

Academic Programs at the Daytona Beach Campus

Civil Engineering

Bachelor of Science

The demand for civil engineers educated in the fields of airports, transportation, aviation and aerospace planning, and analysis and design is strong and is expected to grow rapidly in the future. Air and ground transportation systems have substantially expanded in the last few years and are expected to continue to grow at an increasing pace. Space utilization and exploration initiatives are certain to produce further demand for civil engineers with aerospace interests. The Civil Engineering program at Embry-Riddle is uniquely designed to produce graduates with the types of skills and experiences that employers in these lucrative fields find highly desirable.

Graduates of the Civil Engineering program will leave the University with an understanding of the classical areas of civil engineering with emphasis on transportation, structural design, and materials science in aviation and aerospace fields developed through a carefully planned series of courses and laboratories. Small class size and personal attention allow the interjection of practical interdisciplinary design projects throughout the curriculum. The objectives of the program are to produce graduates who:

- Are prepared for the challenges of contemporary civil engineering practice and have the ability to adapt to changes in the civil engineering profession.
- Have developed problem-solving skills, have acquired team-building abilities, and have demonstrated leadership talent.
- Are capable of participating in interdisciplinary projects, of applying their

knowledge of engineering theory to actual problems, and have the skills to perform technical research.

- Have experienced the facilities, equipment, and academic environment necessary to encourage learning.
- Have developed a love of learning and a quest for understanding that will last throughout their professional careers.

As graduates of a program fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, <http://www.abet.org>), students will have the necessary background to further their formal education through graduate school if desired.

Admission Requirements

To enter this program, students should have demonstrated competence in mathematics, physics, and chemistry in high school. They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students who wish to strengthen their background in mathematics and physical science should consult the program chair for guidance before enrolling in the prescribed courses.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to ensure requisite sequencing.

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Degree Requirements

The Bachelor of Science in Civil Engineering program requires successful completion of a minimum of 128 semester hours. The program may be completed in eight regular semesters, assuming appropriate background and full-time enrollment. A minimum cumulative grade point average of 2.00 is needed for all required CIV, AE, EE, EGR, and ES courses, including engineering electives.

FIRST YEAR

See the common Freshman Year outline on page 160.

Total Credits 32

SECOND YEAR

Course	Title	Credits
CIV 140	Engineering Measurements	2
CIV 140L	Engineering Measurements Laboratory	0
CIV 370	Computational Methods in Civil Engineering	3
COM221	Technical Report Writing	3
ES 201	Statics	3
ES 202	Solid Mechanics	3
ES 204	Dynamics	3
MA 243	Calculus and Analytical Geometry III	4
MA 345	Differential Equations	4
PS 105	General Chemistry with Laboratory	4
PS 250	Physics III	3
PS 253	Physics Laboratory for Engineers	1

Total Credits 33

THIRD YEAR

Course	Title	Credits
CIV	Structures Elective	3
CIV	Transportation Elective	3
CIV 304	Structural Analysis	3
CIV 307	Civil Engineering Materials I	4
CIV 307L	Civil Engineering Materials I Laboratory	0
CIV 311	Introduction to Transportation Engineering	3
CIV 316	Hydraulics	3

CIV 320	Soil Mechanics	4
CIV 320L	Soil Mechanics Laboratory	0
CIV 441	Civil Engineering Materials II	4
CIV 441L	Civil Engineering Materials II Laboratory	0
COM219	Speech - OR-	0
EGR 120	Graphical Communications	3
HU/SS	Lower-Level Elective	3
Total Credits		<u>33</u>

FOURTH YEAR

Course	Title	Credits
CIV	Geotechnical Elective	3
CIV	Civil Engineering Electives	6
CIV 460	Senior Design Project	3
CIV 490	The Civil Engineering Profession	1
HU/SS	Upper-Level Elective	3
EE 335	Electrical Engineering I	2
MA 412	Probability and Statistics Technical Electives	3

Total Credits 30

TOTAL DEGREE CREDITS 128

Civil Transportation Electives

CIV 447, 457, 499

Civil Structures Electives

CIV 431, 432, 499

Civil Geotechnical Electives

CIV 421, 422, 424, 499

Technical Electives

All CIV courses are acceptable. Other courses are to be selected from an approved list of courses maintained by the Civil Engineering program coordinator.

Up to 3 credits of Co-operative education may be used as Technical elective credits with department or Co-op advisor approval.