

# ENGINEERING

ASSOCIATE DEGREE &amp; CERTIFICATE PROGRAMS

2023-2024 CATALOG

## DESCRIPTION

Cuesta's Engineering program provides a foundation of mathematics, chemistry, physics, and engineering courses necessary to transfer to a four-year institution and complete a bachelor's degree in engineering. Students should consult the institution to which they wish to transfer for specific lower division requirements.

People working in the field of engineering and related technical fields "bridge the gap" between scientific principles and the application of these principles to the needs of society. An engineer uses experience and judgment, as well as advanced training in engineering, science, and mathematics, to formulate ideas and designs, and to determine standards, specifications, work orders and schedules so that projects can be economically beneficial to mankind. Engineering offers diverse and exciting job opportunities for people with mathematical, scientific, and technical skills.

## ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS

**An Associate Degree**, depending on the focus of study, is designed to prepare students for transfer into upper division course work in a bachelor's degree program, or, to prepare students to enter the workforce in a particular vocational field. To qualify for an Associate's Degree, a student must: (1) complete each major-specific course required for the degree with at least a "C" grade or better, (2) complete all Cuesta College general education, graduation and residency requirements, and (3) achieve an overall grade point average of 2.0 for all courses attempted (major, general education, elective).

**A Certificate Program** is designed for students who desire specific training to meet an immediate occupational or personal goal, or for promotion or lateral transfer within their existing field of employment. To qualify for a Certificate of Achievement or a Certificate of Specialization, a student must 1) complete all courses required for the Certificate with an overall grade point average of 2.0.

## DEGREES, CERTIFICATES & AWARDS

- Associate in Science (A.S.)
- Certificate of Achievement (C.A.)

## CAREER OPPORTUNITIES

- Drafters
- Engineering Lab Technician
- Mechanical Designers
- Quality Control Technicians
- Research Technicians
- Surveyors

## CONTACT

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**ASSOCIATE DEGREE PROGRAMS****Engineering**— Associate in Science

Courses in this program closely mirror the lower division major preparation required of 1st and 2nd year students enrolled in baccalaureate level Engineering programs. The “Required for all Tracks” courses are standard major preparation for most engineering degrees. Students then choose one of the four tracks to meet additional lower division preparation required for their particular area of engineering study.

**Required for all Tracks: 37 units**

CHEM 201A . . . General College Chemistry I . . . . .	5
MATH 265A . . . Calculus I . . . . .	5
MATH 265B . . . Calculus II . . . . .	5
MATH 283 . . . . Calculus Iii: Multivariable Calculus . . . . .	5
MATH 287 . . . . Ordinary Differential Equations And Linear Algebra . . . . .	5
PHYS 208A . . . Principles Of Physics 1 . . . . .	5
PHYS 208B . . . Principles Of Physics 2 . . . . .	5
ENGR 248 . . . . Introduction To Engineering . . . . .	2

**Complete one of the following 4 tracks:****Civil Engineering Track: 17-18 units****Required for Civil Track: 14 units**

ENGR 210 . . . . Computational Methods For Engineers . . . . .	3
ENGR 226 . . . . Engineering Drawing . . . . .	4
ENGR 246 . . . . Materials Engineering . . . . .	3
ENGR 246L . . . Engineering Materials Lab . . . . .	1
ENGR 250 . . . . Engineering Statics . . . . .	3

**Electives for Civil Track: 3-4 units**

ENGR 201 . . . . Plane Surveying . . . . .	3
ENGR 202 . . . . Introduction To Civil 3D . . . . .	2
ENGR 217 . . . . Circuit Analysis . . . . .	4
ENGR 251 . . . . Engineering Dynamics . . . . .	3
ENGR 252A . . . Strength Of Materials I . . . . .	2
and	
ENGR 252B . . . Strength Of Materials II . . . . .	2
GEOL 210 . . . . Physical Geology . . . . .	4

**Computer Engineering Track: 15-16 units****Required for Computer Engineering Track: 12 units**

CIS 231 . . . . . Fundamentals Of Computer Science I . . . . .	4
CIS 232 . . . . . Fundamentals Of Computer Science II . . . . .	2
CIS 233 . . . . . Fundamentals Of Computer Science III . . . . .	2
ENGR 217 . . . . Circuit Analysis . . . . .	4

**TRANSFER PREPARATION**

Courses that fulfill major requirements for an associate degree may differ from those needed to prepare to transfer. Students who plan to transfer to a four-year college or university should schedule an appointment with a Cuesta College counselor to develop a student education plan (SEP) before beginning their program.

