

ENGINEERING

Victor Valley College does not offer an Engineering program for transfer, but does however offer preparatory courses needed for transfer for transfer into a School of Engineering. These courses are offered through our Engineering Drafting and Design Program, Physics, and Electronics Programs. Students can obtain Engineering related certificates that will assist in preparing them to enter into a School of Engineering at the university level. An Associate of Science for Transfer degree in Mathematics or an Associate of Science in Math/Science is highly recommended for those students wanting to transfer into a School of Engineering. Students seeking an Associate of Science degree in Engineering Drafting and Design are positioned to enter straight into the workforce.

Engineers seek to understand and solve a broad range of technical problems faced by our society. Engineers are responsible for such projects as converting raw materials and power sources into useful products, developing scientific equipment, and designing and planning the construction of buildings, highways, and rapid transit systems. As society becomes more technologically complex, so do the ever-emerging branches of engineering. The rigorous curriculum of engineering programs is for high achieving students who have developed good study habits and possess a strong math and science background. No associate degree is offered with a major in Engineering from Victor Valley College. Because the math and science requirements are so extensive, students usually pursue an associate degree with a major in AS-T Mathematics or AS Math/Science.

Career Opportunities

Mechanical Engineer, CAD Operator, Chemical Engineer, Computer Engineer, Electrical Drafter, Electronics Drafter, Electrical Engineer, Mechanical Drafter, Public Works Technician, Steel Fabricator Drafter, Structural Engineer, Structural Drafter

Faculty

Butros, Michael

Rubayi, Khalid

Transfer

- UC campuses offering Engineering majors include: Berkeley, Davis, Irvine, Santa Barbara, San Diego, Santa Cruz, Riverside and Los Angeles.
- CSU Campuses offering Engineering majors include: Dominguez Hills, Chico, Fresno, Long Beach, Los Angeles, Northridge, Pomona, Sacramento, San Diego, San Francisco, San Jose, San Luis Obispo, Sonoma, and Maritime Academy.
- Private schools offering Engineering majors include: University of Southern California, Stanford, CalTech, and Harvey Mudd College

Engineering is a highly competitive transfer degree which is impacted at many universities. There are over 200 different career fields in the Engineering area. The following courses are minimal requirements for most engineering majors: CHEM 100 Introductory Chemistry, CHEM 201 General Chemistry, CHEM 202 General Chemistry; MATH 226 Analytic Geometry and Calculus I, MATH 227 Analytic Geometry and Calculus II; PHYS 201 Engineering Physics I-Mechanics, PHYS 202 Engineering Physics II - Fluids, Sound, and Thermodynamics, PHYS 203 Engineering Physics III Electricity And Magnetism; ENGD 95 & ENGD 110 Introduction

to 2-D AutoCAD. IGETC or CSU General Education-Breadth Requirements are not always appropriate for an engineering major.

For the most up-to-date information on these programs and others, visit [assist.org](http://www.assist.org) (<http://www.assist.org/>). Please stop by the Transfer Center in Building 23 or make an appointment with a counselor if you have questions.

Engineering Drafting and Design, AS (37138)

This major curriculum leads to the Associate of Science degree in Engineering Drafting and Design for advanced Tech Prep applications, employment in design, engineering and manufacturing related industries, public works, utilities and CADD/Drafting related industries. Upon completion of specific General Education courses, this program also fulfills many of the requirements and foundation courses for transfer to other Baccalaureate technical majors within Engineering and Industrial Technology but is not intended to fulfill transfer requirements for the Baccalaureate degree. (See transfer requirements for individual colleges and universities).

To earn this degree, complete the major coursework with "C" grades or better and all of the following graduation requirements: 60 minimum degree-applicable units (including a maximum 4 units of activity); 2.0 minimum overall GPA; 12 degree-applicable units through VVC; Information Competency; Global Citizenship; Kinesiology, and the VVC General Education (catalog.vvc.edu/degrees-certificates/vvcge/#vvcge) pattern. Courses may count in one area only, either in the major or in a general education category. Courses counted in one AA/AS major may not be used in another AA/AS major.

Code	Title	Units
Required Courses		
ARCH 108	Architectural Presentation	3.0
ENGD 101	Introduction to Drafting	3.0
ENGD 103	Blueprint Reading for Construction	3.0
ENGD 110	Introduction to 2-D AutoCAD	3.0
ENGD 130	Introduction to Solidworks	3.0
ENGD 210	Advanced 2-D Autocad	3.0
Total Units		18

Drafting Technician I Certificate of Achievement (37136)

The Drafting Technician I certificate prepares students to work in the fields of architecture, engineering, and drafting as a drafter. Students will have a working knowledge of mechanical and architectural drawing. Students will understand the concepts of line weights, lettering, orthographic projection, and sketching.

