

Engineering Design Technology

EDT, SURVY

Associate in Science Degree
Certificate of Achievement

Division of Advanced Technology
Donnetta Webb, Dean
Technology 106
916-558-2491

- Engineering Design Technology, Degree and Certificate of Achievement
- Architectural/Structural Drafting, Degree and Certificate of Achievement
- Electric (Power-Lighting Systems), Degree and Certificate of Achievement
- Mechanical (HVAC/Plumbing Systems), Degree and Certificate of Achievement
- HVAC Systems Design, Degree and Certificate of Achievement
- Surveying (Geomatics), Degree and Certificate of Achievement

Program Information

Engineering Design Technology is studied in lecture and drafting practice classes. Mathematics, science, and engineering fundamentals, which are all related to the content of this program, are studied in the Engineering Design Technology program or through recommended elective courses. General Education courses complete the recommended classes for the Engineering Design Technology curriculum.

The program is open to all students. An orientation interview with a member of the Engineering Design Technology staff is encouraged to help students become acquainted with the program requirements. For information call (916) 558-2232 or 558-2491.

Career Opportunities

This program is designed for students pursuing entry level employment in architectural, electrical and mechanical engineering, and commercial construction drafting fields. Depending on their technical field of interest and capabilities, students who complete the program may find employment in any of the following types of jobs: Engineering Aide I, Engineering Aide II, Drafting Aide I, Drafting Aide II, Junior Drafter, Architectural Drafter, Mechanical Drafter/Designer Trainee, Electrical Drafter/Designer Trainee, Structural Drafter/Designer Trainer, Topographical Drafter/Designer Trainee, General Construction Drafter/Designer Trainee, General Construction Estimator Trainee, Computer Aided Drafter or Technical Sales representatives.

Program Costs

Normal student expenses for textbooks, personal equipment and supplies may be required. These expenses may vary each semester. If these expenses create a financial burden, students should consult the Financial Aid Office for possible assistance.

Recommended High School Preparation

Completion of English and general mathematics. It is desirable, but not required, that a student complete courses in drafting, industrial arts shop courses, one year of algebra, plane geometry, general science and introduction to computers.

Transfer Students

Students who, after completing this program, are planning to continue specialization in this field by transferring to a four-year college, should consult the Requirements of Transfer Institutions section in this catalog and the engineering or related major sections of the specific catalog for the institution to which they wish to transfer. Consultation with an SCC counselor is advised.

Upon completion of this program, the student will be able to:

- prepare architectural, mechanical and electrical plans for buildings that conform with current industry standards
- demonstrate an understanding of the process of architectural design, mechanical design and electrical design by applying design principles to building design projects

Required Program

	Units
EDT 300 Basic Technical Drafting (3)	3
or ENGR 306 Basic Technical Drafting (3)	
EDT 310 Computer Aided Drafting.....	3
EDT 312 Intermediate Computer Aided Drafting	3
EDT 314 Advanced Computer Assisted Drafting and Design	2
EDT 320 Architectural/Structural Drafting.....	4
EDT 332 Air Conditioning, Plumbing and Piping Design Documents	4
EDT 336 Air Conditioning System Design.....	3
EDT 340 Plumbing and Piping Systems Design I	2
EDT 342 Plumbing and Piping Systems Design II	2
EDT 350 Electrical and Electronics Drafting/Design Problem Solving.....	3
EDT 352 Electrical and Electronics Drafting Design	4
A minimum of 2 units from the following:.....	2
EDT 302 Building Trades Blueprint Reading (2)	
EDT 498 Work Experience in Engineering Design Technology (1-4)	
EDT 356 Electrical Systems Design (2)	
SURVY 300 Elementary Surveying (4)	
SURVY 310 Survey Map Production (4)	
MATH 334 Trigonometry (4)	
Total Units Required	35

Suggested Elective

HCD 310

Associate in Science (A.S.) Degree

The Associate in Science Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better or equivalent.

Architectural/Structural Drafting

Associate in Science Degree
Certificate of Achievement

Program Information

This degree and Certificate of Achievement option is designed for students pursuing employment or upgrade in employment in Manual and CAD drafting applications in Architectural or Structural Engineering related offices.

