveying Earth's surface to determine precise locations and measurements. They are responsible for checking the accuracy of the survey party's work, making accurate measurements, and solving survey problems. Those interested should contact the Southern California Surveying Apprenticeship Committee and the Apprenticeship Office at Santiago Canyon College.

Chief of Party Degree (11990)

Major requirements* for the associate in science degree:

Course	Units
Apprenticeship Surveying 121, Plane Surveying and Coordinate Geometry	3
Apprenticeship Surveying 122, Advanced Coordinate Geometry	3
Apprenticeship Surveying 123, Laptop Surveying/Aerial Photogrammetry	3
Apprenticeship Surveying 124, Plan Reading and Subdivision Surveying	3
Apprenticeship Surveying 125, Major Project Plans and Survey Layout	3
Apprenticeship Surveying 126, Control and Geodetic Surveying	3
Apprenticeship Surveying 127, U.S. Public Land Surveys	3
Apprenticeship Surveying 128, Property Surveys and Legal Descriptions	3
TOTAL	24

Chief of Party Certificate of Achievement (21666)

Major requirements for the certificate of achievement:

Course	Units
Apprenticeship Surveying 121, Plane Surveying and Coordinate Geometry	3
Apprenticeship Surveying 122, Advanced Coordinate Geometry	3
Apprenticeship Surveying 123, Laptop Surveying/Aerial Photogrammetry	3
Apprenticeship Surveying 124, Plan Reading and Subdivision Surveying	3
Apprenticeship Surveying 125, Major Project Plans and Survey Layout	3
Apprenticeship Surveying 126, Control and Geodetic Surveying	3
Apprenticeship Surveying 127, U.S. Public Land Surveys	3
Apprenticeship Surveying 128, Property Surveys and Legal Descriptions	3
TOTAL	24

ART

Art Degree (11911)

The associate degree in art provides students with an opportunity for individual creative stimulus and development. Completion of the associate in arts degree also prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree or into a professional art school. Possible careers in fine arts are art education, interior design, gallery operation, art merchandising, studio artist, illustration, art criticism, computer graphics and animation and related fields.

Major requirements* for the associate in arts degree:

Course	Units
Art 100/100H, Introduction to Art Concepts	3
Art 101, Survey of Western Art History I: Prehistory through the Middle Ages	3
Art 102, Survey of Western Art History II: Renaissance through the Twentieth Century	3
Art 110, Two-Dimensional Design	3
Art 111, Three-Dimensional Design	3
Art 130, Introduction to Drawing	3
Art 131, Beginning Life Drawing	3
Art 141, Beginning Painting	3
**Electives	6
TOTAL	30

*Students in A.A. Degree Transfer Program must enroll in 100, or 200 level courses.

Recommended electives: Art 128, 139, 183, 186, 188A, 188B, 195, 228, 230, 231, 232, 233, 240, 241, 242, 250.

Art-Graphic Design Degree (11921)

The associate degree in graphic design prepares students for entry into the broad field of visual communication, with an emphasis on the development of problem solving in the practical application of graphic design. These applications include design for the print media, advertising, architectural and environmental graphics, packaging, logos, corporate identity, the web and other electronic media, using both digital media tools as well as traditional hand skills. It also enables students to enter a four-year institution leading to a baccalaureate degree or into a professional art school with a graphic design emphasis.

Major requirements* for the associate in arts degree:

Course	Units
Art 100/100H, Introduction to Art Concepts	3
Art 110, Two-Dimensional Design	3
Art 111, Three-Dimensional Design	3
Art 121A, Fundamentals of Typography	3
Art 121B, Advanced Typography	3
Art 122, Graphic Design I	3
Art 128, Illustration for Graphic Design	3
Art 130, Introduction to Drawing	3
Art 131, Beginning Life Drawing	3
Art 141, Beginning Painting	3
Electives	3
TOTAL	33

Recommended electives: Art 101, 102, 129, 139, 183, 186, 188A, 188B, 195, 221, 228, 229, 230, 231, 232, 233, 241, 242, 250.

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Art-Digital Media Arts Certificates

The certificate programs in digital arts reflect the rapidly changing industry of the advertising/graphic design field in relation to graphic design for printed media, the impact of web design on e-commerce, and the integration of motion graphics into this field. The programs are designed with a combination of courses from fine art and digital media to develop technical skills and creativity in the areas of digital imaging, electronic page layout, graphic principles of web design, and interactive design for multimedia. Graduates of these programs will find entry into the profession at various levels with employment opportunities in the fields of advertising, graphic design, printing industry and e-commerce.

Requirements for the certificate:

Core courses	Units
Art 100/100H, Introduction to Art Concepts	3
Art 110, Two-Dimensional Design	3
Art 195, Introduction to Digital Media Arts	3
TOTAL	9

Digital Media Arts Certificate A-Graphic Design Emphasis (21670)

Course	Units
Core courses (See above)	9
Art 121A, Fundamentals of Typography	3
Art 122, Graphic Design I	3
Art 130, Introduction to Drawing	3
Electives	3
TOTAL	21

Recommended electives: Art 101, 111, 121B, 128, 129, 131, 139, 141, 221, 228, 229, 230, 231, 232, 250; Computer Science 100.

Digital Media Arts Certificate B-Web Design Emphasis (11922)

Course	Units
Core courses (See above)	9
Art 121A, Fundamentals of Typography	3
Art 122, Graphic Design I	3
Art 129, Graphic Design Concepts for the Web	3
Art 229, Multimedia Applications for the Web	3
Electives from recommended list	3
TOTAL	24

Recommended electives: Art 111, 121B, 128, 130, 131, 139, 141, 221, 228, 230, 231, 232, 233, 250; Computer Science 100.

BARBERING

(See *Apprenticeship Barbering*)

BIOLOGICAL SCIENCE

Biological Science Degree (11856)

The associate degree in biological science prepares students for pre-professional careers and a curriculum in a four-year institution leading to a baccalaureate degree in such areas as microbiology, botany, zoology, and teaching. The biologist is also prepared to enter graduate or professional programs of specialized study such as medicine, dentistry, medical technology, osteopathy, veterinary medicine, agriculture, forestry, optometry, and dental hygiene. See counseling for transfer requirements.

Major requirements* for the associate in science degree:

Course	Units
Biology 211, Cellular and Molecular Biology	5
Biology 212, Animal Diversity and Ecology	5
Biology 214, Plant Diversity and Evolution	5
Chemistry 219, General Chemistry	5
Chemistry 229, General Chemistry and Qualitative Analysis	5
TOTAL	25

BOTANY

(See *Biological Science Degree* for major requirements and counseling for transfer requirements.)

BUSINESS

Business Administration Degree (11857)

The associate degree in business administration enables students to move into a curriculum at a four-year institution leading to a baccalaureate degree. Career opportunities exist in many areas of business administration such as accounting, financial planning and analysis, financial service specialties, management, marketing and sales, production and logistics, and systems and technology development.

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H, Financial Accounting	4
Economics 120, Principles/Macro	3
Business 101, Business Law* (see note)	
OR	3
Business 105, Legal Environment of Business* (see note)	
Accounting 102/102H, Managerial Accounting	4
Economics 121, Principles/Micro	3
Business 150, Introduction to Computing and Application Software	4
Business 222, Business Writing	3
Select one of the following courses** (see note):	
Business 100, Fundamentals of Business	3
Business 120/Management 120, Principles of Management	3
Business 125, Introduction to International Business	3
Marketing 113, Principles of Marketing	3
Mathematics 150, Calculus for Biological, Management and Social Sciences	4
TOTAL	27 or 28

*Students planning for university transfer should be aware that some universities only accept Business 101 for the transfer major (e.g. California State University, Long Beach) while others only accept Business 105 (e.g. California State University, Fullerton) for the transfer major. Please consult the Transfer Planning Guide and meet with a counselor for information about specific universities.

**Students planning for university transfer should be aware that California State University, Fullerton and many other universities require Math 150 for the Business Administration degree. Please consult the Transfer Planning Guide and meet with a counselor for information about specific universities.

Numerous California State University campuses and private colleges and universities offer baccalaureate degrees in Business Administration. In the University of California system, UC Berkeley and UC Riverside offer this degree. Consult the Transfer Planning Guide and meet with a counselor for information about specific programs and transfer requirements.



Business Management Degree (11859)

The associate degree in business management is designed to enable students to handle basic problems encountered in managing within a business environment including the managing of a marketing program, the making of decisions and problem solving, the coordinating of activities, the influencing of staff, and the understanding of finance. Entry-level careers include management trainees and assistant managers or supervisors.

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H, Financial Accounting	4
Business 100, Fundamentals of Business	3
Business 120/Management 120, Principles of Management	3
Business 222, Business Writing	3
Marketing 113, Principles of Marketing	3

Select two courses from the following:

Business 105, Legal Environment of Business	3
Business 106, International Business Culture	3
Business 121, Human Relations and Organizational Behavior	3
Business 125, Introduction to International Business	3
Business 127, Introduction to E-Commerce	3
Business 150, Introduction to Computing and Application Software	4
Management 135, Human Resource Management	3
Marketing 111, Retail Management	3
TOTAL	22-23

Students intending to obtain a bachelor's degree in Business Management should consult the major requirements for upper-division standing listed under the Business Administration major. For other related majors, look under Management.

Business Management-Entrepreneurship

The associate degree and certificate of achievement in entrepreneurship is designed to assist the student in the development of fundamental skills necessary to open and operate a small business and/or to continue the pursuit of a bachelor's degree at a four-year college or university. Students intending to obtain a bachelor's degree in Entrepreneurship should consult the major requirements for upper-division study listed under the Business Administration major.

Entrepreneurship Degree (11860)

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H, Financial Accounting	4
Business 120/Management 120, Principles of Management	3
Business 170, Principles of Small Business	3
Business 171, Business Plan for Small Business	3
Marketing 113, Principles of Marketing	3

Select ONE of the following 3 unit courses:

Business 125, Introduction to International Business	3
Business 175, Online Entrepreneurship	3
TOTAL	19

Entrepreneurship Certificate of Achievement (21635)

Major requirements for the certificate of achievement:

Course	Units
Accounting 101/101H, Financial Accounting	4
Business 120/Management 120, Principles of Management	3

Business 170, Principles of Small Business	3
Business 171, Business Plan for Small Business	3
Marketing 113, Principles of Marketing	3

Select ONE of the following 3 unit courses:

Business 125, Introduction to International Business	3
Business 175, Online Entrepreneurship	3
TOTAL	19

CARPENTRY

(See Apprenticeship Carpentry)

CALIFORNIA STATE UNIVERSITY GENERAL EDUCATION BREADTH (CSU) CERTIFICATE OF ACHIEVEMENT (18117)

Complete all CSU General Education Breadth Requirements (Plan B) to a minimum of 39 units as outlined on page 39.

