

Engineering Fundamentals Program

All first-year engineering students at Embry-Riddle Aeronautical University (ERAU) Daytona Beach campus, whether they aspire to become Aerospace, Civil, Computer, Electrical, Mechanical, Software, or Systems Engineers, will enroll in a common set of courses. This first-year engineering curriculum provides students with a broad overview of the engineering profession, engages them in hands-on projects, and teaches them the fundamental skills required to be successful throughout the engineering curriculum. Engineering Fundamentals, Mathematics, Computing, and Physical Science courses are integrated into the first-year engineering curriculum to prepare students to work in teams solving real-world problems that span across many engineering and engineering-related disciplines.

The Common First-Year experience provides a number of benefits for students as they advance toward graduation. First, it gives students who are not sure which engineering discipline is right for them, or students who may decide to change majors, time to better understand the different engineering disciplines before engaging in discipline-specific courses. Second, it helps communicate a common language and set of experiences for all students to draw upon as they advance into more complex topics. Finally, it provides a real-world experience working in collaborative, cross-disciplinary environments, learning how to work in teams to complete a common goal.

The ENGR courses in the first-year engineering curriculum are taught by the Department of Engineering Fundamentals whose mission is to deliver impactful, clear, and relevant course content that introduces engineering students to the engineering profession and to utilize the tools, both software and cognitive, crucial for their success. Engineering Fundamentals faculty are trained and committed to teaching excellence and conduct research on engineering education to improve the engineering learning experience.

The Engineering Fundamentals faculty maximize the first-year engineering experience through innovative and empirically-based pedagogy such as: flipped classrooms, hybrid learning, small learning communities, education equity and racial justice, inquiry-based learning, entrepreneurial mindset, model eliciting activities, and challenging team-based projects.

First-Year for Aerospace Engineering

Year One

Requirements	Credits
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
COMM 122 - English Composition	3
ENGR 101 - Introduction to Engineering	2
ENGR 115 - Introduction to Computing for Engineers	3
ENGR 120 - Graphical Communications	3
MATH 241 - Calculus and Analytical Geometry I	4
MATH 242 - Calculus and Analytical Geometry II	4
PHYS 150 - Physics with Calculus I	3
UNIV 101 - College Success	1
Humanities - Lower Level*	3
Social Sciences - Lower Level*	3
Semester Hours	33

Total Credits

Total Hours for All Requirements: 33

* General Education Courses For Engineers

Lower Level Humanities and Social Sciences courses may be chosen from those listed in the General Education Program Courses section (<https://catalog.erau.edu/general-education/>), assuming prerequisite and other listed requirements are met. Courses that students have taken at other institutions may be acceptable if they fall into these categories and are at the level specified in the particular engineering program.