Upon completion of this program, the student will be able to:

- prepare architectural, mechanical and electrical plans for buildings that conform with current industry standards
- demonstrate an understanding of the process of architectural design, mechanical design and electrical design by applying design principles to building design projects

Required Program

Units

EDT 300 Basic Technical Drafting (3)	3
or ENGR 306 Basic Technical Drafting (3)	
EDT 310 Computer Aided Drafting.....	3
EDT 312 Intermediate Computer Aided Drafting	3
EDT 314 Advanced Computer Assisted Drafting and Design.....	2
EDT 320 Architectural/Structural Drafting.....	4
A minimum of 6 units from the following:..... 6	
EDT 302 Building Trades Blueprint Reading (2)	
EDT 330 Air Conditioning, Plumbing and Piping Design (3)	
EDT 332 Air Conditioning, Plumbing and Piping Design Documents (4)	
EDT 336 Air Conditioning System Design (3)	
EDT 340 Plumbing and Piping Systems Design I (2)	
EDT 342 Plumbing and Piping Systems Design II (2)	
EDT 350 Electrical and Electronics Drafting/Design Problem Solving (3)	
EDT 352 Electrical and Electronics Drafting Design (4)	
EDT 356 Electrical Systems Design (2)	
EDT 498 Work Experience in Engineering Design Technology (1 - 4)	
SURVY 300 Elementary Surveying (4)	
SURVY 310 Survey Map Production (4)	
MATH 334 Trigonometry (4)	

Total Units Required

21

Associate in Science (A.S.) Degree

The Associate in Science Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better or equivalent as determined by the Engineering Design Technology Department.

Electric (Power-Lighting Systems)

Associate in Science Degree
Certificate of Achievement

Program Information

Designed for students pursuing employment or upgrade in employment in Manual and CAD drafting applications in Architectural or Structural Engineering related offices.

Upon completion of this program, the student will be able to:

- prepare architectural, mechanical and electrical plans for buildings that conform with current industry standards
- demonstrate an understanding of the process of architectural design, mechanical design and electrical design by applying design principles to building design projects

Required Program

Units

EDT 300 Basic Technical Drafting (3)	3
or ENGR 306 Basic Technical Drafting (3)	
EDT 310 Computer Aided Drafting.....	3
EDT 312 Intermediate Computer Aided Drafting	3
EDT 314 Advanced Computer Assisted Drafting and Design.....	2
EDT 350 Electrical and Electronics Drafting/Design Problem Solving.....	3
EDT 352 Electrical and Electronics Drafting Design	4
A minimum of 7 units from the following:..... 7	
EDT 302 Building Trades Blueprint Reading (2)	
EDT 320 Architectural/Structural Drafting (4)	
EDT 330 Air Conditioning, Plumbing and Piping Design (3)	
EDT 332 Air Conditioning, Plumbing and Piping Design Documents (4)	
EDT 336 Air Conditioning System Design (3)	
EDT 340 Plumbing and Piping Systems Design I (2)	
EDT 342 Plumbing and Piping Systems Design II (2)	
EDT 356 Electrical Systems Design (2)	
EDT 498 Work Experience in Engineering Design Technology (1 - 4)	
SURVY 300 Elementary Surveying (4)	
SURVY 310 Survey Map Production (4)	
MATH 334 Trigonometry (4)	

Total Units Required

25

Associate in Science (A.S.) Degree

The Associate in Science degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better or equivalent as determined by the Engineering Design Technology Department.

HVAC Systems Design

Associate in Science Degree

Certificate of Achievement

CADD (Heating, Ventilating, Air Conditioning)

Program Information

This program is designed for students pursuing employment or upgrade in training in computer applications of heating, ventilation, and air conditioning (HVAC) systems design.

Upon completion of this program, the student will be able to:

- prepare mechanical designs (HVAC) for buildings that conform with current industry standards.
- demonstrate an understanding of the process of mechanical design (HVAC) by applying design principles to building design projects.