CHEMISTRY

Chemistry Degree (11933)

The associate degree in chemistry provides basic courses for a wide variety of occupations, or prepares the student to enter a curriculum in a four-year institution leading to a baccalaureate degree. The major fields of chemistry are inorganic and organic chemistry, biochemistry, and chemical engineering. These fields provide career opportunities in industry, research, and teaching, and also entry into graduate or professional programs such as medicine, pharmacy and other related health fields.

Major requirements* for the associate in science degree:

Course	Units
Chemistry 219, General Chemistry	5
Chemistry 229, General Chemistry and Qualitative Analysis	5
Mathematics 180/180H, Analytical Geometry and Calculus	4
Chemistry 249, Organic Chemistry I	5
Chemistry 259, Organic Chemistry II	5
TOTAL	24

CHILD DEVELOPMENT

(See Human Development-Early Childhood)

COMMUNICATION

Communication Degree (11929)

The associate degree in communication provides training for communicating and dealing with people. Completion of the associate in arts degree in communication prepares students to: (1) Communicate with clarity and accuracy, and in diverse environments, (2) Act with awareness of self and both the local and global communities of persons, (3) Think critically, creatively and reflectively, and (4) Learn about self and others, academic and professional issues. The associate in arts in communication degree prepares the student to move into a curriculum at a four-year institution leading to a baccalaureate degree, and then into careers in the field of business, industry, government, social service, or education in such areas as teaching, public speaking, consulting, law, announcing, public speaking and public relations.

Major requirements* for the associate in arts in communication degree:

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.

**Course****Relationship Emphasis, 3 units**

Communication 100/100H, Introduction to Interpersonal Communication

OR

Communication 101, Group Dynamics

Delivery Emphasis, 3 units

Communication 110, Public Speaking

OR

Communication 111, Argumentation and Debate

Diversity Emphasis, 3 units

Communication 120/120H, Introduction to Intercultural Communication

OR

Communication 225/225H, Gender Communication

Performance Emphasis, 3 units

Communication 130, Forensics Team (1-2)

OR

Communication 131, Individual Events (1-2)

OR

Communication 132, Team Events (1-2)

OR

Communication 133, Voice and Diction for Effective Communication (3)

OR

Communication 134, Oral Interpretation (3)

OR

Communication 135, Readers Theatre (3)

OR

Communication 230, Forensic Team (1-2)

OR

Communication 231, Individual Events (1-2)

OR

Communication 232, Team Events (1-2)

Required Electives, 6 units:

Any of the above courses not already completed, but no more than 2 additional units of Communication 130, Communication 131, Communication 132, Communication 230, Communication 231, or Communication 232 (1-2)

OR

Communication 102, Listening (1.5)

OR

Library and Information Sciences 103, Advanced Internet Research (1)

TOTAL 18

COMPUTER RELATED PROGRAMS

Santiago Canyon College offers two major programs which are described below.

Computer Information Systems

Computer Information Systems (CIS) is a program for students interested in the application of computer hardware and software to business. CIS courses prepare students for entry-level positions in programming, networking, or computer support. These courses may be used for job advancement, an Associate Degree or Certificate of Competency, or transfer to a four-year institution. CIS courses cover major programming languages (Visual BASIC, C++, Java) as well as software used in business for database management, spreadsheets, and networking. The introductory course for the CIS program is Business 150.

Units Computer Science

3

Computer Science courses are designed to meet the varying goals of students interested in employment or education in the computer field. There are courses on specific languages for professionals who want to supplement their skills with the knowledge of a current programming language (PC assembler, C++, Visual BASIC, Java). A certificate in computer science can be earned by those students desiring to enter the workplace at entry-level positions. Also, an Associate Degree can be earned by those students desiring to transfer to a four-year institution with a major in Computer Science.

3

The Computer Science courses provide instruction in low level and high level languages, intermediate and advanced techniques in programming, and hardware organization. Refer to Computer Science in the courses section of this catalog and to the schedule of classes for specific information.

3

**Computer Related Programs-
Computer Information Systems**

The associate degree and certificate of achievement in Computer Information Systems is concerned with the development of procedures which are effective and efficient, computer languages suitable for starting these procedures, and systems for executing the procedures. This may include the ability to write programs in Visual BASIC, C++ or Java, experience microcomputer data processing applications such as Excel or Access, and ability to structure data for the computer. Graduates of the program are prepared for employment as trainees in information systems, computer programming, networking and systems analysis. Completion of the degree provides background for curriculum at a four-year institution such as the California State University system at Fullerton or Pomona.

Students intending to obtain a bachelor's degree in Computer Information Systems should consult the major requirements for upper-division standing listed under the Business Administration major at the school of their choice.

6

Computer Information Systems Degree (11902)**Major requirements* for the associate in science degree:**

Course	Units
Computer Science 105, Visual BASIC Programming	3
Computer Science 205, Advanced Visual Basic	3
Business 150, Introduction to Computing and Application Software	4
Computer Information Systems 106, Microsoft Excel	3
Computer Information Systems 108, Microsoft Access	3
Computer Information Systems 128, Introduction to Networking Technology	3

Three (3) units taken from the following electives: 3
Accounting 101 or 101H, 102, 102H, Computer Information Systems 103, 110, 130, 132, 134, 135, 144, 146, Computer Science 112, 121, 206, 213.

TOTAL 22

Computer Information Systems Certificate of Achievement (21647)**Major requirements for the certificate of achievement:**

Course	Units
Computer Science 105, Visual BASIC Programming	3
Computer Science 205, Advanced Visual Basic	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Business 150, Introduction to Computing and Application Software	4
Computer Information Systems 106, Microsoft Excel	3
Computer Information Systems 108, Microsoft Access	3
Computer Information Systems 128, Introduction to Networking Technology	3

Three (3) units taken from the following electives:	3
Accounting 101 or 101H, 102, 102H, Computer Information Systems 103, 110, 130, 132, 134, 135, 144, 146, Computer Science 112, 121, 206, 213.	
TOTAL	<u>22</u>

Web Page Designer Certificate

Course	Units
Computer Information Systems 124, Introduction to Adobe Photoshop	3
Computer Information Systems 126, Web Site Development for Business	3
Computer Information Systems 130, HTML	3

Three (3) units taken from the following electives:	3
Computer Information Systems 122, 128, 132, 134.	
TOTAL	<u>12</u>

Web Programming Certificate

Course	Units
Computer Science 105, Visual Basic	3
Computer Information Systems 130, HTML	3
Computer Information Systems 132, JavaScript	3
Computer Science 205, Advanced Visual Basic	3
Computer Science 206, Visual Basic for Web Development	3
TOTAL	<u>15</u>

Computer Related Programs-Computer Science

The associate degree and certificate of achievement in computer science leads to entry-level employment in computer science, engineering and other areas where high aptitude in computer programming is recognized. The program prepares students for careers as engineering aides, scientific computing technicians and junior programmers. The program also prepares students to transfer to a university with a major in Computer Science.

Computer Science Degree (11903)

Major requirements* for the associate in science degree:

Course	Units
Computer Science 100/100H, The Computer and Society	3
Computer Science 111, Introduction to Computer Organization	4
Computer Science 119, Fundamentals of Assembly Programming	4
Computer Science 120, Introduction to Programming	3
Computer Science 121, Concepts	3
Computer Science 131, Data Structures Concepts	3

Select ONE course from the following:	3
Computer Science 112, Java Programming	
Computer Science 205, Advanced Visual Basic	
Computer Science 213, C# Programming	

Six (6) units from the following electives:	6
Computer Science 105, 106	
Mathematics 180/180H, 185	
TOTAL	<u>29</u>

Computer Science Certificate of Achievement (21649)

Major requirements for the certificate of achievement:

Course	Units
Computer Science 100/100H, The Computer and Society	3
Computer Science 111, Introduction to Computer Organization	4
Computer Science 119, Fundamentals of Assembly Programming	4
Computer Science 120, Introduction to Programming	3
Computer Science 121, Concepts	3
Computer Science 131, Data Structures Concepts	3

Select ONE course from the following:	3
Computer Science 112, Java Programming	
Computer Science 205, Advanced Visual Basic	
Computer Science 213, C# Programming	

Six (6) units from the following electives:	6
Computer Science 105, 106	
Mathematics 180/180H, 185	
TOTAL	<u>29</u>

Applied Robotics and Embedded Programming Certificate

The Embedded Programming certificate in computer science will lead to entry-level employment in computer science, engineering and other areas where high aptitude in computer programming is recognized. The program prepares students for careers as robotics technicians, engineering technicians, and junior programmers.

Requirements for the certificate:

Course	Units
Computer Science 157, Introduction to Robotics Programming	3
Computer Science 257, Applied Robotics and Embedded Programming	3
Computer Science 205, Advanced Visual Basic	3
Computer Science 112, Java Programming	3
Computer Science 213, C# Programming	3
TOTAL	<u>15</u>

COSMETOLOGY

The associate degree and certificate of achievement in cosmetology is designed to exceed minimum Board of Cosmetology standards. A combination of lecture and laboratory instruction includes personal hygiene and grooming; salesmanship and skills in serving the public; antisepsis, bacteriology, sterilization, and principles of sanitation; use of electrical appliances and principles of electricity; safety requirements in operation of cosmetic materials; laws and administrative regulations. Proficiencies to be developed include hairdressing, chemical waving and straightening, haircutting and shaping, hair coloring, scalp and hair treatments, facials, manicuring, and operation of a beauty salon.

The student may enroll at any time. Students should be prepared to purchase a basic cosmetology kit. Courses are offered on an open enrollment basis.

Cosmetology Degree (11948)

Major requirements* for the associate in science degree:

Course	Units
Cosmetology 040, Cosmetology	38
TOTAL	<u>38</u>

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Cosmetology Certificate of Achievement (21674)

Major requirements for the certificate of achievement:

Course	Units
Cosmetology 040, Cosmetology	38
TOTAL	38

Esthetician Certificate

The certificate in Esthetician is designed to exceed minimum California State Board of Cosmetology standards. A combination of lecture and laboratory instruction includes personal hygiene and grooming; salesmanship and skills in serving the public; bacteriology, sterilization and sanitation; use of electrical machines and appliances and principles of electricity; safety requirements in operation of a skin care salon; fundamentals of physiology; principles of chemistry and composition of cosmetic materials; fundamentals of nutrition; laws and administrative regulations; skin care techniques; make up.

