

ENGINEERING, ASSOCIATE IN SCIENCE

Ventura College offers a two-year lower-division engineering program that prepares students for transfer to colleges and universities in California and across the nation. The first two years of the engineering curriculum, at many colleges and universities, are fairly similar with specialization commencing in the junior year. Completion of lower division core courses is essential in facilitating progress as an upper division engineering transfer student.

The Ventura College Associate in Science (A.S.) in Engineering is structured to allow students to complete core requirements found in the majority of Engineering majors within the UC and CSU systems, while also customizing their major, through the choice of restricted electives and support courses, to align with their specific Engineering field at the particular universities to which they are applying. The A.S. degree requires students to complete the Ventura County Community College District (VCCCD) General Education Pattern.

This is a high-unit major, requiring 68 or 70 units. Students will be able to complete the program in two years (four semesters) by taking between 16 and 19 units per semester. However, students can reduce semester units by taking one or more courses in the summer term between their first and second years.

It is important that engineering students meet with an engineering transfer counselor and/or the Engineering Department for specific requirements for transfer.

| Course ID | Title | Units/ Hours |
|--|---|-----------------|
| Required Core Courses | | |
| CHEM V01A & V01AL | General Chemistry I and General Chemistry I Laboratory | 5 |
| ENGR V01 | Introduction to Engineering | 3 |
| MATH V21A | Calculus with Analytic Geometry I | 5 |
| MATH V21B | Calculus with Analytic Geometry II | 5 |
| MATH V21C | Multivariable Calculus | 5 |
| PHYS V04 & V04L | Mechanics for Scientists and Engineers and Mechanics Laboratory for Scientists and Engineers | 5 |
| PHYS V05 & V05L | Electricity and Magnetism for Scientists and Engineers and Electricity and Magnetism Laboratory for Scientists and Engineers | 5 |
| Required Core Units | | 33 |
| Required Additional Courses (12-14 units) | | 12-14 |
| - List A. Select 3 or 5 units: | | |
| CHEM V01B & V01BL | General Chemistry II and General Chemistry II Laboratory | 5 |
| MATH V22 | Introduction to Linear Algebra | 3 |
| MATH V23 | Introduction to Differential Equations | 3 |
| PHYS V06 & V06L | Optics, Heat, and Modern Physics: For Scientists and Engineers and Optics, Heat, and Modern Physics Laboratory for Scientists and Engineers | 5 |

- From Lists B and C: Select a total of 9 units, as indicated below:

- List B: Select 3 to 9 units:

| | | |
|-----------------|--|---|
| ENGR V02 | Engineering Graphics and Design | 3 |
| ENGR V12 | Engineering Statics | 3 |
| ENGR V14 | MATLAB: Programming and Problem Solving | 3 |
| ENGR V16 | Electronic Circuit Analysis | 3 |
| ENGR V16L | Electronic Circuits Laboratory | 1 |
| ENGR V18 & V18L | Engineering Materials and Engineering Materials Laboratory | 4 |

- List C. May select 3 or 6 units as part of the 9 units:

| | | |
|-----------------|--|---|
| CS V11 | Programming Fundamentals | 3 |
| CS V13 | Object-Oriented Programming | 3 |
| CS V15 | Data Structures and Algorithms | 3 |
| CS V17/MATH V52 | Discrete Structures | 3 |
| CS V19 | Computer Architecture and Organization | 3 |
| CS V30 | Beginning C++ | 3 |
| CS V40 | Beginning Java | 3 |
| CS V42 | Intermediate Java | 3 |

Total Required Units 45-47

| | |
|----------------------------|-------|
| Required Core Units | 33 |
| Restricted Elective Units | 12-14 |
| Total Required Major Units | 45-47 |

VCCCD General Education Pattern

| | |
|--------------------------------------|--------------|
| Required Major Units | 45-47 |
| VCCCD General Education Units | 29 |
| Double-Counted Units | - 6 |
| Unrestricted Elective Units | 0 |
| Total Units for the AS Degree | 68-70 |

Year 1

| Fall Semester | Units/Hours | |
|--------------------|--|-----------|
| CHEM V01A | General Chemistry I (VCCCD GE Area A2) | 3 |
| CHEM V01AL | General Chemistry I Laboratory | 2 |
| ENGL V01A | English Composition (VCCCD GE Area D1) | 4 |
| ENGR V01 | Introduction to Engineering | 3 |
| MATH V21A | Calculus with Analytic Geometry I (VCCCD GE Area D2) | 5 |
| Units/Hours | | 17 |

Spring Semester

| | | |
|------------------------------------|---|-----------|
| MATH V21B | Calculus with Analytic Geometry II | 5 |
| PHYS V04 | Mechanics for Scientists and Engineers | 4 |
| PHYS V04L | Mechanics Laboratory for Scientists and Engineers | 1 |
| Select Course: Restricted Elective | | 3 |
| Select course: VCCCD GE Area A1 | | 3 |
| Units/Hours | | 16 |

Year 2

| Fall Semester | Units/Hours | |
|------------------------------------|---|-----------|
| MATH V21C | Multivariable Calculus | 5 |
| PHYS V05 | Electricity and Magnetism for Scientists and Engineers | 4 |
| PHYS V05L | Electricity and Magnetism Laboratory for Scientists and Engineers | 1 |
| Select Course: Restricted Elective | | 3 |
| Select course: VCCCD GE Area C1 | | 3 |
| Select course: VCCCD GE Area C2 | | 3 |
| Units/Hours | | 19 |

Spring Semester

| | |
|------------------------------------|--------------|
| Select Course: Restricted Elective | 3 |
| Select Course: Restricted Elective | 3-5 |
| Select course: VCCCD GE Area B1 | 3 |
| Select course: VCCCD GE Area B2 | 3 |
| Select course: VCCCD GE Area E1 | 3 |
| Select course: VCCCD GE Area E2 | 1 |
| Units/Hours | 16-18 |
| Total Units/Hours | 68-70 |

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

- Analyze and interpret data to make engineering problem decisions.
- Identify, formulate, and solve basic engineering problems