Required Program	Units
EDT 300 Basic Technical Drafting (3) 3 or ENGR 306 Basic Technical Drafting (3)	
EDT 310 Computer Aided Drafting..... 3	
EDT 312 Intermediate Computer Aided Drafting 3	
EDT 314 Advanced Computer Assisted Drafting and Design..... 2	
EDT 336 Air Conditioning System Design 3	
A minimum of 10 units from the following: 10	
EDT 302 Building Trades Blueprint Reading (2)	
EDT 320 Architectural/Structural Drafting (4)	
EDT 330 Air Conditioning, Plumbing and Piping Design (3)	
EDT 332 Air Conditioning, Plumbing and Piping Design Documents (4)	
EDT 340 Plumbing and Piping Systems Design I (2)	
EDT 342 Plumbing and Piping Systems Design II (2)	
EDT 350 Electrical and Electronics Drafting/Design Problem Solving (3)	
EDT 352 Electrical and Electronics Drafting Design (4)	
EDT 356 Electrical Systems Design (2)	
EDT 498 Work Experience in Engineering Design Technology (1 - 4)	
MATH 334 Trigonometry (4)	
Total Units Required	24

Associate in Science (A.S.) Degree

The Associate in Science degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better or equivalent.

**Mechanical
(HVAC/Plumbing Systems)**

**Associate in Science Degree
Certificate of Achievement**

Designed for students pursuing employment or upgrade in employment in Manual and CAD drafting applications in Architectural or Structural Engineering related offices.

Upon completion of this program, the student will be able to:

- prepare mechanical and plumbing plans for buildings that conform with current industry standards.
- demonstrate an understanding of the process of mechanical and plumbing design by applying design principles to building design projects.

Required Program	Units
EDT 300 Basic Technical Drafting (3) 3 or ENGR 306 Basic Technical Drafting (3)	
EDT 310 Computer Aided Drafting..... 3	
EDT 312 Intermediate Computer Aided Drafting 3	
EDT 314 Advanced Computer Assisted Drafting and Design..... 2	
EDT 332 Air Conditioning, Plumbing and Piping Design Documents 4	
EDT 336 Air Conditioning System Design 3	
EDT 340 Plumbing and Piping Systems Design I 2	
EDT 342 Plumbing and Piping Systems Design II 2	

A minimum of 3 units from the following:..... 3	
EDT 302 Building Trades Blueprint Reading (2)	
EDT 320 Architectural/Structural Drafting (4)	
EDT 350 Electrical and Electronics Drafting/Design Problem Solving (3)	
EDT 352 Electrical and Electronics Drafting Design (4)	
EDT 356 Electrical Systems Design (2)	
EDT 498 Work Experience in Engineering Design Technology (1 - 4)	
SURVY 300 Elementary Surveying (4)	
SURVY 310 Survey Map Production (4)	
MATH 334 Trigonometry (4)	
Total Units Required	25

Associate in Science (A.S.) Degree

The Associate in Science degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better or equivalent.

**Surveying (Geomatics) SURVY
Associate in Science Degree
Certificate of Achievement**

Program Information

The curriculum provides the student with instruction in survey theory and fundamentals of office and field practice. The objective is to prepare students for employment as described above.

Career Opportunities

Students may find employment in field jobs as surveyor assistants to do specific jobs as rod, chain, level and instrument person and notekeeper. In office jobs, students may do survey computations, draw maps of property lines, topographic maps, profiles of construction sites, and compute acreage.

Employers are private survey and engineering firms and government agencies throughout the United States. Job titles are Boundary, Technicians, Survey Technicians, Engineering Technicians, Engineering Aide, and Survey Aide.

Recommended High School Preparation

Courses in algebra, trigonometry, physics, and geography.

Material is sufficient, when coupled with the legally required experience, to prepare the student for the State licensing examinations conducted by The Board of Registration for Professional Engineers.

There are numerous specialties in survey employment and early counseling is suggested to help select the proper optional classes.

Upon completion of this program, the student will be able to:

- operate all surveying measurement instruments commonly in use within the profession.
- demonstrate a knowledge of the techniques and methodology of surveying measurement.
- select appropriate survey measuring instruments to accurately complete a variety of surveying projects.
- list specific requirements of local agencies for approval and filing of survey maps such as, record of surveys, parcel maps, subdivision maps, preliminary and final maps, and also improvement plans.