The student may enroll at any time. Students should be prepared to purchase basic skin care tools. Courses are offered on an open enrollment basis.

Major requirements for the certificate:

Course	Units
Cosmetology 080, Esthetician	13
TOTAL	13

Manicuring Certificate

The certificate in manicuring is designed to exceed minimum California State Board of Cosmetology standards. A combination of lecture and laboratory instruction includes personal hygiene and grooming; salesmanship and skills in serving the public; antisepsis, bacteriology, sterilization, and principles of sanitation; use of electrical appliances and principles of electricity; safety requirements in operation of a nail salon; fundamentals of physiology; principles of chemistry and composition of cosmetic materials; laws and administrative regulations.

The student may enroll at any time. Students should be prepared to purchase a basic manicuring kit. Courses are offered on an open enrollment basis.

Major requirements for the certificate:

Course	Units
Cosmetology 050, Manicuring	8
TOTAL	8

Recommended electives: Cosmetology 040.

DATA PROCESSING

(See *Computer Information Systems*)

ECONOMICS

Economics Degree (11943)

The associate degree in economics is a program of basic courses which enable students to move into a curriculum in a four-year institution leading to a baccalaureate degree. Economics prepares the student for a number of career opportunities such as accounting and marketing in the areas of business, government and teaching.

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H, Financial Accounting	4
Accounting 102/102H, Managerial Accounting	4
Economics 120, Principles/Macro	3
Economics 121, Principles/Micro	3
Social Science 219/219H, Statistics and Probability	4
OR	
Mathematics 219/219H, Statistics and Probability	4
Business 150, Introduction to Computing and Application Software	4
OR	
Mathematics 150, Calculus for Biological, Management and Social Sciences	4
TOTAL	22

EDUCATION

Education/Teaching

Students planning to teach in the elementary and secondary schools may begin preparation at Santiago Canyon College. The college offers programs of study which fulfill lower-division requirements for most university teacher credential programs.

Suggested Elementary Teaching Emphasis

Liberal Studies and Child Development are the two most common university majors of students who are planning to enter teacher preparation programs for an elementary teaching credential. However, any transfer major leading to a bachelor's degree will fulfill admission requirements for teacher credential programs. Students should work with an SCC Counselor to assist them in choosing general education courses that will support their subject matter competency. Some universities offer students the option of obtaining a bachelor's degree and a credential simultaneously. These types of programs are called "integrated" teaching programs and are best for students who have decided early to pursue a teaching credential. Planning for this type of program involves specific courses for the major and general education. Students are advised to work with an SCC counselor to plan this course of study.

Santiago Canyon College offers an Elementary Education degree, shown below, that has been designed to assist students in meeting the course requirements for most transfer elementary teaching programs and prepares them for California subject matter requirements. Santiago Canyon College also offers a course, Counseling 118, Self-Exploration and the Teaching Profession that has been developed to assist students in making career decisions related to teaching, inform students about the process of entering the profession and/or to investigate alternate career choices.

Elementary Education Degree (17759)

The associate degree in elementary education is designed to prepare students for transfer to a four-year university traditional or integrated teacher preparation program. It incorporates the elementary subject matter requirements for the CSU Lower-Division Transfer Pattern (LDTP) as established by the California Teacher Credentialing Commission. The degree program requirements, and the general education recommended electives below, prepare students in content areas for the California Subject Examinations for Teachers (CSET) of Multiple Subjects. Additionally, the degree curriculum may also serve as preparation for paraprofessional positions in the K-12 classroom meeting unit requirements for paraprofessionals as established by the No Child Left Behind Act.

Major requirements* for the associate in arts degree:

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Course	Units		Units
Counseling 118, Self-Exploration and the Teaching Profession	2	OR	Human Development 107, Child Growth and Development
Education 101, Introduction to Education	3		Psychology 157, Introduction to Child Psychology
Education 200, Introduction to Classroom Teaching	3		Human Development 110, Child, Family and Community
Human Development 107, Child Growth and Development	3		Human Development 121, School Age Child Care Activities
Earth Science 115, Earth Science for Educators	4		Communication 110, Public Speaking
Math 203, Math for Future Elementary Teachers	4		
English 270, Children's Literature	3		TOTAL
			15
	TOTAL		22

For those students following transfer patterns for elementary education programs the following general education electives are recommended to meet content area knowledge for the CSET. They may also be used to meet certain categories of the general education requirements for students not transferring and completing Plan A for the associate's degree:

Communication 110, English 103, Biology 109 and 109L, Physical Science 115, Math 105, History 101, History 120, Political Science 101, Geography 100, History 133, Anthropology 104; and Art 100, Music 100 and 101 or Theatre 100; and English 231, 232, 241, 242, 271 or 272.

Suggested Secondary Teaching Emphasis

Teaching at the secondary level (high school and middle school) requires a single subject credential. Students major in the subject they plan to teach and pass a subject matter competency exam or complete a state approved list of courses in the discipline. Students are advised to work with an SCC counselor to plan this course of study. EDUC 204 and EDUC 210, offered at SCC, are recommended prerequisites for secondary credential programs.

After School Program Assistant Certificate

The After School Program Assistant Certificate is intended to prepare a student for an entry-level position requiring practical skills and knowledge to work with children in an after-school care, tutoring, or mentoring program. Completion of this certificate leads to state certification for a School Age Assistant Permit.

Requirements for the certificate:

Course	Units
Education 113, Tutoring Reading in Elementary Schools	1
Counseling 118, Self Exploration and the Teaching Profession	2
Human Development 120, Development of the School Age Child	3
Human Development 121, School Age Child Care Activities	3
Mathematics 060, Elementary Algebra*	0-4
English 061, Introduction to Composition*	0-3
TOTAL	9-16

*Successful course completion or test score.

After School Program Associate Teacher Certificate

The After School Program Associate Teacher Certificate is intended to provide students with advanced skills necessary to work with K-12 students in an after-school setting, provide tutoring/homework assistance, and assist in academic enrichment programs. In combination with the completion of the SCC After School Program Assistant Certificate, this certificate of completion leads to state certification for the School Age Associate Teacher Permit.

Requirements for the certificate:

Course	Units
Education 113, Tutoring Reading in Elementary Schools	1
Counseling 118, Self Exploration and the Teaching Profession	2

Special Education Paraprofessional Certificate

The successful completion of this certificate will prepare the student for an entry-level position requiring practical skills and knowledge to work with persons with disabilities in a variety of educational settings. This certificate program also supports the requirements of federal legislation that all paraprofessionals/instructional assistants/aides in Title I schools be "highly qualified". In addition, the courses introduce the student to career opportunities in special education or other disability related fields and/or provide major preparation for transfer to four-year institutions to continue a course of study in special education.

Requirements for the certificate:

Course	Units
Counseling 118, Self Exploration and the Teaching Profession	2
Human Development 107, Child Growth and Development	3
OR	
Psychology 157, Introduction to Child Psychology	3
Human Development 205, Exceptionality and Special Needs in Human Development	3
Human Development 208, Working with Families of Children with Special Needs	3
Education 209, Roles and Responsibilities of the Special Education Paraprofessional	3
Education 211, Classroom Practices for Diverse Learners	3
TOTAL	17

Students planning to transfer to CSU Fullerton's Human Services major—Person's with Disabilities Track will receive up to 17 units of credit toward the major if they have satisfactorily completed the requirements for this certificate.

ELECTRICIAN

General Electrician

The associate degree and certificate of achievement for the general electrician provides instruction for those seeking a career as an electrician. This meets the state requirements as an electrician trainee program.

General Electrician Degree (18791)

Major requirements* for the associate in science degree:

Course	Units
Electrician 041, General Electrician 1	3
Electrician 042, General Electrician 2	3
Electrician 043, General Electrician 3	3
Electrician 044, General Electrician 4	3
Electrician 045, General Electrician 5	3
Electrician 046, General Electrician 6	3
Electrician 047, General Electrician 7	3
Electrician 048, General Electrician 8	3
Electrician 049, General Electrician 9	3
Electrician 050, General Electrician 10	3
Electrician 051, Quality Safety Program and First Aid	1.5
TOTAL	31.5

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



General Electrician Certificate of Achievement (18790)

Major requirements for the certificate of achievement:

Course	Units
Electrician 041, General Electrician 1	3
Electrician 042, General Electrician 2	3
Electrician 043, General Electrician 3	3
Electrician 044, General Electrician 4	3
Electrician 045, General Electrician 5	3
Electrician 046, General Electrician 6	3
Electrician 047, General Electrician 7	3
Electrician 048, General Electrician 8	3
Electrician 049, General Electrician 9	3
Electrician 050, General Electrician 10	3
Electrician 051, Quality Safety Program and First Aid	1.5
TOTAL	31.5

ELECTRICITY-INDUSTRIAL

(See also *Apprenticeship Electricity*)

ENGLISH

English Degree (11928)

The associate degree in English is designed to develop proficiency in written communication and in the understanding of human nature through the study of language and literature. Completion of the degree program prepares students to pursue a major in English leading to a baccalaureate degree.

Major requirements for the associate in arts degree:

Course	Units
English 101/101H, Freshman Composition	4
English 102/102H, Literature and Composition	4
English 103/103H, Critical Thinking and Writing	4
AND	
Completion of one of the following sequences:	
English 231-232, Survey of English Literature	
OR	
English 241-242, Survey of American Literature	6
OR	
English 271-272, Survey of World Literature	
AND	
*Electives	12
TOTAL	30

*12 units of electives to be selected from any 200 or above English language or literature class including those above not taken as part of the 6 unit requirement. But no more than 3 units in either English 211, 212, 214, or 215.

Note: Students planning to transfer to 4-year schools should consult with English departments at those institutions regarding specific lower-division requirements and unit limits.

ENTREPRENEURSHIP

(Listed after *Business Management*)

FOREIGN LANGUAGES

(See *Modern Languages*)

GEMOLOGY

The associate degree and certificate of achievement in gemology provides technical and practical theory and knowledge in diamonds and colored stones including laboratory grading, identification and evaluation of gems. Employment opportunities upon completion of this program: jewelry appraiser, diamond and colored stones sales, jewelry buyer, jewelry wholesaler and laboratory gemologist.

