ANTELOPE VALLEY COLLEGE

COUNSELING CENTER ADVISING

The Associate in Sciences in Electrical and Mechanical Engineering will provide students with a fundamental knowledge of Electrical and Mechanical Engineering, to enhance their computational and problem solving skills, sharpen their critical thinking, and to ensure proper preparation for junior level Electrical and Mechanical Engineering coursework at a university. Students completing this degree should realize that there are many sub disciplines in Electrical and Mechanical Engineering and most require a similar core education, but not all. The requirements for an associate degree in Electrical and Mechanical Engineering may be satisfied by completing the courses listed below in addition to the associate degree requirements.

• Requires a minimum grade of "C" on each course in the major   • Maximum of 12 pass/no pass units accepted
• Minimum of 12 units must be completed at AVC (credit earned by examination will not be included in these 12 units)
• Refer to catalog or online website for course listings, descriptions, and suggested course sequence if available
• Students who intend to transfer are strongly encouraged to complete either the Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breath (CSU GE).

AS-Associate Degree (2)

Electrical Engineering

Required Courses	units
*CIS 161, Introduction to C Programming	3
ENGR 110, Engineering Orientation and Basic Skills	3
ENGR 125, Programming and Problem Solving in MATLAB	4
ENGR 185, Digital Logic and Design	4
ENGR 230, Circuit Analysis	4
MATH 150, Calculus and Analytic Geometry	5
MATH 160, Calculus and Analytic Geometry	4
MATH 230, Introduction to Ordinary Differential Equations	4
MATH 250, Calculus and Analytic Geometry	4
PHYS 110, General Physics	4
PHYS 120, General Physics	4
PHYS 211, General Physics	5
Total Units Required	**48**

Prerequisite Completion
If a course is listed as a prerequisite for another course, that prerequisite course must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Students who enroll in classes for which they do not meet the prerequisites will be involuntarily dropped. Students will be notified of this involuntary drop.

Mechanical Engineering

Required Courses	units
CHEM 110, General Chemistry	5
ENGR 110, Engineering Orientation and Basic Skills	3
ENGR 125, Programming and Problem Solving in MATLAB	4
ENGR 130, Materials Science	3
ENGR 130L, Materials Science Lab	1
ENGR 140, Engineering 3D Graphics	3
ENGR 210, Statics	4
MATH 150, Calculus and Analytic Geometry	5
MATH 160, Calculus and Analytic Geometry	4
MATH 230, Introduction to Ordinary Differential Equations	4
MATH 250, Calculus and Analytic Geometry	4
PHYS 110, General Physics	4
PHYS 120, General Physics	4
Total Units Required	**48**

Note: All Engineering courses in this major have combinations of Chemistry, Calculus, and Physics prerequisites. Semester order for classes and time to complete may vary for night students.

other requirements for degree

General Education	21-27
Proficiency (See Proficiency Requirements) *	
Electives	11-17
Minimum Units Required	**60**

*Fulfilling proficiencies will not require any extra units if the competencies are demonstrated by including the required courses in the general education, or major requirements, or by satisfying the reading proficiency through AVC's policy.

General Education Requirements
At least 3 units from each of the following areas below: A, B, C, D1, D2, E, and F.
Minimum Total GE Units Required   21

Area A Natural Sciences
(min. 3 units)
ANTH 101, 101L
ASTR 101, 101L
BIOL 100, 101, 101L, 102, 103, 104, 110, 120, 201, 202, 204, 205
CHEM 101, 102, 110
ELTE 101
ERSC 101
GEOG 101, 101L, 102, 102L
GEOL 101, 101L, 102, 102L
PHYS 101, 102, 110, 120, 211
PSCI 101

Area B Social & Behavioral Sciences
(min. 3 units)
AJ 201, 204, 206
ANTH 102, 103, 112, 140
BUS 101
CFE 102
COMM 217
DFST 105
ECON 100, 101, 102, 110
GEOG 105, 106, 110
HIST 101, 102, 104, 105, 107, 108, 110, 111, 113, 114, 116, 118, 119
POLS 101, 103, 200, 201, 202, 203
PSY 101, 201, 212, 230, 232, 233, 234, 235, 236
SOC 101, 105, 110, 111, 112, 115, 116, 120

