

Software Engineering

Bachelor of Science

The Bachelor of Science degree in Software Engineering is designed to prepare students for an entry-level software engineering position in industry that supports the design and implementation of software systems with the focus on real-time, embedded, and safety-critical applications. Such systems are critical in aviation, space, medicine, and other disciplines that rely on high-quality, dependable software. The objectives of the Software Engineering program are that our graduates:

- Effectively analyze, design, and implement software systems, including embedded, real-time, and safety-critical systems.
- Demonstrate professionalism in their work and grow professionally through continued learning and involvement in professional activities.
- Contribute to society by behaving ethically and responsibly.
- Communicate effectively in oral, written, and newly developing modes and media.
- Successfully assume a variety of roles in teams of diverse membership.

The curriculum is designed to facilitate accomplishment of these objectives by program graduates. It provides a broad education, including fundamental knowledge about computer software and hardware. It also allows graduates to work in a team environment and to recognize the value of collaborative effort. The program lays a foundation for lifelong learning, professional growth, and ethical and responsible behavior in society.

Degree Requirements

The Bachelor of Science degree can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 127 credit hours is required.

Students entering this program should have demonstrated a competence in mathematics and science (preferably physics). They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare for this program by taking MA 140, College Algebra, and MA 142, Trigonometry, prior to taking MA 241. For those students who have not taken physics in high school, it is recommended that PS 103, Technical Physics I, be taken prior to PS 150.

The Software Engineering program is designed to prepare students to work as part of a team on the development of software systems. Software engineering concepts, methods, and techniques are integrated through the curriculum. The curriculum includes courses in general education, math and science, and computing. The latter is divided into computing fundamentals, advanced concepts, applied computing, and software engineering. In addition, a student can acquire a minor or a concentration in a domain area of interest. 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.

Academic Programs at the Daytona Beach Campus

The Software Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering Technology (111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone: (410) 347-7700, <http://www.abet.org>).

FIRST YEAR

See common Freshman Year outline on page 160.

Total Credits	32/33
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SECOND YEAR

Course Title	Credits
AS 120 Principles of Aeronautical Science	3
CEC 220 Digital Circuit Design	3
CEC 222 Digital Circuit Design Laboratory	1
CEC 320 Microprocessor Systems	3
CEC 322 Microprocessor Systems Laboratory	1
COM221 Technical Report Writing	3
CS 222 Introduction to Discrete Structures	3
CS 315 Data Structures and Algorithms	3
PS 250 Physics III for Engineers	3
PS 253 Physics Laboratory for Engineers	1
SE 300 Software Engineering Practices (3 credits lecture, 1 credit lab)	4
CS 225 Computer Science II* (3 credits lecture, 1 credit lab) -OR-	4
COM219 Speech*	3
Total Credits	32/31

* Students in the Software Engineering program are encouraged to take CS 225 during the first year, postponing COM 219 until the second year.

THIRD YEAR

Course Title	Credits
CEC 470 Computer Architecture	3
CS 317 Files and Database Systems	3
CS 332 Organization of Programming Languages	3
CS 420 Operating Systems	3
EC 225 Engineering Economics	3
HU/SS XXX Humanities/Social Sciences Elective	3
MA 3/4XX Math Elective**	3
MA 412 Probability and Statistics	3
SE 310 Analysis & Design of Software Systems	3
SE 320 Software Construction	3
CEC 450 Real Time Systems	3
Total Credits	33

FOURTH YEAR

Course Title	Credits
CEC/CS/SE 3/4XX Elective	3
HU/SS 3/4XX Humanities/Social Sciences Elective (upper division)	3
Open Elective	3
SE 410 Formal Software Modeling	3
SE 420 Software Quality Assurance & Testing	3
SE 450 Software Team Project I (2 credits lecture, 1 credit lab)	3
SE 451 Software Team Project II (1 credit lecture, 2 credits lab)	3
Specified Electives***	9
Total Credits	30
TOTAL DEGREE CREDITS	127

** Math elective to be selected from an approved list of courses maintained by the program coordinator.

*** Courses to be selected, with the approval of the program coordinator, to support acquiring a minor, an identified concentration of domain knowledge (aerospace, aviation, business, communications, human factors, mathematics, etc.), or further depth in software engineering or related disciplines.