Gemology Degree (11874)

Major requirements* for the associate in science degree:

Course	Units
Gemology 011, Introductory Colored Stones	4
Gemology 012, Advanced Colored Stones	4
Gemology 020, Diamonds	4
Plus 6 units from the following:	6
Gemology 029, The Jewelry Profession (3)	
OR	
Gemology 030, Antique and Period Jewelry (3)	
OR	
Gemology 040, Appraisal Theory and Practice (3)	
OR	
Gemology 050, Pearls (3)	
TOTAL	18

Recommended electives: Gemology 015.

Gemology Certificate of Achievement (21644)

Major requirements for the certificate of achievement:

Course	Units
Gemology 011, Introductory Colored Stones	4
Gemology 012, Advanced Colored Stones	4
Gemology 020, Diamonds	4
Plus 6 units from the following:	6
Gemology 029, The Jewelry Profession (3)	
OR	
Gemology 030, Antique and Period Jewelry (3)	
OR	
Gemology 040, Appraisal Theory and Practice (3)	
OR	
Gemology 050, Pearls (3)	
TOTAL	18

Recommended electives: Gemology 015.

GEOGRAPHY

Geography Degree (11945)

The associate degree in geography provides students with an interdisciplinary background for entry into a curriculum at a four-year institution leading to a baccalaureate degree with career opportunities in a wide range of jobs in government, such as Bureau of Census, C.I.A., D.E.A., U.S.G.S., Department of Immigration and Naturalization, Department of State; and in private industry, such as planning market research, land use analysis, transportation, travel and tourism, and education.

Major requirements* for the associate in arts degree:

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Course	Units
Geography 100/100H, World Regional Geography	3
Geography 101, Physical Geography	3
Geography 102, Cultural Geography	3
Recommended Electives	<u>9</u>
TOTAL	18

Recommended electives must be chosen from Category A and Category B below with a minimum of 3 units from each category.

Category A

Anthropology 100/100H, 103; Economics 120; History 101/101H, 102/102H; Political Science 201, 220.

Category B

Anthropology 101; Astronomy 109, 110/110H, 140; Biology 200, 259; Environmental Studies 200, 259; Geology 101, 101L, 111, 112, 142, 150, 162, 164, 166, 168, 170, 172, 174, 176, 178, 201; Physical Science 117, 118; Survey/Mapping Sciences 150.

It is strongly recommended that geography majors transferring to the CSU or UC system complete Foreign Language courses at the 201 and 202 level, and Social Sciences 219/219H or Mathematics 219/219H.

GEOLOGY

Geology Degree (11934)

The associate degree in geology prepares students for transfer to a four-year college or university to complete a baccalaureate degree in a geoscience major. Geoscientists find employment with environmental companies that clean up and monitor pollution problems. Geotechnical companies also employ geoscientists to evaluate risk from earthquakes, landslides, and other geological hazards. Oil and mining companies employ geoscientists to find new resources. The federal, state, county, and city governments also employ geoscientists for many of the same functions, as well as for geoscience research, and to monitor compliance with environmental regulations. Universities, colleges, and museums offer opportunities for teaching and/or research.

Units used to satisfy the general education requirements may also be used to satisfy the Geology Degree requirements.

Major requirements* for the associate in science degree:

Course	Units
Geology 101, Introduction to Geology	3
Geology 101L, Introduction to Geology Laboratory	1
Geology 201, Introduction to Historical Geology	4
Geology 142, Natural Disasters	3
OR	3
Geology 150, Introduction to Oceanography	5
Chemistry 219, General Chemistry	5
Geology 260, Introduction to Mineralogy and Crystallography (4)	4 or 5
OR	4 or 5
Chemistry 229, General Chemistry and Qualitative Analysis (5)	5
Electives	<u>4</u>
TOTAL	24 or 25

Recommended electives: Biology 211, 212, 214; Chemistry 229; Earth Science 115; Geology 111, 112, 113, 142, 150, 162, 164, 166, 168, 173, 174, 176, 178, 180, 260; Mathematics 180/180H, 185, 280; Physics 210, 211, 217, 227, 237, 279, 289.

HEAVY EQUIPMENT OPERATOR AND REPAIR

(See *Apprenticeship Heavy Equipment Operator*)

HISTORY

History Degree (11944)

The associate degree in history provides a basic program to aid students in thinking critically about one's self, one's cultural heritage, social and economic processes, and national and international affairs. Completion of the degree prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree and eventually into careers with government agencies, libraries or museums, research programs in business, journalism, international organizations, archival work, and work in law, international relations, and business.

Major requirements* for the associate in arts degree:

Course	Units
History 101/101H, World Civilizations to the 16th Century	3
History 102/102H, World Civilizations Since the 16th Century	3
History 120/120H, United States to 1865	3
History 121/121H, United States Since 1865	3

Choose 3 electives from the following group. Must include at least one History class. **9**

History 124, 127, 133, 152, 162; Political Science 101/101H, 121, 200, 201, 220, 221, 222, 226, 230; Philosophy 112, 118; Economics 120; Geography 100/100H.

TOTAL 21

HUMAN DEVELOPMENT

Early Childhood Basic Infant-Toddler and Preschool Certificates

The basic infant/toddler and preschool certificates offer students fundamental knowledge about the young child prebirth through the early elementary years providing learning opportunities to meet the social, emotional, physical, cognitive, and education needs of the child. The early childhood certificates emphasizes infant/toddler and preschool courses necessary for employment in state-licensed Title 22 and publicly funded Title 5 programs. These certificates are also recommended courses for those who work as licensed child care providers or nannies.

The basic infant/toddler and preschool certificates prepare students for extended study in infant/toddler or early learning to obtain an associate or a baccalaureate degree in child development or employment as a preschool director, teacher, or other specialist working with children and families.

Students must show negative TB results.

Basic Early Childhood Infant/Toddler Certificate

The Basic Early Childhood Infant/Toddler Certificate meets the minimum requirements for beginning early learning professionals employed or seeking employment as teachers and/or aides in privately owned and church affiliated (Title 22) or publically funded (Title 5) programs serving preschoolers 2-5. This certificate is also recommended for licensed Family Day Care Providers or Nannies.

Major requirements for the certificate:

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Course	Units
Human Development 107, Child Growth and Development (DS1)	3
Human Development 108A, Observation and Assessment for Early Learning and Development	3
Human Development 110, Child, Family and Community (DS2)	3
Human Development 116A, Infant/Toddler Growth and Development (DS4)	3
Human Development 116B, Programming for Infants and Toddlers (DS4)	3
TOTAL	15

A NEGATIVE TB TEST IS REQUIRED FOR COMPLETION OF THIS CERTIFICATE.

Basic Early Childhood Preschool Certificate

The Basic Early Childhood Preschool Certificate meets the minimum requirements for beginning early learning professionals employed or seeking employment as teachers and/or aides in privately owned and church affiliated (Title 22) or publically funded (Title 5) programs serving preschoolers 2-5. This certificate is also recommended for licensed Family Day Care Providers or Nannies.

Major requirements for the certificate:

Course	Units
Human Development 107, Child Growth and Development (DS1)	3
Human Development 108A, Observation and Assessment for Early Learning and Development	3
Human Development 110, Child, Family and Community (DS2)	3
Human Development 111A, Principles and Practices of Teaching Young Children (DS4)	3
Human Development 111B, Curriculum for Young Children (DS4)	3
TOTAL	15

A NEGATIVE TB TEST IS REQUIRED FOR COMPLETION OF THIS CERTIFICATE.

The School Age Child Certificate

The School Age Child Certificate is intended to prepare a student for an entry or reentry level positions requiring practical skills and knowledge to work with school age children (PreK-Grade 3) in Title 22 or Title 5 after-school care programs. Completion of this certificate leads to a School Age Children's Center Permit.

Requirements for the certificate:

Course	Units
Human Development 110, Child, Family and Community	3
Human Development 112, Health, Safety, and Nutrition	3
Human Development 120, Development of the School Age Child	3
Human Development 121, School Age Child Care Activities	3
Human Development 221, Teaching in a Diverse Society	3
TOTAL	15

INSTRUCTIONAL AIDE-EARLY CHILDHOOD

(See *Human Development-Early Childhood: Infant-Toddler, and Preschool Child*)

INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM (IGETC) CERTIFICATE OF ACHIEVEMENT (18118)

Complete all Intersegmental General Education Transfer Curriculum Requirements (Plan C) to a minimum of 34 units as outlined on page 40.

LAW

Prelaw students at Santiago Canyon College should complete the requirements for the political science, liberal arts, business administration transfer and to meet the lower-division requirements of the institution to which they plan to transfer.

No specific college major is required for admission to a school of law. A usual requirement for admission is that the student must have been granted a bachelor's degree from an accredited college or university. Some law schools, however, have alternate plans. The student should consult the catalog of the school of law to which he expects to apply for admission.

The prelegal students should follow a plan of study which will assure an adequately broad cultural foundation. It is recommended that they prepare to read understandingly, accurately and rapidly and to express thoughts orally and in writing clearly, completely and concisely. Students should acquire competence in the fields of English, speech, American history, economics, elementary accounting, political science, psychology, philosophy, sociology and at least one foreign language. They should know something of mathematics and the natural sciences.

LIBERAL ARTS

Liberal Arts Degree

The integrated curriculum of the Liberal Arts degree provides a broad exposure to the arts, humanities, sciences and social sciences, while offering the opportunity for depth of knowledge within an area of emphasis. The program will enable students to develop an appreciation and understanding of the beauty and values that have shaped and enriched our culture and to develop intellectual maturity, a deeper understanding of themselves and the American heritage. The curriculum provides a basic framework for lifelong individual study as well as preparation for university study.

Requirements* for the associate in arts degree, Liberal Arts:

Complete a minimum of 18 units selected from one of the following Areas of Emphasis:	Units 18
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Arts, Humanities and Communication; Mathematics and Sciences; Multi-Cultural Studies; or Social and Behavioral Sciences. Students are encouraged to select two or more courses within a single discipline in an "area of emphasis" to expand their depth of knowledge within a discipline. All courses in the area of emphasis must be completed with a letter grade of "C" or better. Students are advised to meet with a counselor to select the area of emphasis most appropriate to their educational goal.