Area C Humanities
(min. 3 units)
ART 100, 101, 102, 103, 104, 106, 110, 113, 120, 132, 135, 136, 137, 140, 145, 150, 163, 170, 210, 213
CHIN 101, 102, 201, 202
COMM 103, 112, 114, 214
DA 101
DFST 101, 102, 105, 106, 201, 202
ENGL 102, 111, 112, 113, 221, 222, 225, 227, 230, 231, 235, 236, 240, 242, 246, 250, 253, 256, 257, 259, 265, 279
FREN 101, 102, 201, 202, 203
FTV 101, 103, 107, 108, 201, 203, 241, 251, 261
GER 101, 102, 201, 202
HIST 115
ID 150, 201
LATN 101, 102, 201
MUS 101, 105, 111, 131, 132, 151, 153, 185, 231, 232, 251A, 251B, 253A, 253B
MUSC 102, 103, 107, 108
PHIL 105, 106, 108, 109
PHOT 107
PHTC 101, 150, 201
SPAN 101, 110SS, 102, 201, 202, 210SS, 220SS
THA 101, 102, 103, 110, 115A, 115B, 116A, 116B, 117A, 117B, 118A, 118B, 121A, 121B, 130, 133, 225, 239

Area D Language & Rationality
(min. 3 units from (1) and 3 units from (2))
1. *Academic Composition:* Courses fulfilling the written composition requirement shall be designed to include both expository and argumentative writing.

   ENGL 101

2. *Communication and Analytical Thinking*
   BUS 113
   CA 103

CIS 101, 111, 141, 157, 161
COMM 101, 103, 107, 109, 112, 114, 115, 217, 219
ENGL 102, 103
GEOG 201, 205
MATH 102, 110, 115, 116, 120, 124, 128, 135, 140, 148, 150, 160, 220, 230, 250
PHIL 101, 106, 110, 201

Area E - Additional Breadth
(min. 3 units)
From areas A**, B**, C**, D2 **or
CFE 102
COMM 103, 107, 219
DFST 105
HD 100, 101, 102, 103, 105
HE 101, 120, 201
ID 100, 120
KINT 100
LIB 107, 110
MUSC 108
NF 100, 102, 103, 110, 150
PSY 212
SOC 111, 116
Any DA activity course(s) from DA102-205, except DA 107A-C, 108, 109, and 111.
Any Kinesiology Fitness (KINF) activity course, Intercollegiate Athletics (IATH) activity course, or up to 4 units for military experience.

** Courses must be taken from a discipline not previously selected.

Area F Diversity Studies
(min. 3 units)
ANTH 102, 112
BUS 212
CFE 116
COMM 114, 217, 219
DFST 105, 106
ECON 110
ENGL 250, 253, 256, 257, 259
FTV 201, 203
HE 201
HIST 110, 111, 113
MUSC 107, 108
POLS 202
SOC 105, 110, 116
THA 239

Proficiency Requirements
Proficiency requirements exist for the areas of Reading, Writing and Math. Students must demonstrate competency in each of these areas in order to be eligible for the associate degree.
A. READING
Eligibility for College Level Reading (AVC assessment) or completion of READ 099 with a minimum grade of "P" (Pass), or completion of an Associate Degree or higher from a regionally accredited institution of higher education.
B. WRITING
Completion of ENGL 101 with a minimum grade of "C." NOTE: ENGL 101 may be taken with the Pass/No Pass option; however, students are cautioned that other colleges and universities may not accept ENGL 101 courses taken on a Pass/No Pass basis, especially for satisfaction of general education and major requirements. Students planning to transfer should check college catalogs for applicable policies.
C. MATHEMATICS
Completion of MATH 102 or higher or CIS 121 with a satisfactory grade or placement by AVC assessment into a math course higher than MATH 102.

Electives
The remaining number of units (up to a minimum of 60) are considered electives. Any course that has already been counted toward (1) the general education requirements, or (2) the major, cannot be used as an elective. Any course with a designation of "AVC" at the end of a course description can be used as an elective.

Grade Point Average Requirement
An overall grade point average of 2.0 ("C" average) is required.

Residence Requirement. Of the required 60 units, "at least 12 semester units must be completed in residence at the college granting the degree." Title 5, Section 54000 et seq. Title 5 of the California Code of Regulations is available at *http://ccr.oal.ca.gov* and in the Antelope Valley College Library.

Requirements for Two or More Associate Degrees. To be eligible for multiple associate degrees, a student must have completed all of the graduation requirements for each degree.

Double Counting: While a course might satisfy more than one general education requirement, it may not be counted more than once for these purposes. A course may be used to satisfy both a general education requirement and a major or area of emphasis requirement.

Requirements for Two or More Certificates. To earn more than one certificate, a course can be used as part of as many certificate requirements as the student wishes to obtain.

Transfer. Students planning to continue studies at a four-year college or university after AVC should visit the Transfer Resource Center and consult with a counselor as soon as possible to develop a plan of studies. Additional information on official transfer articulation agreements from AVC to many CSU/UC campuses can be found at the following Web site: **www.assist.org**

Transferability of courses to the CSU or UC systems is indicated at the end of a course description by the notation "(UC, CSU)." For the transferability of courses to all other universities, please consult with a counselor or the Transfer Resource Center.