Code	Title	Units
Required Courses		
CT 105	Technical Sketching	3.0
CT 107	Technical Mathematics	3.0
ENGD 101	Introduction to Drafting	3.0
ENGD 103	Blueprint Reading for Construction	3.0
ENGD 110	Introduction to 2-D AutoCAD	3.0
MATH 104	Trigonometry	4.0

Code	Title	Units
or MATH 105	College Algebra	
Total Units		19

CADD (Computer Aided Design and Drafting) Technician I Certificate of Achievement (37151)

The Drafting Technician I certificate prepares students to work in the fields of Architecture, Engineering, and Drafting as a drafter. Students will have a working knowledge of mechanical and architectural drawing.

Code	Title	Units
Required Courses		
CT 107	Technical Mathematics	3.0
ENGD 101	Introduction to Drafting	3.0
ENGD 103	Blueprint Reading for Construction	3.0
ENGD 110	Introduction to 2-D AutoCAD	3.0
ENGD 120	Introduction to Inventor	3.0
or ENGD 130	Introduction to Solidworks	
ENGD 210	Advanced 2-D Autocad	3.0
Total Units		18

Engineering Courses

ENGD 101 Introduction to Drafting (3.0 Units)

This survey course will explore the basic techniques used in the drafting industry. The course will emphasize proper use of hand drafting instruments, lettering, and line quality. Course includes work in the fields of architectural, engineering and mechanical drafting.

Lecture Hours: 36.00; Lab Hours: 54.00

Transfer: Transfers to CSU only

ENGD 103 Blueprint Reading for Construction (3.0 Units)

A course designed to develop the skills necessary to interpret both residential and commercial construction drawings and blueprints.

Lecture Hours: 54.00

Transfer: Transfers to CSU only

ENGD 110 Introduction to 2-D AutoCAD (3.0 Units)

An introduction to the AutoCAD program including all necessary basic commands required for computer aided drafting. Students will master drawing setup, common draw, edit and view commands, and plotting.

Lectures and exercises are designed to provide a comprehensive knowledge of all basic computer drafting functions. Grade option.

Lecture Hours: 36.00; Lab Hours: 54.00

Transfer: Transfers to CSU only

ENGD 120 Introduction to Inventor (3.0 Units)

Solid Modeling and Three Dimensional CADD will introduce students to a new Autodesk software package entitled INVENTOR. Students will understand the concepts involved in Parametric Modeling. Students will begin by constructing basic shapes and proceed to building intelligent solid models and create multi-view drawings. Assembly drawings, section views, auxiliary views, sheet metal drawings, and details will also be produced. Students will develop their drafting and computer skills through drawings and projects that emphasize teamwork and the design process. Students will also learn various hardware, software and peripheral components related to operating a CADD station.

Lecture Hours: 36.00; Lab Hours: 54.00

Transfer: Transfers to CSU only

ENGD 130 Introduction to Solidworks (3.0 Units)

This course is designed to introduce the student to three-dimensional parametric solid modeling with SolidWorks. Students will begin with basic parametric solid modeling techniques and advance into complex assemblies requiring animation.

Lecture Hours: 36.00; Lab Hours: 54.00

Transfer: Transfers to both UC/CSU

ENGD 138 Cooperative Education Engineering (1-8 Units)

Cooperative Education is a key element of Victor Valley College's comprehensive approach to career development. Cooperative Education is a 16-, 12-, or 8-week course that enables students to receive college credit for paid or unpaid work opportunities. This course helps students gain valuable on-the-job work experience while providing practical education, best practices in professional development, and academic guidance through the course of their work opportunity. The combination of practical experience and curricular development empowers students to be more competitive, efficient and valuable employees upon completion of this program and/or their academic program trajectory. The course is ideal for students who are cross-training at their current worksite for upward mobility or seeking career changes, as well as those looking for entry-level occupational training through work-based learning experiences such as through an internship. Cooperative Education Transforms community businesses, industries, and public agencies into expanded educational training laboratories. Credit is awarded on the basis of learning objectives completed and the number

of hours the student trains. Students must create/ complete new learning objectives each semester they enroll. Students may utilize their present work sites. More details are available in the Cooperative Education Office, (760) 245-4271, ext. 2281. The office, located in the Academic Commons, is open Monday-Thursday, 8:00 a.m.-1:00 p.m., 2:00-6:00 p. m., and by appointment. Transfer: Transfers to CSU only

ENGD 210 Advanced 2-D Autocad (3.0 Units)

A working knowledge of AutoCAD is necessary. This course will explore the more advanced two-dimensional features of the AutoCAD program including entity filters, attributes, external reference files, paper space and slide presentations. Projects include sectional description of compound shapes and developments.

Recommended Preparation: ENGD 110

Lecture Hours: 36.00; Lab Hours: 54.00

Transfer: Transfers to CSU only

Program Learning Outcomes

Program Learning Outcomes (PLOs) are statements of the kind of learning a program hopes a student will achieve. The PLOs describe the knowledge, skills, problem-solving, communication and values that apply to all certificates and/or degrees within that program.

Upon completion of this program, students should be able to:

1. To discuss the key components of design, process, layout, and function as it relates to the real world.
2. To develop scene aesthetics that emphasizes creativity and storytelling.
3. To create compelling two and three dimensional projects that meet current industry standards.