Complete general education Plan A (associate degree only, non-transfer), Plan B (CSU-GE Breadth, CSU transfer) or Plan C (IGETC, UC or CSU transfer). Students are advised to meet with a counselor to select the general education pattern most appropriate to their educational goal.

Units used to satisfy an area of emphasis may be used to satisfy general education requirements.

Area of Emphasis – Arts, Humanities and Communication (18317):

These courses emphasize the study of cultural literacy, humanistic activities and the 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

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



the world around them in artistic and cultural creation. Students will also learn to value aesthetic understanding and incorporate these concepts when constructing value judgements. This area of emphasis will prepare students for a variety of majors within the Humanities discipline including Creative Writing, English, Foreign Language, Humanities and Art, and Philosophy. It will also provide lower-division preparation for a wide range of majors with the Communications discipline.

Anthropology 104; Art 100/100H, 101, 110, 111; Dance 100; English 101/101H, 102/102H, 103/103H, 231, 232, 233A, 233B, 241, 242, 246, 270, 271, 272, 278; French 101, 102, 194, 196, 201, 202; History 101/101H, 102/102H, 152, 162; Italian 101, 102, 194, 195, 201, 202 ; Music 101/101H, 102, 103, 104; Philosophy 106/106H, 108, 110/110H, 111, 112, 115, 118, 120, 144; Reading 150; Sign Language 110, 111, 112, 116; Spanish 101/101H, 101A, 101B, 102/102H, 194, 195A, 195B, 201, 202; Television/Video Communications 103, 104; Theatre Arts, 100, 101, 103, 104.

Area of Emphasis – Mathematics and Sciences (18318):

The science courses in this category examine the physical universe, its life forms and its natural phenomena. These courses will assist the student in developing an appreciation of the scientific method and encourage an understanding of the relationships between science and other human activities. The mathematics courses will encourage the understanding of mathematical concepts through the development of quantitative reasoning skills. **Students are required to complete at least one mathematics course within this area of emphasis.** This area of emphasis will provide students with lower-division preparation for a variety of majors within the scientific disciplines, including Astronomy, Biology, Chemistry, Geology, and Physics and will provide preparation for Mathematics majors. Additionally, students may undertake preparation for Nursing, Kinesiology, Public Health and other Health Science majors. Many of the courses will also assist students in prerequisite preparation for graduate programs within the Health Sciences.

Anthropology 101; Astronomy 109, 110, 112, 140; Biology 109/109H, 109L, 139, 149, 177, 200, 211, 212, 214, 229, 239, 249, 259; Chemistry 119, 209, 210, 219, 229, 249, 259; Earth Science 110, 115; Environmental Studies 200, 259; Geography 101; Geology 101, 101L, 142, 150, 201, 260; Math 080, 081, 105, 140, 150, 160, 170, 180/180H, 185, 219/219H, 280, 287, 290, 295; Physical Science 115; Physics 109, 210, 211, 217, 227, 237, 279, 289; Social Science 219/219H

Area of Emphasis – Multi-Cultural Studies (18319):

These inter-disciplinary courses promote an appreciation of multi-cultural influences in contemporary society. Courses in this category encourage students to acquire the knowledge, skills and attitude needed to function effectively in a pluralistic democratic society and to interact, negotiate and communicate with peoples from diverse groups in order to create a civic and moral community that works for the common good. This emphasis will provide students with lower-division major preparation for disciplines within the area of study devoted to culture and society. These majors would include Chicano Studies, Ethnic Studies, Foreign Language, Global Studies, International Development and Women’s Studies.

Anthropology 100/100H, 104; Art 101, 102; Business 106; Chicano Studies 101; Communication 120/120H, 225/225H; Counseling 101, 116, 118, 150; Education 101; English 246, 271, 272, 278; Ethnic Studies 101; Exercise Science 110; French 101, 102, 194, 196, 201, 202; History 124, 127, 152, 162; Italian 101, 102, 194, 195, 201, 202; Music 103; Philosophy 112; Political Science 221; Psychology 170; Sign Language 116; Spanish 101/101H, 101A, 101B, 102/102H, 194, 195A, 195B, 201, 202; Women’s Studies 101, 102, 201

Area of Emphasis – Social and Behavioral Sciences (18320):

Courses in this category emphasize the connection between human behavior and social, political and economic institutions and promote an understanding of how societies and social subgroups operate. Students will be encouraged to apply critical thinking techniques as they evaluate the way individuals act and have acted in response to their societies. The courses will ensure opportunities for students to develop an understanding of the perspectives and methods of inquiry used in the social and behavioral sciences. This area of emphasis will provide students with lower-division major preparation for many disciplines within the social sciences including Criminal Justice, Economics, Political Science, Psychology, Sociology and History.

Anthropology 100/100H, 103, 104; Chicano Studies 101; Communication 120/120H, 225/225H; Computer Science 100/100H; Counseling 150; Criminal Justice 101; Economics 120, 121; English 278; Ethnic Studies 101; Exercise Science 109; Geography 100/100H, 102; History 101/101H, 102/102H, 118, 120/120H, 121/121H, 122, 124, 127, 133, 152, 162; Human Development 107, 110; Interdisciplinary Studies 155; Math 219/219H; Political Science 101/101H, 200/200H, 220, 221, 226, 230; Psychology 100/100H, 157, 170, 200, 219, 230, 240, 250; Social Science 219/219H; Sociology 100/100H, 112, 140/140H; Television/ Video Communications 105; Women’s Studies 101, 102, 201

MANAGEMENT

The associate degree and certificate in management is designed to prepare students for various management positions in business, government, and public organizations; to aid existing managers in upgrading their skills; and to assist employees for promotion to management/supervision positions.

General Management Degree (11861)

Major requirements* for the associate in arts degree:

Course	Units
Accounting 101/101H Financial Accounting	4
Business 100, Fundamentals of Business	3
Business 120/Management 120, Principles of Management	3
Business 222, Business Writing	
OR	3
Management 122, Business Communications	
Select TWO courses from the following:	
Business 101, Business Law	3
Business 105, Legal Environment of Business	3
Business 121/Management 121, Human Relations and Organizational Behavior	3
Business 125, Introduction to International Business	3
Business 150, Introduction to Computing and Applications Software	4
Marketing 113, Principles of Marketing	3
TOTAL	19-20

Small Business Certificate

Course	Units
Accounting 035, QuickBooks	1.5
Business 170, Principles of Small Business Management	3
Business 171, Business Plan for Small Business	3
Business 172/Marketing 172, Small Business Marketing and Advertising	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.

**Select ONE of the following 3 unit courses:**

Business 125, Introduction to International Business	3
Business 127, Introduction to E-Commerce	3
Business 175, Online Entrepreneurship	3
Computer Information Systems 126, Web Site Development for Business	3
TOTAL	13.5

Supervision Certificate

Course	Units
Management 121/Business 121, Human Relations and Organizational Behavior	3
Management 122, Business Communications	3
OR	
Business 222, Business Writing	3
Management 120/Business 120, Principles of Management	3
OR	
Management 123, Supervision	3
Management 135, Human Resource Management	3
TOTAL	12

Human Resource Management Certificate

Course	Units
Management 120/Business 120, Principles of Management	3
Management 121/Business 121, Human Relations and Organizational Behavior	3
Management 135, Human Resource Management	3
Business 105, Legal Environment of Business	3
TOTAL	12

Retail Management Certificate of Achievement (11867)

The program is approved by the Western Association of Food Chains, and persons completing the prescribed courses are eligible to receive both the ECC Certificate of Competence and the WAFC Retail Management Certificate. The WAFC Retail Management Certificate is a specially recognized program designed to prepare individuals for the fast-paced retail industry. This program is also intended to help students develop an understanding of the retail manager's job and the requirements for success in the retail environment.

Major requirements for the certificate of achievement:

Course	Units
Accounting 101/101H Financial Accounting	4
Business 120/Management 120, Principles of Management	3
Business 121/Management 121, Human Relations and Organizational Behavior	3
OR	
Business 222, Business Writing	3
OR	
Management 122, Business Communications	3
Computer Science 100, The Computer and Society	3
Management 135, Human Resource Management	3
Marketing 111, Principles of Retailing	3
Marketing 113, Principles of Marketing	3
Communication 100/100H, Introduction to Interpersonal Communication	3
TOTAL	28

MARKETING

The associate degree and certificate in marketing is designed to prepare students for various marketing, sales, and retail store management positions; to assist existing marketing managers and sales professionals in upgrading their skills; and to open up new career opportunities within the marketing field. Program content includes selection and buying of merchandise, advertising, sales, product distribution, customer relations, and pricing. The student will then specialize in one of the option areas: general marketing, professional selling, advertising, or retailing management. The certificate program provides practical skills for the student within specific areas of marketing.

General Marketing Degree (11866)**Major requirements* for the associate in arts degree:**

Course	Units
Accounting 101/101H, Financial Accounting	4
Business 222, Business Writing	3
OR	
Management 122, Business Communications	3
Marketing 112, Principles of Advertising	3
Marketing 113, Principles of Marketing	3
Marketing 115, Consumer Behavior	3
Select a minimum of three units from the following:	3
Business 100, Fundamentals of Business (3)	
Business 127, Introduction to E-Commerce (3)	
Marketing 111, Principles of Retailing (3)	
Marketing 114, Professional Selling (3)	
Marketing 135, Web Marketing and Promotion (3)	
TOTAL	19

General Marketing Certificate

Course	Units
Marketing 112, Principles of Advertising	3
Marketing 113, Principles of Marketing	3
Marketing 114, Professional Selling	3
Marketing 115, Consumer Behavior	3
TOTAL	12

Advertising Certificate

Course	Units
Marketing 112, Principles of Advertising	3
Marketing 113, Principles of Marketing	3
Marketing 115, Consumer Behavior	3
Marketing 135, Web Marketing and Promotion	3
TOTAL	12

Web Marketing Certificate

Course	Units
Marketing 113, Principles of Marketing	3
Marketing 135, Web Marketing and Promotion	3
Business 127, Introduction to E-Commerce	3
Computer Information Systems 124, Adobe Photoshop	3
OR	
Computer Information Systems 126, Web Site Development for Business	3
TOTAL	12

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Professional Selling Certificate

Course	Units
Marketing 113, Principles of Marketing	3
Marketing 114, Professional Selling	3
Business 222, Business Writing	3
OR	
Management 122, Business Communications	3
Speech Communication 101/101H, Introduction to Interpersonal Communication	3
TOTAL	12

MATHEMATICS

Mathematics Degree (11931)

The associate degree in mathematics prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree. Employment opportunities are available as mathematicians in government, industry and education.

