Engineering - Civil/Mechanical Option A.S. Degree - Local GE

Engineering involves the application of scientific and mathematical principles used in designing and solving practical technical problems. The program provides the foundation in mathematics, physics, and engineering to transfer to a university and complete a B.S. in Engineering. However, meet with a counselor for assistance in meeting the specific transfer university's requirements.

Total Units: 80

First Year

Semester 1

15 Units

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
CHEM 300[1] Z Beginning Chemistry	4	Elementary Algebra or higher	F, S, Su	CRC Area L5
MATH 335[2] Z Trigonometry with College Algebra **or**	5	Intermediate Algebra (or equivalent in high school) or higher		CRC Area L2
MATH 370[2] Z Pre-Calculus Mathematics	5	MATH 335	F, S	CRC Area L2
Local Area 2 – Math Concepts and Quantitative Reasoning Z	3	Recommend meeting with a counselor	F, S, Su	CRC Area L1A
Elective[3]	3		F, S	

Z At least one section of this course is offered with free textbooks and is labeled as zero textbook costs (ZTC). If it is a GE area class or elective, there may be several ZTC offerings to fulfill the GE requirement. Use the Free Textbook filter to find these courses. Learn more on the ZTC page of the college website.

1 or 1 year of high school chemistry with lab.

2 If not completed in high school.

3 Suggestion-CISP 300 Algorithm Design/Problem Solving (3 units); Pre-req: Intermediate Algebra or equivalent; F, S.

Semester 2

16 Units

Career Options/Outlook:

Civil engineers perform engineering duties in planning, designing, and overseeing the construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems. Mechanical engineers plan and design tools, engines, machines, and other mechanically functioning equipment. They oversee the installation, operation, maintenance, and repair of equipment. **Career opportunities require more than an associate degree.**

A sample of reported job titles:

Bridge/Structure Inspection Team Leader, City Engineer, Civil Engineer, Civil Engineering Manager, County Engineer, Design Engineer, Project Engineer, Railroad Design Consultant, Structural Engineer, Traffic Engineer; Application Engineer, Design Engineer, Design Maintenance Engineer, Equipment Engineer, Mechanical Design Engineer, Mechanical Engineer, Process Engineer, Product Engineer, Project Engineer, Test Engineer

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
CHEM 400 Z General Chemistry I	5	Elementary Algebra and CHEM 300, 305, 309 or 1 yr of HS Chem with Lab	F, S, Su	CRC Area L5
MATH 400 Z Calculus I	5	MATH 370	F, S	CRC Area L2
ENGR 312 Z Engineering Graphics	3	Advisory: MATH 110 or 120 or high school geometry	F, S	
Local Area 1B – Oral Communication and Critical Thinking Z	3		F, S, Su	CRC Area L1B

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Year 2

Semester 3

18 Units

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
MATH 401 Z Calculus II	5	MATH 400	F, S	
PHYS 411 Z Mechanics of Solids and Fluids	4	MATH 400	F, S, Su	CRC Area L5
Local Area 3 – Arts and Humanities Z	3		F, S, Su	CRC Area L3
Local Area 7B – Life Development Skills Z	3		F, S, Su	CRC Area L7B
Local Area 4 – Social and Behavioral Sciences Z	3		F, S, Su	CRC Area L4

Projected job openings in California (2020-2030):

2,140-4,320

Projected job opening in California (2020-2030)

12%-17% growth

Median Salary in California with advanced degree (2021):

$101,230/yr-$101,710/yr

Source:

https://www.onetonline.org/link/summary/17-2051.00 & https://www.onetonline.org/link/summary/17-2141.00

Transfer notes:

Please meet with a counselor for specific transfer course evaluation or transferring to a specific 4-year institution.

General Education (GE):

Non-specified GE courses identified by CRC Area, CSU Area or IGETC Area without pre- or co-requisite can be taken at any semester.

Z At least one section of this course is offered with free textbooks and is labeled as zero textbook costs (ZTC). If it is a GE area class or elective, there may be several ZTC offerings to fulfill the GE requirement. Use the Free Textbook filter to find these courses. Learn more on the ZTC page of the college website.

Semester 4

16 Units

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
MATH 402 Z Calculus III	5	MATH 401	F, S	
PHYS 421 Z Electricity and Magnetism	4	MATH 401 & PHYS 411	F, S	
ENGR 420 Z Statics	3	MATH 401 & PHYS 411	F, S	
CISP 360 Z Introduction to Structured Programming	4	CISP 300 or MATH 400	F(P), S(P)	

Z At least one section of this course is offered with free textbooks and is labeled as zero textbook costs (ZTC). If it is a GE area class or elective, there may be several ZTC offerings to fulfill the GE requirement. Use the Free Textbook filter to find these courses. Learn more on the ZTC page of the college website.

Semester 5

15 Units

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
MATH 420 Z Differential Equations	4	MATH 401; Advisory: MATH 402	F, S	
ENGR 400 Z Introduction to Electrical Circuits and Devices	3	PHYS 421	F, S	
ENGR 412 Z Properties of Materials	4	CHEM 400 & PHYS 411	F, S	
Local Area 7A – Physical Education Z	1		F, S, Su	CRC Area L7A

Honors option:

The CRC Honors Program is designed specifically for academically accomplished students and for students with the potential for high achievement. Students who complete 15 units or more in honors-designated courses will earn special recognition as an Honors Scholar, a distinction that may entitle the student to guaranteed transfer and scholarship opportunities at select transfer colleges and universities.

About this program map:

This program map represents one possible pathway to complete the program. Please see a counselor to create an education plan that is customized to meet your needs. This map is not a guarantee of course

availability or financial aid applicability.

Zero Textbook Costs (ZTC):

The Zero Textbook Costs designation and logo are added to any course that provides free access to all required instructional materials. These are typically shared with students through Canvas. Courses that are designated as ZTC may still require students to purchase supplemental materials such as lab coats, a calculator, art supplies, etc. See full definitions and searching tips on the Zero Textbook Costs page of the college website.

COURSE	UNITS	PRE-REQS^	SEMESTERS OFFERED*	GE AREA
Local Area 6 – Ethnic Studies Z	3		F, S, Su	CRC Area L6

Z At least one section of this course is offered with free textbooks and is labeled as zero textbook costs (ZTC). If it is a GE area class or elective, there may be several ZTC offerings to fulfill the GE requirement. Use the Free Textbook filter to find these courses. Learn more on the ZTC page of the college website.

^You must have passed the prerequisite course(s) with a “C” or better; Corequisite must be taken during the same semester; Advisory means it is recommended but not required to enroll in the course.

*(O) = online available (P) = partially online

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