**TRANSFER RESOURCES:**

CSU and UC Articulation Agreements and Majors Search Engine:

[www.ASSIST.org](http://www.ASSIST.org)

CSU System Information:

[www2.calstate.edu](http://www2.calstate.edu)

**FINANCIAL AID**

Paying for the cost of a college education requires a partnership among parents, students and the college. As the cost of higher education continues to rise we want you to know that Cuesta College offers a full array of financial aid programs—grants, work study, scholarships, federal loan programs, and fee waivers. These programs are available to both full-and part-time students who are seeking a degree or certificate. For those who qualify, financial aid is available to help with tuition, fees, books and supplies, food, housing, transportation, and childcare. Please log onto our website for additional information:

[www.cuesta.edu/student/student-services/financial-aid](http://www.cuesta.edu/student/student-services/financial-aid)

**Electives for Computer Engineering Track: 3-4 units**

CIS 241 . . . . .	Discrete Structures . . . . .	3
ENGR 250 . . . . .	Engineering Statics . . . . .	3
ENGR 246 . . . . .	Materials Engineering . . . . .	3
and		
ENGR 246L . . . . .	Engineering Materials Lab . . . . .	1

**Electrical Engineering Track: 15-16 units****Required for Electrical Track: 12 units**

CIS 231 . . . . .	Fundamentals Of Computer Science I . . . . .	4
ENGR 217 . . . . .	Circuit Analysis . . . . .	4
PHYS 208C . . . . .	Modern Physics . . . . .	4

**Electives for Electrical Track: 3-4 units**

ENGR 250 . . . . .	Engineering Statics . . . . .	3
ENGR 251 . . . . .	Engineering Dynamics . . . . .	3
CHEM 211 . . . . .	Introductory Organic/Biochemistry . . . . .	4
BIO 211 . . . . .	Life Science . . . . .	3

**Mechanical/ Aeronautical Engineering/ Manufacturing/ Industrial/ Bio Medical: 15-17 units****Required for ME/ AERO/ MANUF/ INDUST/ BIOMED Track: 13 units**

ENGR 210 . . . . .	Computational Methods For Engineers . . . . .	3
ENGR 226 . . . . .	Engineering Drawing . . . . .	4
ENGR 246 . . . . .	Materials Engineering . . . . .	2
ENGR 246L . . . . .	Engineering Materials Lab . . . . .	1
ENGR 250 . . . . .	Engineering Statics . . . . .	3

**Electives for ME/ AERO/ MANUF/ INDUST/ BIOMED Track: 2-4 units**

BIO 211 . . . . .	Life Science . . . . .	3
ENGR 217 . . . . .	Circuit Analysis . . . . .	4
ENGR 228 . . . . .	Detailed Design With Solidworks . . . . .	3
ENGR 251 . . . . .	Engineering Dynamics . . . . .	3
ENGR 252A . . . . .	Strength Of Materials I . . . . .	2
and		
ENGR 252B . . . . .	Strength Of Materials li . . . . .	2
WELD 270A . . . . .	Basic Welding . . . . .	3
ENGR 200 . . . . .	Introduction To Robotics . . . . .	3
ENGR 205 . . . . .	Survey Of Manufacturing . . . . .	3
ENGR 290L . . . . .	Introduction To Composite Materials Manufacturing And Machining . . . . .	1.5
CTCH 200 . . . . .	Workplace Safety- OSHA10 . . . . .	0.5
<b>Total Credits:</b> . . . . .		<b>52 - 55</b>

[Click Here For Program Student Learning Outcomes](#)



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