
Computer Science

Bachelor of Science

The curriculum for the Bachelor of Science degree in Computer Science includes courses in software development, computer organization, database systems, and software engineering. The program provides a blend of theory and applications that prepare students for a variety of computer science and software engineering positions in scientific and business fields, and lays the foundation for graduate studies in computer science and software engineering. The Computer Science program allows students interested in this area of computing to complement their computing knowledge with one other application area chosen from the different areas of concentration. There are three Areas of Concentration (AOC) to choose from: Applied Mathematics, Business Administration, and Human Factors. The courses in the Area of Concentration allow students to broaden their general education or pursue specific interests. Upper-level courses involve students in team projects that emphasize industrial processes and practices.

Applied Mathematics Area of Concentration

The Computer Science degree with an area of concentration in Applied Mathematics is designed to produce graduates who can operate at the intersection of applied mathematics, computer science, and a science application area. This degree program integrates computing, mathematical modeling,

and visualization to solve complex problems that arise in the physical, natural, and behavioral sciences as well as engineering. Students will have a very strong core of computing, as well as an in-depth exposure to numerical methods, modeling, and visualization. This background is synthesized and applied to computational models that arise in such areas as atmospheric physics, structural dynamics, or computational fluid dynamics in the capstone course.

Because of the strong emphasis on applied mathematics, computing tools, and science applications, this program provides an excellent background for graduates to work in a variety of aviation/aerospace or homeland security industries.

Business Administration Area of Concentration

The Computer Science degree with an Area of Concentration in Business Administration is designed to produce graduates who can operate at the intersection of Business Administration, Management, Computer Science, and Software Engineering. This program provides students with an in-depth knowledge associated with computing and management fundamentals. Graduates of this program have an opportunity to pursue graduate studies in computing or management, or careers in the computing industry, management, or entrepreneurship.

Academic Programs at the Daytona Beach Campus

Human Factors Area of Concentration

Human Factors is an interdisciplinary field that incorporates aspects of psychology, systems engineering, and computer science toward the improvement of the interface between operator and equipment. The intention is to improve designs to make them safer, more reliable, and easier to use for the system operator by understanding the capabilities and limitations of the operator.

The Computer Science degree with Area of Concentration in Human Factors is designed to produce graduates who can operate at the intersection of human factors, computer science, and the quality assurance area. This degree program integrates computing, human factors, and software engineering. Students will have a very strong core of computing, as well as an exposure to in-depth human factors and quality assurance.

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 121 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.

The Computer Science program is

designed to prepare students to work as part of a team on the development of software systems. Software engineering concepts are integrated through the curriculum. The curriculum includes courses in general education, math science, and computing. The latter is divided into computing fundamentals, advanced concepts, applied computing, and software engineering. In addition, a student is required to select an area of 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.

COMPUTER SCIENCE CORE

Course	Title	Credits
CEC 220	Digital Circuit Design	3
COM122	English Composition & Literature	3
COM219	Speech	3
COM221	Technical Report Writing	3
CS 222	Introduction to Discrete Structures	3
CS 225	Computer Science II	4
CS 315	Data Structures and Analysis of Algorithms.	3
CS 332	Organization of Programming Languages	3
CS 420	Operating Systems	3
EGR 101	Introduction to Engineering	2
EGR 115	Introduction to Computing for Engineers	3
HU 14X	Humanities	3
HU/SS	Upper-Level Electives	3
MA 241	Calculus I	4
MA 242	Calculus II	4
SE 300	Software Engineering	4
SS	Lower-Level Elective	3
UNIV 101	College Success	1
Total Credits		55

Academic Programs at the Daytona Beach Campus

APPLIED MATHEMATICS

AREA OF CONCENTRATION

Course	Title	Credits
CEC 300	Computing in Aerospace and Aviation...	3
CS 344	C Programming and UNIX.....	3
CS 317	Files and Database Systems	3
CS 375	Algorithms.....	3
ES 312	Energy Transfer Fundamentals.....	3
HU/SS	Upper-Level Humanities.....	6
MA 243	Calculus III.....	4
MA 345	Differential Equations and Matrix Methods.....	4
MA 412	Probability and Statistics.....	3
MA 432	Linear Algebra.....	3
MA 350	Partial Differential Equations.....	3
MA 444	Scientific Visualization.....	3
MA 453	High Performance Scientific Computing.....	3
MA 488	Introduction to Numerical Fluids	3
MA 490	Capstone Project.....	3
PS 150	Physics for Engineers I.....	3
PS 160	Physics for Engineers II.....	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
WX 201	Survey of Meteorology.....	3
	Open Elective	3
Total Credits		66

BUSINESS ADMINISTRATION

AREA OF CONCENTRATION

Course	Title	Credits
BA 201	Principles of Management.....	3
BA 210	Financial Accounting.....	3
BA 220	Marketing.....	3
BA 225	Business Law.....	3
BA 317	Organizational Behavior	3
BA 325	Social Responsibility and Ethics in Management	3
BA 406	Strategic Management of Technical Operations	3
BA 422	Life Cycle Analysis for Systems and Programs in Aviation/Aerospace.....	3
BA 436	Strategic Management.....	3
CEC 300	Computing in Aerospace and Aviation...	3
CS 317	Files and Database Systems	3
CS 455	Artificial Intelligence	3
CS 490	Computer Science Capstone Design	3
EC 225	Engineering Economics	3
MA 222	Business Statistics	3
MA 245	Applied Differential Equations.....	3

MA 320	Decision Mathematics	3
PS	Science I*	3
PS	Science II*	3
PS	Science III* with Laboratory	4
SE 310	Analysis and Design of Software Systems.....	3
	Open Elective	3
Total Credits		67

HUMAN FACTORS AREA OF CONCENTRATION

Course	Title	Credits
CEC 300	Computing in Aerospace and Aviation...	3
CS 490	Computer Science Capstone Design	3
HF 210	Human Factors I: Principles and Fundamentals	3
HF 302	Human Factors II: Analytic Methods and Techniques	4
HF 305	Human Factors III: Test and Evaluation ..	4
HF 310	Human-Computer Interaction	3
HF 400	Human Factors IV: System Design	4
HF/PSY	Human Factors or Psychology Elective ..	3
MA 222	Business Statistics	3
MA 245	Applied Differential Equations.....	3
MA 320	Decision Mathematics	3
PS	Science I*	3
PS	Science II*	3
PS	Science III* with Laboratory	4
PSY 101	Introduction to Psychology.....	3
PSY 312	Research Analysis in Psychology.....	4
PSY 322	Research Design	4
SE 310	Analysis and Design of Software Systems.....	3
SE 320	Software Construction	3
SE 420	Software Quality Assurance	3
Total Credits		66

TOTAL DEGREE CREDITS

121/122

*Students may satisfy the science requirements by choosing one of the course sequences identified below.

- PS 150, PS 160, PS 250/253 -OR- PS 140/141
- PS 103/103L, PS 104/104L, PS 107/107L
- PS 107/107L, PS 111, PS 112
- Other combinations of science topics may be approved by the program coordinator