The **"Catalog Rights Policy"** sets forth the criteria used for determining the degree requirements under which students may graduate. Please refer to the AVC Catalog for a detailed description or consult with a counselor.

Antelope Valley College's website: www.avc.edu

For an educational plan, please consult with a counselor. To obtain counseling services please call: (661) 722-6300 ext. 6338

To contact the Mathematics, Science, and Engineering Division, please call: 661-722-6300 ext. 6415

CHEM 110 *GENERAL CHEMISTRY
Prerequisite: Completion of MATH 102. *Advisory*: Completion of CHEM 101, and Eligibility for College Level Reading and ENGL 100A. (CSU, UC, AVC)

CIS 161 *INTRODUCTION TO C PROGRAMMING *Advisory*: Completion of CIS 101, and Eligibility for ENGL 100A, READ 099 and MATH 128. (CSU, UC, AVC)

ENGR 110 *ENGINEERING ORIENTATION AND BASIC SKILLS. **Prerequisite**: Completion of MATH 102. (CSU, AVC)

ENGR 125 PROGRAMMING AND PROBLEM-SOLVING IN MATLAB. **Prerequisite**: Completion of MATH 150. (CSU, UC, AVC)

ENGR 130 MATERIAL SCIENCE.
Prerequisite: Completion of CHEM 110 and PHYS 110. Corequisite: Concurrent enrollment in ENGR 130L. (CSU, UC, AVC)

ENGR 130L MATERIAL SCIENCE LAB
Corequisite: Concurrent enrollment in ENGR 130. (CSU, AVC)

ENGR 140 ENGINEERING 3D GRAPHICS
Prerequisite: Completion of MATH 135 (*AVC Assessment*). (CSU, UC, AVC)

ENGR 185 *DIGITAL LOGIC AND DESIGN
Prerequisite: Completion of MATH 102. *Advisory*: Eligibility for ENGL 101 and READ 099. (CSU, UC, AVC)

ENGR 210 STATICS. **Prerequisite**: Completion of MATH 160 and PHYS 110. (CSU, UC, AVC)

ENGR 230 CIRCUIT ANALYSIS
Prerequisite: Completion of PHYS 120. Corequisite: Completion of or concurrent enrollment in MATH 230. (CSU, UC, AVC)

MATH 150 CALCULUS AND ANALYTIC GEOMETRY. **Prerequisite:** Eligibility of Math 150 (*AVC Assessment test*) or Completion of MATH 140. *Advisory:* Eligibility for College Level Reading. (CSU, UC, AVC)

MATH 160 CALCULUS AND ANALYTIC GEOMETRY. **Prerequisite:** Completion of MATH 150. *Advisory:* Eligibility for College Level Reading. (CSU, UC, AVC)

MATH 230 INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS
Prerequisite: Completion of MATH 160. *Advisory:* Completion of MATH 220 and MATH 250, and Eligibility for College Level Reading. (CSU, UC, AVC)

MATH 250 CALCULUS AND ANALYTIC GEOMETRY. **Prerequisite:** Completion of MATH 160. *Advisory:* Eligibility for College Level Reading. (CSU, UC, AVC)

PHYS 110 GENERAL PHYSICS
Prerequisite: Completion of or concurrent enrollment in MATH 150. *Advisory:* Completion of ENGL 101 and PSCI 101. (CSU, UC, AVC)

PHYS 120 GENERAL PHYSICS
Prerequisite: Completion of PHYS 110, and Completion of or concurrent enrollment in MATH 160. *Advisory:* Eligibility for College Level Reading and ENGL 101. (CSU, UC, AVC)

PHYS 211 GENERAL PHYSICS
Prerequisite: Completion of PHYS 110, and Completion of or concurrent enrollment in MATH 160. *Advisory:* Completion of MATH 220. (CSU, UC, AVC)

Advisory:
A condition of enrollment that a student is advised, but not required, to meet before or in conjunction with enrollment in a course or educational program.

Prerequisite:
A condition of enrollment that a student is required to meet in order to demonstrate current readiness for enrollment in a course or educational program. Prerequisites are enforced and a student will be blocked from enrolling or involuntarily dropped after enrolling if the student does not meet the stated prerequisite. A student must complete a course prerequisite with a satisfactory grade of A, B, C or P (pass).

Corequisite:
A condition of enrollment consisting of a course that a student is required to simultaneously take in order to enroll in another course. Corequisites are enforced and a student will be blocked from enrolling if the student does not meet the stated requisite.