- demonstrate an understanding of boundary surveying and photogrammetric surveys, theory of geodetic and control surveys, Global Positioning Systems, Geographic Information System and electronic surveys.
- demonstrate knowledge of statutory and common law regulating the surveying industry.
- discuss various types of land ownership and classify effects and intent of various land transfers and transactions.
- prepare and interpret different forms of legal descriptions of land transfers and transactions.

Required Program	Units
SURVY 300 Elementary Surveying.....	4
SURVY 320 Advanced Survey.....	4
SURVY 330 Special Surveying Projects.....	4
SURVY 340 Basics of Photogrammetry.....	3
SURVY 350 Boundary Control and Legal Principles	4
SURVY 352 Evidence and Procedures for Boundary Location.....	4
A minimum of 3 units from the following.....	3
SURVY 310 Survey Map Production (4)	
SURVY 360 Survey Business Practices (3)	
GEOG 330 Introduction to Geographic Information Systems (3)	
Total Units Required	26

Associate in Science (A.S.) Degree

The Associate in Science degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of the required program with grades of "C" or better.

Engineering Design Technology (EDT)

EDT 300 **Basic Technical Drafting** **3 Units**

Same As: ENGR 306

Prerequisite: None.

Course Transferable to CSU

Hours: 36 hours LEC; 54 hours LAB

This is the first course in drafting for drafting, architectural, and engineering students. Studies include drafting instrument care and use, sketching, scale reading, drafting conventions, lettering, orthographic and pictorial drawings, dimensioning techniques, sections, auxiliary views, surface developments, topographics, and working drawing development. Credit may be earned for EDT 300 or ENGR 306, but not for both. Students are required to provide their own drafting equipment.

EDT 302 **Building Trades Blueprint Reading** **2 Units**

Prerequisite: None.

Course Transferable to CSU

Hours: 36 hours LEC

This is a course in blueprint reading and sketching related to building trades. Architectural, structural, electrical and mechanical drawings, details, and specification requirements will be examined in detail for residential, commercial, and industrial construction. This course may be taken two times for credit provided that the code versions have changed.

EDT 310 **Computer Aided Drafting** **3 Units**

Prerequisite: None.

Advisory: EDT 300 with a grade of "C" or better or equivalent

Course Transferable to CSU

Hours: 36 hours LEC; 54 hours LAB

This course is an introduction to computer-assisted drafting (CAD). It covers orthographic and isometric projection concepts. CAD topics include, but are not limited to: Entity Editing; Linetypes; Layers; Entity Drawing; Object Snaps; Grips; Polylines; Dimensioning; Multilines; Pictorial Drawings; Program Customization; Drawing Plotting - Plotters and Printing; Selection Sets and Blocks. Instruction is provided in the commands, application, techniques, standards and settings of CAD software to produce basic technical drawings that conform to current industry standards. A lecture/lab format is used to develop student comprehension of CAD software and to develop appropriate skills required to operate the software in a professional manner in the production of Architectural and Engineering related drawings. This course may be taken two times for credit provided that the software version has changed.

EDT 312 **Intermediate Computer Aided Drafting** **3 Units**

Prerequisite: EDT 310 with a grade of "C" or better or equivalent.

Course Transferable to CSU

Hours: 36 hours LEC; 54 hours LAB

This is a second course in Computer Aided Drafting (CAD) that emphasizes advanced CAD commands and design graphics drawing principles and helps develop job-applicable speed and competence on AutoCAD software. Topics include but are not limited to: Windows Explorer; Paths and Filenames, Directory Structures; CAD Layering Standards; Floor Plans: Limits, Layers, Scale Factors; Drawing Sheet Sizes; Limits; Zoom xP; AutoCAD Geometric Calculator; AutoCAD Filters and Selection Sets; Architectural Dimension settings; AutoCAD Customization; Command Aliases; Toolbar and Menu Customization; Macros; POP Sections; Menugroups / Image Tile Menus; Preferences/Profiles/Advanced Plotting Techniques; Attributes; Scripts and Bill of Materials. This course offers in-service training and upward mobility training to the professional CAD drafter. Emphasis is on in-office related production skills and program customization. This course may be taken two times for credit, provided that the software version has changed.