Major requirements* for the associate in science degree:

Course	Units
Mathematics 180/180H, Analytic Geometry and Calculus	4
Mathematics 185, Analytic Geometry and Calculus	4
Mathematics 280, Intermediate Calculus	4
Mathematics 287, Introduction to Linear Algebra and Differential Equations (5)	4-5
OR	
Mathematics 290, Linear Algebra (4)	4-5
OR	
Mathematics 295, Beginning Differential Equations (4)	4-5
Computer Science 120, Introduction to Programming	3
OR	
Computer Science 112, Java Programming	3
TOTAL	19-20

Recommended electives: Mathematics 165.

MODERN LANGUAGES

Modern Languages Degree (11925)

The associate degree in languages is designed to meet the needs of both the student who wishes to transfer to a four-year institution and the student who wishes to achieve basic conversational ability in the language. Completion of the associate in arts degree prepares students to move into the curriculum at a four-year institution leading to a baccalaureate degree and then to possible careers requiring multiple languages proficiency.

The Degree in Languages requires the following:

- 1) Completion of 21 units total
- 2) Completion of a minimum of 13 units in any one language including the courses numbered 201 and 202.
- 3) Completion of 5 units in a second language.
- 4) Completion of 3 units of recommended electives

Major requirements* for the associate in arts degree:

Course	Units
French Courses	
French 101, 102, Elementary French I, II	5-5
French 201, 202, Intermediate French I, II	5-5
French 194, Conversation and Composition I	3
French 196, Conversation and Composition II	3
OR	
Italian Courses	
Italian 101, 102, Elementary Italian I, II	5-5
Italian 201, 202, Intermediate Italian I, II	5-5
Italian 194, Conversation and Composition	3
Italian 195, Advance Conversational Italian	3
OR	
Spanish Courses	
Spanish 101/101H or 101A and 101B and 102/102H, Elementary Spanish I, II	5-5
Spanish 201, 202, Intermediate Spanish I, II	5-5
Spanish 194, Beginning Conversational Spanish	3
Spanish 195A, 195B, Advanced Conversational Spanish	3-3
Spanish 213, College Spanish Composition	3
13 units in a language from the courses listed above	13
5 units in a second language from the courses listed above	5
3 units from the recommended electives	3
TOTAL	21

Recommended Electives:

Any course listed above in a third language numbered 100 or higher, Anthropology 100/100H; Art 101, 102; Communication 100/100H; English 102/102H, 271, 272; Geography 100/100H; History 101/101H, 102/102H, 124; Political Science 101/101H, 220.

OCEANOGRAPHY

(See *Geology*)

PHILOSOPHY

Philosophy Degree (11930)

The associate degree in philosophy prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree. The baccalaureate degree is intended for those students who plan to teach philosophy, or for pre-professional students in such areas as theology and law, and as a foundation for graduate studies in the areas of library science, diplomacy, theoretical physical science and specialized historical studies.

Major requirements* for the associate in arts degree:

Course	Units
Philosophy 106/106H, Introduction to Philosophy	3
Philosophy 108, Ethics	3
Philosophy 110/110H, Critical Thinking	3
OR	
Philosophy 111, Introductory Logic	4
Philosophy 112, World Religions	3
Philosophy 118, History of Philosophy	3
Electives	6
TOTAL	22

A minimum of six elective units to be selected from the following:

Art 101, 102; English 271, 272; History 101/101H; Library and Information Studies 103; Music 101/101H; Psychology 100/100H.

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



PHYSICS

Physics Degree (11932)

The associate degree in physics prepares students to move into a curriculum at a four-year institution leading to a baccalaureate, and then into careers in applied physics, research and development, and/or as assistant research scientists.

Major requirements* for the associate in science degree:

Course	Units
Physics 217, Engineering Physics I	4
Physics 227, Engineering Physics II	4
Physics 237, Engineering Physics III	4
Mathematics 180/180H, Analytical Geometry and Calculus	4
Mathematics 185, Analytical Geometry and Calculus	4
Mathematics 280, Intermediate Calculus	4
TOTAL	24

Chemistry courses may be required for upper-division standing (check with a counselor and the Transfer Center).

POLITICAL SCIENCE

Political Science Degree (11946)

The associate degree in political science prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree. The baccalaureate degree prepares students for law school, teaching, public relations, journalism, government service on the local, state and national levels, and private employment where government institutions are involved.

Major requirements* for the associate in arts degree:

Course	Units
English 101/101H, Freshman Composition	4
Political Science 101/101H, Introduction to Government	3

Students can choose 3 of the following Political Science courses:

Political Science 200/200H, American Political Thought	3
Political Science 201, Introduction to Comparative Politics	3
Political Science 220, International Politics	3
Political Science 226, Contemporary Issues in California Government and Politics	3
Political Science 230, Political Theory	3

Choose 3 electives from the following:	9
TOTAL	25

Recommended electives: Anthropology 100/100H; Computer Science 100; Economics 120; French 101; History 101/101H, 102/102H, 120/120H, 124, 127, 133, 152, 162; Italian 101; Philosophy 106/106H; Political Science 121, 122, 123, 221, 222; Psychology 100/100H; Sociology 100/100H; Spanish 101/101H.

POWER LINEMAN

(See *Apprenticeship Electricity*)

PSYCHOLOGY

Psychology Degree (11935)

The associate degree in psychology prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree for specialization in any of more than twenty branches of psychology including child, clinical, personal, vocational and

marriage counseling, industrial, mental health, and college teaching. Completion of the two-year program is appropriate for students whose vocational plans include helping people, i.e., teaching, social welfare, probation, criminology, nursing, law, and personnel work.

Major requirements* for the associate in arts degree:

Course	Units
Psychology 100/100H, Introduction to Psychology	3
Psychology 219, Introduction to Research Methods in Psychology	3
Social Science 219/219H, Statistics and Probability	
OR	4
Mathematics 219/219H, Statistics and Probability	

Two courses from the following psychology electives:

Psychology 157, Introduction to Child Psychology (3)	6
Psychology 170, Multicultural Psychology (3)	
Psychology 200, Introduction to Biological Psychology (3)	
Psychology 230, Psychology and Effective Behavior (3)	
Psychology 240, Introduction to Social Psychology (3)	
Psychology 250, Introduction to Abnormal Psychology (3)	

One additional elective from the psychology courses above or from the following:

Anthropology 100/100H, 101; Biology 109/109H, 149; Chemistry 119; Computer Science 100/100H; Interdisciplinary Studies 155; Philosophy 110, 111; Sociology 100/100H.	3
TOTAL	19

Courses recommended for upper-division standing (check with a counselor and the transfer school to verify current courses).

PUBLIC WORKS

Project Management Certificate

This certificate is for current, new or future project managers and team members and those who may seek the PMP (Project Management Professional®) designation as a part of their future career plan. The content includes project definition, planning, group dynamics, workplace diversity, team roles and communication techniques, problem solving, evaluation and final reporting on results in both a classroom setting and with opportunities for application.

Requirements for the certificate:

Course	Units
Public Works 080/Business 090, Principles of Project Management	3
Public Works 081, Applied Project Management	2
Public Works 082, Project Management: Microsoft Project	1
Public Works 083, Capstone Project	1

Choose one course from written or verbal communication

Business 222, Business Writing	3
Communication 101, Group Dynamics	
Communication 110, Public Speaking	
Management 122, Business Communications	

Choose one course from business law or management

Business 101, Business Law	3
Business 105, Legal Environment of Business	
Management 120, Principles of Management	
Management 121, Human Relations and Organizational Behavior	

TOTAL **13**

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



PUBLIC WORKS MANAGEMENT

The degree and certificate provide the skills and knowledge required for employment and promotion in the area of public works. The responsibility for the construction and maintenance of transportation corridors, and public structures might be undertaken by the individuals in this field. Understanding of the policies and practices of the various public and private entities is covered along with attention to the needs of the community being served.

Public Works Management Degree (11909)

Major requirements* for the associate in science degree:

Course	Units
Public Works 050, Public Works I	3
Public Works 051, Infrastructure Construction and Operations	3
Public Works 061, Plan Interpretation and Cost Estimation	3
Public Works 062, Public Works II	3
Public Works 075, Public Administration	3
Public Works 080/Business 090, Principles of Project Management	3
TOTAL	18

Public Works Management Certificate of Achievement (21673)

Requirements for the certificate of achievement:

Course	Units
Public Works 050, Public Works I	3
Public Works 051, Infrastructure Construction and Operations	3
Public Works 061, Plan Interpretation and Cost Estimation	3
Public Works 062, Public Works II	3
Public Works 075, Public Administration	3
Public Works 080/Business 090, Principles of Project Management	3
TOTAL	18

Public Works Construction Inspection Certificate of Achievement (11910)

Public Works Inspectors entering the field or advancing within the field have a designated course of study to improve their employability. Course content is specifically designed to provide the inspectors with coursework relative to the field of inspection and related responsibilities.

Requirements for certificate of achievement:

Course	Units
Public Works 055, Public Works Inspection I	3
Public Works 061, Plan Interpretation and Cost Estimating	3
Public Works 065, Public Works Inspection II	3
Public Works 066, Asphalt and Concrete for the Public Works Inspector	3
Public Works 075, Public Administration	3
Public Works 080/Business 090, Principles of Project Management	3
TOTAL	18

Public Works Green-Sustainable Building Code Certificate

This certificate meets emerging needs for individuals to achieve competence in knowledge, interpretation, implementation and practice in the areas of Public Works, construction and building inspection and in related environmental careers to understand the new codes for all residential and commercial construction or remodeling in the state of California.

Requirements for the certificate:

Course	Units
Public Works 061, Plan Interpretation and Cost Estimation	3
Public Works 075, Public Administration	3
Public Works 076, Building Code Fundamentals – Non Structural	2
Public Works 077, Energy Code and Green Building Code	1
Public Works 078, Building Code Administration and Code Enforcement Process	2
Public Works 079, Sustainable Living and Green Building Concepts	1
Public Works 080/Business 090, Principles of Project Management	3
Public Works 083, Capstone Project	1
TOTAL	16

REAL ESTATE

The associate degree and certificate of achievement in real estate is designed for individuals interested in careers in real estate as salespersons, brokers, and real estate industry professionals including mortgage brokers, property managers, title officers, developers and as government employees.

