ENGINEERING, ASSOCIATE IN SCIENCE DEGREE

Banner Code: 1_AS_ENGR
Financial Aid Eligible

Engineers apply mathematics and scientific laws to invent and design products and services that are used in everyday life. This Engineering Associate of Science degree is meant to provide students with a strong foundation of engineering and design skills. Theoretical concepts are combined with practical experiences to expose students to real-world engineering problems.

While the core courses are necessary to develop and strengthen the necessary mathematics and physics knowledge an engineer must possess, the elective courses allow for different routes, ranging from additional transferable courses in several engineering majors, to hands-on courses that confer readily employable skills as engineering technicians.

Program Outcomes

1. An ability to apply engineering, science, and mathematics knowledge utilizing critical thinking and problem-solving skills to find solutions to problems of engineering nature and design.
2. Skills to use the state of the art laboratory equipment and simulation tools for engineering and engineering related practices and research.
3. An understanding of the ethical and professional role and responsibility as a member of the society in finding the ways for the betterment of the environment and all humanity and life.

Review Graduation Requirements (https://catalog.cccd.edu/orange-coast/graduation-requirements/associate-degree/) and General Education (https://catalog.cccd.edu/orange-coast/general-education-patterns/).

Course	Title	Units
Required Courses		
ENGR A110	Introduction to Engineering and Design	3
or ENGR A110H	Introduction to Engineering and Design Honors	
ENGR A180	Engineering Graphics	4
ENGR A280	Statics	3
PHYS A185	Calculus Based Physics: Mechanics	4
or PHYS A185H	Calculus-Based Physics: Mechanics Honors	
PHYS A280	Calculus Based Physics: Electricity/ Magnetism	4
MATH A185	Calculus 2	4
or MATH A185H	Calculus 2 Honors	
MATH A280	Calculus 3	4-5
or MATH A280H	Calculus 3 Honors	
MATH A285	Introduction to Linear Algebra and Differential Equations	4-5
or MATH A285H	Introduction to Linear Algebra and Differential Equations Honors	
Restricted Electives		
Choose a minimum of six units from the following:		6-10
AMT A151	General Electricity - FAA	
AMT A152	General Airframe & Powerplant Fuel Systems - FAA	
APT A131	Introduction to Unmanned Aircraft Systems	
ARCH A171	Design Fabrication 1	
ARCH A172	Design Fabrication 2	
ASTR A200	Introduction to Astrophysics	
BIOL A100	Principles of Biology	
BIOL A114	Basic Microbiology	
BIOL A125	Human Biology	
BIOL A281	Biochemistry	
CHEM A180	General Chemistry A	
CHEM A185	General Chemistry B	
CHEM A220	Organic Chemistry A	
CHEM A225	Organic Chemistry B	
CNST A116	Furniture Making and Design	
CNST A155	Intro to Home Automation	
CNST A157	Photovoltaic System Installation	
CS A150	C++ Programming Language 1	
CS A170	Java Programming 1	
CS A200	Data Structures	
CS A220	Software Engineering	
ELEC A111	D.C. Circuits	
ENGR A210	Engineering Materials	
ENGR A220	Programming and Problem-Solving in MATLAB	
ENGR A230	Dynamics	
ENGR A240	Mechanics of Materials	
ENGR A285	Engineering Circuits	
GEOL A105	General Geology	
GEOL A110	Physical Geology	
HVAC A100	Air Conditioning and Refrigeration Principles	
MACH A100	Introduction to Machine Shop	
PHYS A285	Calculus Based Physics: Modern	
WELD A100	Arc & Oxy-acetylene Welding	
Program Major Units		*36-42*
AS General Education Option 1, 2, or 3		*Varies*
Transferable electives as needed to satisfy unit requirement		*Varies*
Total Minimum Degree Units		**60**

Program Sequence

These sequences at Orange Coast College are general course curriculum maps for students to finish all major and general education requirements for two-year completion of degrees, and/or fulfillment of transfer requirements. The course sequence may include course prerequisites and other placement requirements. **Students are advised to meet with an Orange Coast College Counselor to review course selections and sequences to ensure that completion of this program will meet a student's transfer and career goals.**

Course	Title	Units
Year 1		
Semester 1		
ENGR A110 or ENGR A110H	Introduction to Engineering and Design or Introduction to Engineering and Design Honors	3
MATH A180 or MATH A180H	Calculus 1 or Calculus 1 Honors	4
OCC AS GE AREA A1- CHOOSE ONE		3
OCC AS GE AREA C2- CHOOSE ONE		3
	Units	**13**
Semester 2		
ENGR A180	Engineering Graphics	4
MATH A185 or MATH A185H	Calculus 2 or Calculus 2 Honors	4
PHYS A185 or PHYS A185H	Calculus Based Physics: Mechanics or Calculus-Based Physics: Mechanics Honors	4
OCC AS GE AREA C1- CHOOSE ONE		3
	Units	**15**
Summer		
ELECTIVE (DEGREE APPLICABLE)		3
	Units	**3**
Year 2		
Semester 1		
ENGR A280	Statics	3
PHYS A280	Calculus Based Physics: Electricity/ Magnetism	4
MATH A280 or MATH A280H	Calculus 3 or Calculus 3 Honors	4-5
OCC AS GE AREA D- CHOOSE ONE		3
	Units	**14-15**
Semester 2		
MATH A285 or MATH A285H	Introduction to Linear Algebra and Differential Equations or Introduction to Linear Algebra and Differential Equations Honors	4-5
AS RESTRICTED ELECTIVES- CHOOSE ONE (See Requirements)		3-5
AS RESTRICTED ELECTIVES- CHOOSE ONE (See Requirements)		3-5
ELECTIVE (DEGREE APPLICABLE) [1]		5-0
	Units	**15**
	Total Units	**60-61**

[1] VARIES TO REACH MINIMUM 60 DEGREE APPLICABLE UNITS