**EDT 314 Advanced Computer Assisted 2 Units
Drafting and Design**

*Prerequisite: EDT 310 with a grade of "C" or better
Course Transferable to CSU*

Hours: 18 hours LEC; 54 hours LAB

This course covers advanced study in computer aided drafting with emphasis on construction related topics. Course subject areas include basic three-dimensional studies, pictorial (isometric) and three dimensional drawings and dimensioning; customization using the AutoLISP programming language; use of database application to integrate drawing and schedule information in project drawing sets; 3D and UCS Coordinate Systems; Spherical and Cylindrical Coordinates; Solids and Primitives; Solid Model Editing 3D Objects; Wireframes; 3D Faces, Rendering; Light Sources and Backgrounds; Raster and PostScript Files, and applications of CAD to drawing development. The concepts also relate to other computer drafting applications. This course may be taken two times for credit provided that the software version has changed.

EDT 316 REVIT-Architectural 3 Units

*Prerequisite: EDT 310 with a grade of "C" or better
Course Transferable to CSU*

Hours: 36 hours LEC; 54 hours LAB

This course provides instruction in the AutoDesk software package REVIT Architecture. Topics covered include but are not limited to: Building Information Modeling (BIM), parametric 3D design, tools for creating and analyzing projects, and automated tools for documentation.

**EDT 320 Architectural/Structural 4 Units
Drafting**

Prerequisite: EDT 300 and EDT 310 with grades of "C" or better or equivalent.

Course Transferable to CSU

Hours: 36 hours LEC; 108 hours LAB

This course provides instruction in drafting practices involving building construction drawings and specifications and surveying practices related to construction work. This course may be taken two times for credit, provided that the software version has changed.

**EDT 330 Air Conditioning, Plumbing 3 Units
and Piping Design**

Prerequisite: EDT 300 and EDT 310 with grades of "C" or better or equivalent.

Course Transferable to CSU

Hours: 54 hours LEC

This course provides instruction in the design of air conditioning, plumbing and piping systems. Topics include cooling and heating load calculations, zoning, system and equipment selection, ductwork systems, controls, plumbing and industrial piping systems. This course may be taken two times for credit, provided that the software version has changed.

**EDT 332 Air Conditioning, Plumbing 4 Units
and Piping Design Documents**

Prerequisite: EDT 300 and EDT 310 with grades of "C" or better or equivalent.

Course Transferable to CSU

Hours: 36 hours LEC; 108 hours LAB

This course provides instruction in the preparation of construction drawings and specifications for air conditioning, plumbing, and piping systems. The emphasis is on preparing drawings and related documentation that meet building department and construction industry standards, using computer aided drafting applications. This course may be taken two times for credit, provided that the software version has changed.

**EDT 336 Air Conditioning System 3 Units
Design**

Prerequisite: None.

Course Transferable to CSU

Hours: 54 hours LEC

This course focuses on the calculations of heat gain and heat loss in buildings, types of HVAC systems, equipment selection, ductwork design, environmental comfort considerations, psychrometrics, and temperature control systems. This course may be taken two times for credit, provided that the software version has changed.

**EDT 340 Plumbing and Piping Systems 2 Units
Design I**

Prerequisite: EDT 300 and EDT 310 with grades of "C" or better or equivalent.

Course Transferable to CSU

Hours: 36 hours LEC

This course provides introductory level instruction in the design of water, waste, and gas piping systems for residential and commercial buildings including study of the materials, methods, codes, and practices. This course may be taken two times for credit, provided that the code version or the software version has changed.

**EDT 342 Plumbing and Piping Systems 2 Units
Design II**

Prerequisite: None.

Course Transferable to CSU

Hours: 36 hours LEC

This course provides further instruction in the design of water, waste, and gas piping systems, for residential and commercial buildings including study of the materials, methods, codes, and practices. This course may be taken two times for credit, provided that the Code version or the software version has changed.

**EDT 350 Electrical and Electronics 3 Units
Drafting/Design Problem Solving**

Prerequisite: None.

Advisory: Concurrent enrollment in EDT 352.

