

THE FIELD OF ENGINEERING

Engineers are the designers of our modern society - designing everything from cars, planes, buildings, roads, cell phones, & TV's! There are numerous disciplines of engineering: civil, mechanical, electrical, biomedical, industrial, aerospace, & many others. Engineer's salaries are among the highest of all college graduates. Santa Ana College offers several degree options: certificate, associate degree, or university transfer.

Engineers ~ \$109k/yr*
Engineering technicians ~ \$67k/yr*
Drafters ~ \$63k/yr*
(www.labormarketinfo.edd.ca.gov, 2020)
(* Estimated median wages for CA are shown.
Actual salary will depend on experience and ability)

SAC PROGRAM HIGHLIGHTS

Multiple Degree/ Certificate Programs
University transfer programs
Engineering Drafting/CAD technology
Engineering Technology (mechatronics & civil)
Day, evening, weekend, online classes
State-of-the-Art Computer Facilities
Fees you can afford
Solidworks, GD&T
AutoCAD, Civil 3D, Revit
Electric circuits, Statics, Dynamics, Materials courses

CONTACT US:

We strongly advise students to meet with SAC Engineering faculty & with their transfer institution to plan their course work.

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714-564-6306

Business Division Office 714-564-6750
(Engineering is part of the Business Division)

WHY SANTA ANA COLLEGE?

- Update training
- Refresh skills
- Switch careers
- Better-paying jobs
- Career exploration
- University transfer



STARTING OUT

Which courses should you take first?

- Engr 100A – Introduction to Engineering
- Engr 051 – Introduction to Drafting & CAD
- Engr 101 – Programming Survey
- Engr 060 – Robotics Survey
- Engr 131 – Introduction to Mechatronics
- Engr 122 – Engineering Drawing
- Engr 183 – AutoCAD I
- Engr 103 – Basic Solidworks

SAC webpage
www.sac.edu

SAC Engineering web
www.sac.edu/engineering



Nondiscrimination Policy

The Rancho Santiago Community College District complies with all Federal and state rules and regulations and does not discriminate on the basis of race, color, national origin, gender or disability. This holds true for all students who are interested in participating in educational programs and/or extracurricular school activities. Harassments of any employee/student with regard to race, color, national original, gender or disability is strictly prohibited. Inquiries regarding compliance and/or grievance procedures may be directed to District's Title IX Officer and/or section 504/ADA Coordinator.

Rancho Santiago Community College district
Title IX Officer and Section 504/ADA
John Didion, Coordinator
2323 N. Broadway
Santa Ana, CA 92706
714-480-7489



Santa Ana College
1530 West 17th Street
Santa Ana, CA 92706-3398

Santa Ana College Engineering Department Programs



ASSOCIATE DEGREE IN ENGINEERING

This degree provides a basic program of engineering courses for students planning to transfer to an engineering university program.

Required core courses for degree*: **Tot: 30-32**

Engineering courses (select at least 9 units)

Engr 100A, Intro to Engineering (Engr)	3
Engr 125 – Engr Graphics	3
Engr 103, Basic Solidworks	3
Engr 183, AutoCAD I	4
Engr 235, Statics	3
Engr 240, Dynamics	3
Engr 250, Electric Circuits	3
Engr 250L, Electric Circuits Lab	1
Engr 280, Strength of Materials	3
Cmpr 120, Intro to Programming	3
Cmpr 121, Programming Concepts	3

Science & Math courses (21 units)

Math 180 (or Math 180H) Calculus I	4
Math 185, Calculus II	4
Physics 217, Engineering Physics I	4
Physics 227 or 237, Engineering Physics II or III	4
Chemistry 219 (or 219H), General Chemistry	5

ENGINEERING CAD DRAFTING

This program teaches engineering CAD (computer-aided design) software in either of 2 areas: Mechanical or Civil (select ONE). Suggested additional courses: for mechanical: Engr 114; for civil: Engr 118, 119

Core courses for degree* or certificate: **Tot: 21-24**

Common courses (9-10 units)

Engr 100A (Intro Engr) OR Engr 100B (Intro Civil)	2-3
Engr 122, Engr Draw'g), OR Engr 125 (Engr Graphics)	3
Engr 183, AutoCAD I	4

Mechanical option (12 units)

Engr 103, Basic Solidworks	3
Engr 104, Intermediate Solidworks	3
Engr 105, Advanced Solidworks	3
Mnfg 106, Solidworks Drawings	3

Civil option (14 units)

Engr 012, Civil/Architectural Blueprint Reading	2
Engr 183, AutoCAD I	4
Engr 184, AutoCAD II	4
Engr 185, Civil 3D	4
Engr 154, REVIT & Civil Drafting	4