The program is intended to meet the mandatory and elective course requirements students need to sit for the California real estate sales or brokers license exam.

Real Estate Degree (11869)

Major requirements* for the associate in arts degree:

Course	Units
Real Estate 102, Real Estate Principles	3
Real Estate 103, Legal Aspects of Real Estate	3
Real Estate 105, Real Estate Practice	3
Real Estate 106, Real Estate Finance	3
Real Estate 110, Real Estate Economics	3
Real Estate 112, Real Property Management	3
Real Estate 114, Appraisal Principles and Procedures	3.5

Plus ONE of the following courses: 1-4

- Real Estate 116, Residential Real Estate Appraisal (3.5)
OR
- Real Estate 117, Residential Report Writing and Case Studies (1)
OR
- Business 101, Business Law (3)
OR
- Accounting 101, Financial Accounting (4)

TOTAL 22.5-25.5

Individuals interested in obtaining a California real estate salesperson or broker license are directed to contact the State of California Department of Real Estate at www.dre.ca.gov to ensure they are meeting both current and their individual requirements for licensing and taking the exam.

Real Estate Certificate of Achievement (21639)

Requirements for the certificate of achievement:

Course	Units
Real Estate 102, Real Estate Principles	3
Real Estate 103, Legal Aspects of Real Estate	3
Real Estate 105, Real Estate Practice	3
Real Estate 106, Real Estate Finance	3
Real Estate 110, Real Estate Economics	3
Real Estate 112, Real Property Management	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Real Estate 114, Appraisal Principles and Procedures	3.5
Plus ONE of the following courses:	1-4
Real Estate 116, Residential Real Estate Appraisal (3.5)	
OR	
Real Estate 117, Residential Report Writing and Case Studies (1)	
OR	
Business 101, Business Law (3)	
OR	
Accounting 101, Financial Accounting (4)	
TOTAL	<u>22.5-25.5</u>

Individuals interested in obtaining a California real estate salesperson or broker license are directed to contact the State of California Department of Real Estate at www.dre.ca.gov to ensure they are meeting both current and their individual requirements for licensing and taking the exam.

Real Estate Appraisal Certificate

The certificate in real estate is designed for individuals interested in a career in real estate appraisal of both residential and commercial property. The program is intended to prepare students for the California real estate appraiser license exam, certified residential exam and certified general exam. As well as it provides coursework for real estate professionals.

Requirements for the certificate:

Course	Units
Real Estate 102, Real Estate Principles	3
Real Estate 103, Legal Aspects of Real Estate	
OR	3
Real Estate 110, Real Estate Economics	
Real Estate 114, Appraisal Principles and Procedures	3.5
Real Estate 116, Residential Real Estate Appraisal	3.5
Real Estate 117, Residential Report Writing and Case Studies	1
TOTAL	<u>14</u>

Individuals interested in obtaining a Real Estate Appraiser Trainee and Residential license or a Real Estate Appraiser Certified Residential or General license are directed to contact the California State Office of Real Estate (OREA) at www.OREA.ca.gov to ensure they are meeting both current and their individual educational and other requirements for licensing and taking the exam.

Real Estate Salesperson Certificate

The certificate provides students with the coursework necessary to meet the state DRE (Department of Real Estate) educational requirements that qualify an individual to sit for the Salesperson's license exam. It also includes the basic information for a successful career in real estate sales.

Requirements for the certificate:

Course	Units
Real Estate 102, Real Estate Principles	3
Real Estate 105, Real Estate Practice	3
Real Estate 103, Legal Aspects of Real Estate	
AND	3
Real Estate 110, Real Estate Economics (3)	
OR	3-3.5
Real Estate 114, Appraisal Principles and Procedures (3.5)	
TOTAL	<u>12-12.5</u>

SCIENCE

Science Degree (11953)

The associate degree in science is designed to provide students with a foundation in science that will allow transfer to a four-year college or university to complete a baccalaureate science degree in disciplines such as astronomy, biology, biochemistry, chemistry, geology, geophysics, meteorology, oceanography, or physics.

For transfer with upper-division standing, most four-year institutions require a minimum of one-year of calculus and one-year of general chemistry in addition to the courses required in the science major. Check with the Transfer Center or a counselor for specific transfer requirements.

Units used to satisfy the general education requirements may also be used to satisfy the Science Degree requirements.

Requirements* for the associate in science degree:

Core Courses	Units
Mathematics 180/180H, Analytic Geometry and Calculus	4
Chemistry 219, General Chemistry	5
TOTAL	<u>9</u>

General Science Emphasis:

Course	Units
Core Courses	9
Mathematics 185, Analytic Geometry and Calculus	4
Electives	13
TOTAL	<u>26</u>

Astronomy Emphasis:

Course	Units
Core Courses*	9
Astronomy 109, Introduction to the Solar System	
OR	3
Astronomy 112, Introduction to Cosmology	
Astronomy 110, Introduction to Stars and Galaxies	3
Astronomy 140, Astronomy Laboratory	1
Mathematics 185, Analytic Geometry and Calculus	4
Electives*	6
TOTAL	<u>26</u>

*Astronomy Emphasis Students may substitute Physics 217 for Chemistry 219.

*Completion of Physics 217/227/237 and/or Mathematics 280 is highly recommended for Astronomy Emphasis Students.

Biology Emphasis:

Course	Units
Core Courses**	9
Biology 211, Cellular and Molecular Biology	5
Biology 212, Animal Diversity and Ecology	
OR	5
Biology 214, Plant Diversity and Evolution	
Electives**	8
TOTAL	<u>27</u>

**Biology Emphasis Students may substitute Mathematics 150 for Mathematics 180/180H.

**Completion of Chemistry 229, Biology 212 and 214 is highly recommended for Biology Emphasis Students.



Chemistry Emphasis:

Course	Units
Core Courses	9
Chemistry 229, General Chemistry and Qualitative Analysis	5
Mathematics 185, Analytic Geometry and Calculus	4
Electives***	8
TOTAL	26

***Completion of Chemistry 239 or Chemistry 249/259 is highly recommended for Chemistry Emphasis Students.

Geology Emphasis:

Course	Units
Core Courses	9
Geology 101, Introduction to Geology	3
Geology 101L, Introduction to Geology Laboratory	1
Geology 201, Introduction to Historical Geology	4
Electives****	9
TOTAL	26

****Completion of Mathematics 185 and either Geology 260 or Chemistry 229 is highly recommended for Geology Emphasis Students.

Physics Emphasis:

Course	Units
Core Courses*****	9
Physics 217, Engineering Physics I	4
Physics 227, Engineering Physics II	4
OR	4
Physics 237, Engineering Physics III	4
Mathematics 185, Analytic Geometry and Calculus	4
Electives*****	5
TOTAL	26

*****Physics Emphasis Students may substitute Mathematics 280 for Chemistry 219.

*****Completion of Physics 227, 237 and Mathematics 280 is highly recommended for Physics Emphasis Students.

Electives for any emphasis of the Science Degree must be selected from the following courses:

Astronomy 109, 110, 112, 140; Biology 109/109H, 109L, 139, 149, 177, 200, 211, 212, 214, 229, 239, 249, 259; Chemistry 119, 209, 210, 219, 229, 249, 259; Earth Science 110, 115; Environmental Studies 200, 259; Geology 101, 101L, 111, 112, 113, 142, 150, 162, 164, 166, 168, 173, 174, 176, 178, 180, 201, 260; Mathematics 185, 280; Physical Science 115; Physics 109, 210, 211, 217, 227, 237, 279, 289.

SIGN LANGUAGE

American Sign Language Certificate of Achievement (11905)

A certificate of achievement in American Sign Language (ASL) is offered as preparation for developing linguistic competency in ASL and readiness for entering a formal Interpreter Training Program. The certificate indicates skill in the use of ASL for personal communication and an introductory awareness of Sign Language Interpreting and other professions working within the Deaf community.

Major requirements for the certificate of achievement:

Course	Units
Sign Language 110, American Sign Language I	3
Sign Language 111, American Sign Language II	3

Sign Language 112, American Sign Language III	3
Sign Language 113, Introduction to Interpreting for the Deaf	3
Sign Language 114, Classifiers, Fingerspelling and Numbering	3
Sign Language 116, Perspectives on Deafness	3
Human Development 205, Exceptionality and Special Needs in Human Development	3
OR	
Human Development 107, Child Growth and Development	3
Psychology 157, Introduction to Child Psychology	3
TOTAL	24

SOCIAL SCIENCE

Social Science Degree (11937)

The associate degree in social science is designed to provide the student with a better understanding of man's behavior, past and present, the historical and social environmental forces that operate in the world, and the significant problems of the present day. Completion of the degree prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree. Some employment opportunities are available in the teaching of social science.

Major requirements* for the associate in arts degree:

Required Courses

Course	Units
History 101/101H, World Civilizations to the 16th Century	3
OR	
History 102/102H, World Civilizations Since the 16th Century	3
History 120/120H, United States to 1865	3
OR	
History 121/121H, United States Since 1865	3
Anthropology 100/100H, Cultural Anthropology	3
OR	
Sociology 100/100H, Introduction to Sociology	3
Economics 120, Principles/Macro	3
Political Science 101/101H, Introduction to Government	3
Psychology 100/100H, Introduction to Psychology	3

Select a minimum of 6 units from the recommended electives below:

TOTAL	6
TOTAL	24

Recommended electives: Anthropology 101, 103; Computer Science 100/100H; English 231, 232, 241-242; Geography 100/100H, History 127, 152, 162; Political Science 200/200H, 201, 220.

SOCIOLOGY

Sociology Degree (11947)

The associate degree in sociology is an interdisciplinary social science program providing students an understanding of interpersonal behavior and social structure, a critical appreciation of contemporary social life, a form of reference for an analysis of human behavior. Completion of the associate in arts degree prepares students to move into a curriculum at a four-year institution leading to a baccalaureate degree.

Major requirements* for the associate in arts degree:

Required courses:

Sign Language 110, American Sign Language I	3
Sign Language 111, American Sign Language II	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Course	Units
Anthropology 100/100H, Introduction to Cultural Anthropology	3
Psychology 100/100H, Introduction to Psychology	3
Sociology 100/100H, Introduction to Sociology	3
Sociology 140/140H, Analysis of Social Trends and Problems	3

Selected two courses from the recommended electives :	<u>6</u>
TOTAL	18

Recommended electives: Anthropology 101, 104; Mathematics 219/219H or Social Science 219/219H; Psychology 157; Psychology 240/Sociology 240; Sociology 112.