Course Transferable to CSU

Hours: 54 hours LEC

This course involves problem solving related to electrical and electronics drafting, formula solutions, application of Ohms Law, series-parallel circuitry, basic electrical power and sizing formula, and general lighting calculations. This course may be taken two times for credit, provided that the software version has changed.

EDT 352 Electrical and Electronics Drafting Design 4 Units

Prerequisite: EDT 300 and EDT 310 with grades of "C" or better or equivalent.

Course Transferable to CSU

Hours: 36 hours LEC; 108 hours LAB

This course provides instruction in basic electron theory, electrical/electronic circuitry, drafting practices involving residential, commercial, industrial electrical drawings, material specifications, and an introduction to printed circuit board layout. Field trips to local construction projects or existing installation or manufacturing facilities may be included. Course work involves applying calculations from EDT 350 to design basic electrical power wiring, lighting, and control signal systems. This course may be taken two times for credit, provided that the Code version or the software version has changed.

EDT 356 Electrical Systems Design 2 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 36 hours LEC; 18 hours LAB

This is a basic course on electrical systems for residential and commercial buildings with emphasis on practical industry, materials, methods, and codes. This course may be taken two times for credit provided the Code version or the software version has changed.

EDT 494 Topics in Engineering Design Technology .5-4 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 36 hours LEC; 108 hours LAB

This specialized course has been developed in cooperation with industry to address emerging training needs. This course may be taken four times provided there is no duplication of topics.

EDT 495 Independent Studies in Engineering Design Technology 1-3 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 162 hours LAB

Independent study of an Engineering Design Technology topic or research project. This course is for students who wish to develop an in-depth understanding in fundamental topics of Engineering Design Technology and to learn to work in a collaborative atmosphere with instructors and other students. Instructor approval is required to enroll in this course. This course may be taken four times for credit providing there is no duplication of topics.

EDT 498 Work Experience in Engineering Design Technology 1-4 Units

*Prerequisite: EDT 300 and 310 with grades of "C" or better
General Education: AA/AS Area III(b)*

Enrollment Limitation: According to Education Code Title V regulations, a student cannot earn academic credits in a Work Experience class unless s/he has either a job or an internship.

Course Transferable to CSU

Hours: 18 hours LEC; 300 hours LAB

This course provides students with opportunities to develop or add marketable skills related to their vocational study programs. Course content will include understanding the application of the

student's education to the workforce; the responsibilities of an internship (where applicable); completion of Title V Education Code papers (the student's Application, Learning Objectives, Time sheet, and Evaluations), which document the student's progress and hours spent at the work or internship site; and developing workplace (soft) skills identified by the Secretary's Commission on Achieving Necessary Skills (SCANS) Competencies, as well as by local employers. In addition, the student is required to fulfill 18 hours lecture and 75 hours of related, paid work experience or 60 hours of volunteer work experience for one unit; 75 or 60 hours of related work experience for each additional unit. The program allows the transfer student to combine practical, paid or non-paid work experience with college training. The course may be taken up to four times when there is new or expanded learning on the job for a total of 16 units. Only one Work Experience course may be taken per semester.

EDT 499 Experimental Offering in Engineering Design Technology .5-4 Units

Prerequisite: None

Course Transferable to CSU

Hours: 54 hours LEC; 54 hours LAB

See Experimental Offerings

Surveying (Geomatics) (SURVY)**SURVY 300 Elementary Surveying 4 Units**

Prerequisite: None.

Advisory: MATH 334 with a grade of "C" or better.

General Education: AA/AS Area II(b)

Course Transferable to UC/CSU

Hours: 45 hours LEC; 81 hours LAB

This course provides an introduction to the principles and practices of plane surveying. Survey instrumentation and methods of measuring distances, angles, and differences in elevation will be presented. Fundamental surveying methods including traversing, area computations, and use and care of electronic survey equipment will be stressed. Computation methods associated with surveying will be covered.

SURVY 310 Survey Map Production 4 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 45 hours LEC; 81 hours LAB

This course provides an exposure to the special procedures and requirements unique to computer-assisted survey mapping. Fundamental survey drafting methods and types of maps will be stressed. Conformance with local agency and State mapping requirements will be addressed. Students will work with state of the art computer hardware and software to produce industry standard survey maps.