ENGINEERING STEM CORE

This program provides a basic program of engineering coursework for students planning to transfer to a university engineering program. Select courses based on major: ME's (235, 240, 103), CE's (235, 240, 183), EE's (250, Cmpr 120, 121)

Required core courses for degree*: **Tot: 30-32**

Science & Math courses (15-16 units)

Math 180, Calculus I	4
Math 185, Calculus II	4
Chem 209 OR Cmpr 120	3-4

Elective courses (select at least 9 units)

Engr 235, Statics	3
Engr 240, Dynamics	3
Engr 250, Electric Circuits	3
Engr 183, AutoCAD I	4
Engr 103, Beginning Solidworks	3
Chem 219, General Chemistry	5
Cmpr 121, Programming Concepts	3

ENGR MECHANICAL DRAFTING & DESIGN

This program prepares students for employment as a MECHANICAL DRAFTER or DESIGNER (or related fields like aerospace, biomedical, or industrial).

Suggested additional courses: Engr 184 (AutoCAD II), 131, 133, trigonometry

Core courses for degree* or certificate: **Tot: 28**

Engr 100A, Intro to Engr	3
Engr 122, Engr Draw'g), OR Engr 125 (Engr Graphics)	3
Engr 183, AutoCAD I	4
Engr 103, Basic Solidworks	3
Engr 104, Intermediate Solidworks	3
Engr 105, Advanced Solidworks	3
Mnfg 106, Solidworks Drawings	3
Engr 114, GD & T	3
Engr 158, Basic Machining Concepts/Operations	3

ENGINEERING CIVIL DRAFTING & DESIGN

This program prepares students for employment as CIVIL DRAFTER or DESIGNER (or architectural).

Suggested additional courses: Engr 118 (surveying), 119 (surveying II)

Core courses for degree* or certificate: **Tot: 23-24**

Engr 100A (Intro Engr) OR Engr 100B (Intro Civil)	2-3
Engr 122 (Engr Draw'g), OR Engr 125 (Engr Graphics)	3
Engr 012, Civil/Architectural Blueprint Reading	2
Engr 183, AutoCAD I	4
Engr 184, AutoCAD II	4
Engr 185, Civil 3D	4
Engr 154, Revit & Civil Drafting	4

ENGINEERING MECHATRONICS

This program prepares students for employment as an ENGINEERING TECHNICIAN in the mechanical, electro-mechanical, aerospace, industrial, or manufacturing areas, but with an emphasis on mechatronics systems.

Suggested additional courses: Cmpr 120 (programming), Cmpr 121, Engr 131, 104 (SW II), Weld 101, Engr 250L

Core courses for degree* or certificate: **Tot: 20**

Engr 100A, Intro to Engr	3
Engr 122, Engr Draw'g), OR Engr 125 (Engr Graphics)	3
Engr 103 (Solidworks)	3
Engr 132, Intro to Robotics	2
Engr 133, Mechatronics I	2
Engr 134, Mechatronics II	3
Engr 158, Basic Machining Concepts/ Operations	3

ENGINEERING CIVIL TECHNOLOGY

This program prepares students for employment as a CIVIL ENGINEERING TECHNICIAN.

Core courses for degree* or certificate: **Tot: 31-32**

Engr 100A (Intro Engr) OR 100B (Intro to Civil)	2-3
Engr 122 (Engr Dwg) OR Engr 125 (Engr Graphics)	3
Engr 183, AutoCAD I	4
Engr 184, AutoCAD II	4
Engr 185, Civil 3D	4
Engr 118, Surveying	3
Engr 119, Advanced Plane Surveying	3
Geology 101, Introduction to Geology	3
Geology 101L, Introduction to Geology Lab	1
Mathematics 160, Trigonometry	4

ENGR MECHANICAL 3D SOLID-MODELING

This program prepares students for employment as a MECHANICAL DRAFTER or DESIGNER with strong emphasis on mechanical solid-modeling CAD software used in mechanical, aerospace, industrial, & biomedical engineering fields.

Core courses for certificate: **Tot: 15**

Engr 122, (Engr Draw'g), OR Engr 125 (Engr Graphics)	3
Engr 103, Basic Solidworks	3
Engr 104, Intermediate Solidworks	3
Engr 105, Advanced Solidworks	3
Mnfg 106, Solidworks Drawings	3

ENGINEERING AUTOCAD 2D BASICS

Core courses for certificate **Tot: 10-11**

Engr 100A, Intro Engr or 100B (Intro Civil)	2-3
Engr 183, AutoCAD I	4
Engr 184, AutoCAD II	4

***The Associate degree also requires general education coursework per Plans A, B, or C of the college catalog. (~ 30 units).**