SPEECH COMMUNICATION

(See *Communication*)

SUPERVISION

(See *Management*)

SURVEY/MAPPING SCIENCES

The associate degree and certificate program in Survey/Mapping provides the student a thorough background in land surveying and mapping in addition to an introduction to collection, manipulation, formatting and mapping of geospatial data. The successful graduate of this program will have the technical expertise necessary for an entry level position in the fields of Geographic Information Systems, Land Surveying, and Digital Photogrammetry. The program also assists those students preparing for the State Land Surveyor-In-Training and Land Surveyor's Exams. The State Board of Registration for Professional Engineers and Land Surveyors will grant one year of experience credit for students completing an Associate Degree in Survey/Mapping Sciences.

Survey/Mapping Sciences - Land Surveying Degree (11906)

Major requirements* for the associate in science degree:

Course	Units
Survey/Mapping Sciences 118, Plane Surveying	4
Survey/Mapping Sciences 119, Advanced Plane Surveying	4
Survey/Mapping Sciences 205, Computer Aided Drafting Fundamentals for Land Surveyors	
OR	3
Survey/Mapping Sciences 206, Advanced Computer Aided Drafting for Surveyors	
Survey/Mapping Sciences 221, Advanced Problems in Surveying I	3
Survey/Mapping Sciences 222, Advanced Problems in Surveying II	3
Survey/Mapping Sciences 229, Legal Aspects of Land Surveying I	3
Survey/Mapping Sciences 230, Legal Aspects of Land Surveying II	3
Public Works 080/Business 090, Principles of Project Management	<u>3</u>
TOTAL	26

Survey/Mapping Sciences - Land Surveying Certificate of Achievement (21668)

Major requirements for the certificate of achievement:

Course	Units
Survey/Mapping Sciences 118, Plane Surveying	4
Survey/Mapping Sciences 119, Advanced Plane Surveying	4

Survey/Mapping Sciences 205, Computer Aided Drafting Fundamentals for Land Surveyors	
OR	3
Survey/Mapping Sciences 206, Advanced Computer Aided Drafting for Surveyors	
Survey/Mapping Sciences 221, Advanced Problems in Surveying I	3
Survey/Mapping Sciences 222, Advanced Problems in Surveying II	3
Survey/Mapping Sciences 229, Legal Aspects of Land Surveying I	3
Survey/Mapping Sciences 230, Legal Aspects of Land Surveying II	3
Public Works 080/Business 090, Principles of Project Management	<u>3</u>
TOTAL	26

Survey/Mapping Sciences - Land Surveying Technician Certificate

This certificate will introduce the student to the world of surveying and mapping. They will study the art and science of making, recording and mapping measurements using a variety of equipment and software. The student will also learn the fundamentals of Computer Aided Design (CAD) and gain knowledge in boundary determination and writing land descriptions. The successful graduate of this program will have the technical expertise necessary for an entry-level position with a land survey organization. In addition, the student will be ready (after meeting the necessary employment requirements) to take the State Land-Surveyor-in-Training examination.

Requirements for the certificate:

Course	Units
Survey/Mapping Sciences 118, Plane Surveying	4
Survey/Mapping Sciences 119, Advanced Plane Surveying	4
Survey/Mapping Sciences 205, Computer Aided Drafting Fundamentals for Land Surveyors	
OR	3
Survey/Mapping Sciences 206, Advanced Computer Aided Drafting for Surveyors	
Survey/Mapping Sciences 229, Legal Aspects of Land Surveying I	3
Survey/Mapping Sciences 230, Legal Aspects of Land Surveying II	<u>3</u>
TOTAL	17

SURVEYING

(See also *Apprenticeship Surveying*)

TELEVISION/VIDEO COMMUNICATIONS

Television/Video Communications Certificate - Media Studies

Emphasis on preparing students for careers as producers and executives in the cable, television, and film industries as well as those who wish to be media teachers, critics and historians. Students will gain theoretical knowledge about the history, development, and societal impact of the media in the United States and the world as well as practical experience in dealing with production aesthetics and terminology, basic scriptwriting skills, and business and budgeting applications relating to the electronic media.

Course	Units
Television/Video Communications 100, Introduction to Electronic Media: TV, Radio, Film and the Internet	3
Television/Video Communications 101, Television and Society: A Visual History	3

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



Television/Video Communications 103 or Theatre Arts 103, History of Film to 1945 OR	3
Television/Video Communications 104 or Theatre Arts 104, History of Film from 1945 to Present	3
Television/Video Communications 105, Mass Media and Society	3
Television/Video Communications 120, Beginning Writing for TV, Film and Corporate Video	3
TOTAL	15

Recommended electives: Television/Video Communications 121, 123, 298.

WATER UTILITY SCIENCE

The associate degree and certificate of achievement in water utility science covers basic concepts in the operation of water treatment plants, controlling and monitoring water deliveries, water quality control methods, water and wastewater pumping equipment electrical systems repair, and pump repair and maintenance. The program is designed to train new personnel and to enable those already working in the field to upgrade their skills. Typically, the new employee starts as an entry level worker, then advances to other higher levels including lead operator, Operations and Maintenance Supervision, Superintendent and/or Manager.

Water Distribution Degree (11907)

Major requirements* for the associate in science degree:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 104, Electrical Wiring and Circuits	3
Water Utility Science 107, California Water Resources	3
Water Utility Science 109, Water Distribution Systems	3
Water Utility Science 131, Water Conservation Practitioner OR	3
Water Utility Science 204, Water Reclamation and Reuse	3
Water Utility Science 208, Pumps and Pumping	3
Water Utility Science 210, Advanced Water Distribution	3
TOTAL	21

Water Distribution Certificate of Achievement (19625)

Major requirements for the certificate of achievement:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 104, Electrical Wiring and Circuits	3
Water Utility Science 107, California Water Resources	3
Water Utility Science 109, Water Distribution Systems	3
Water Utility Science 131, Water Conservation Practitioner OR	3
Water Utility Science 204, Water Reclamation and Reuse	3
Water Utility Science 208, Pumps and Pumping	3
Water Utility Science 210, Advanced Water Distribution	3
TOTAL	21

Water Treatment Degree (19623)

Major requirements* for the associate in arts degree:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 101, Water Treatment Fundamentals	3
Water Utility Science 102, Advanced Water Treatment	3
Water Utility Science 103, Water Chemistry and Bacteriology	3

Water Utility Science 107, California Water Resources	3
Water Utility Science 109, Water Distribution Systems	3
Water Utility Science 131, Water Conservation Practitioner OR	3
Water Utility Science 204, Water Reclamation and Reuse	3
TOTAL	21

Water Treatment Certificate of Achievement (19624)

Major requirements for the certificate of achievement:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 101, Water Treatment Fundamentals	3
Water Utility Science 102, Advanced Water Treatment	3
Water Utility Science 103, Water Chemistry and Bacteriology	3
Water Utility Science 107, California Water Resources	3
Water Utility Science 109, Water Distribution Systems	3
Water Utility Science 131, Water Conservation Practitioner OR	3
Water Utility Science 204, Water Reclamation and Reuse	3
TOTAL	21

Wastewater/Environmental Sanitation Degree (11908)

Major requirements* for the associate in arts degree:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 111, Wastewater Treatment Plant Operations	3
Water Utility Science 112, Wastewater Treatment Plant Processes	3
Water Utility Science 116, Collection Systems	3
Water Utility Science 204, Water Reclamation and Reuse	3
Water Utility Science 208, Pumps and Pumping	3
TOTAL	18

Wastewater/Environmental Sanitation Certificate of Achievement (21669)

Major requirements for the certificate of achievement:

Course	Units
Water Utility Science 050, Water Mathematics and Hydraulics	3
Water Utility Science 111, Wastewater Treatment Plant Operations	3
Water Utility Science 112, Wastewater Treatment Plant Processes	3
Water Utility Science 116, Collection Systems	3
Water Utility Science 204, Water Reclamation and Reuse	3
Water Utility Science 208, Pumps and Pumping	3
TOTAL	18

Water Utility Supervisor Certificate

This certificate is of interest and value only to those individuals currently holding a California Department of Health Services Distribution Grade 2 or Treatment Grade 2 certification. A course of study for new or future supervisors in the public and private sectors of water distribution and treatment. Covers a selected set of skills and knowledge recognized to provide success in managing work environments. Through the use of practical knowledge and course studies the certificate will encompass projects and its organization and operation; how the public sector functions; supervision; proper communication skills; the management of an organization and the

*Major requirements for the associate degrees are in addition to the General Education requirements found on pages 32-40.



people within that organization. Designed in cooperation of the American Water Works Association for preparation of supervisors in the water industries.

Requirements for the certificate:

Course	Units
Public Works 075, Public Administration	3
Public Works 080/Business 090, Principles of Project Management	3
Public Works 082, Project Management: Microsoft® Project Management 121/Business 121, Human Relations and Organizational Behavior	1
OR	3
Management 135, Human Resource Management	3
Management 122, Business Communications	3
Management 123, Supervision	<u>3</u>
TOTAL	16

WOMEN'S STUDIES

Women's Studies Degree (11938)

The associate degree in women's studies is a liberal arts major which is designed to meet the following needs: 1) to help women develop a perspective pertaining to their own self-interest and relate those views to social and cultural factors such as economic necessity, political participation, historical patterns, and ethics; 2) to develop their self-awareness in relation to others; 3) to develop skills of communication and analysis; 4) to prepare for transfer to four-year colleges and schools of professional training; 5) to enrich women's knowledge of their culture and the rapid developments that are taking place within it.

Major requirements* for the associate in arts degree:

Course	Units
Women's Studies 101, Introduction to Women's Studies	3
Women's Studies 102, Women in America: Work, Self, Family	3
Women's Studies 201, Contemporary Women's Issues	3
English 278, Survey of Literature by Women	3
Exercise Science 110, Women's Health Issues	3
Interdisciplinary Studies 155, Human Sexuality	3
History 127, Women in U.S. History	3
Electives	<u>6</u>
TOTAL	27

Recommended electives: Communication 225/225H, Gender Communication/Honors Gender Communication; Counseling 116; Library and Information Studies 103; Philosophy 108; Sociology 112.