SURVY 320 Advanced Survey 4 Units

Prerequisite: SURVY 300 with a grade of "C" or better; or equivalent.

Advisory: Completion of or concurrent enrollment in MATH 334 with a grade of "C" or better.

Course Transferable to CSU

Hours: 45 hours LEC; 81 hours LAB

This course focuses on real-world surveying applications such as, primary control, construction layout and staking, horizontal and vertical curves, above and underground structural staking, subdivision lotting, and street improvement construction. Introduction to boundary surveying and photogrammetric surveys, California State Plane Coordinate System, and theory of geodetic and control surveys. GPS, GIS, and electronic surveys and mapping are also introduced. Student should provide hand-held Electronic Scientific Style calculator equipped with trigonometric capabilities.

SURVY 324 Global Positioning Surveying (GPS) 3 Units

Prerequisite: SURVY 320 with a grade of "C" or better

Course Transferable to CSU

Hours: 36 hours LEC; 54 hours LAB

This course is an introduction to the methods, techniques, tools, and applications of GPS for use in Land Surveys. It will also present factors of geodesy for surveying, enabling the student to understand and use the mathematical parameters of the earth's shape and effect on survey measurements.

SURVY 330 Special Surveying Projects 4 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 45 hours LEC; 81 hours LAB

This course focuses on real world surveying applications, construction control, layout and staking, horizontal and vertical curves, above and underground structural staking, subdivision lotting, and street improvement construction. This course will provide an introduction to boundary surveying and photogrammetric surveys, theory of geodetic and control surveys. Global Positioning Systems (GPS), Geographic Information System (GIS), and electronic surveys and mapping are also included.

SURVY 340 Basics of Photogrammetry 3 Units

Prerequisite: SURVY 320 with a grade of "C" or better, or equivalent work experience.

Course Transferable to CSU

Hours: 54 hours LEC

This course provides an introduction to the theory and practice of Photogrammetry, including image systems and quality, theory of stereo photography, and orientation and design of stereo models. The class will also address design and operating principles of stereo plotting, photogrammetric and orthophoto mapping. This course also focuses on considerations for flight and control planning, control identification techniques, advanced field completion surveys, and property line investigations. 2 field trips are required.

SURVY 350 Boundary Control and Legal Principles 4 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 72 hours LEC

An introduction to concepts and legal principles associated with

the historic and current practices of surveying and mapping procedures used in locating boundaries and land ownership lines. This course has been developed for those in the fields of surveying, civil engineering, title insurance, and real estate.

SURVY 352 Evidence and Procedures for Boundary Location 4 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 72 hours LEC

This is a continuation of boundary location with emphasis on procedures rather than principles. It provides an introduction to the historical development, current concepts, and evidence and procedures used in boundary determination. Techniques of gathering and evaluating evidence used in boundary locations and methods of presenting that evidence in the form of maps and descriptions are emphasized. This course is designed for those in the fields of engineering, land surveying, land law, real estate, and title insurance.

SURVY 360 Survey Business Practices 3 Units

Prerequisite: None.

Course Transferable to CSU

Hours: 54 hours LEC

This course is directed to surveyors who want or are considering opening a successful business. The course offers an introduction to surveying business economics; contracts and specifications; organizing, staffing, hiring, training, and supervision of professional/technical personnel, surveyor-client relationships, and ethics of practice.

SURVY 495 Independent Studies in Surveying 1-3 Units

Prerequisite: None

Course Transferable to UC/CSU; UC Transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted toward the minimum 60 units required for admissions.

Hours: 54 hours LAB

See Independent Studies

SURVY 498 Work Experience in Surveying 1-4 Units

Prerequisite: None

Course Transferable to CSU

Hours: 18 hours LEC; 75 hours LAB

See Work Experience

SURVY 499 Experimental Offering in Surveying .5-4 Units

Prerequisite: None

Course Transferable to UC/CSU; UC Transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted toward the minimum 60 units required for admissions.

Hours: 54 hours LEC; 54 hours LAB

See Experimental Offerings