B.S. in Computer Science

Part of the Electrical Engineering and Computer Science Department of the College of Engineering, the Bachelor of Science in Computer Science blends theory, applications, algorithms and data structures to prepare students for a multitude of commercial or government computer science and software development positions. The program simultaneously lays a foundation for graduate studies in computer science or software programming while placing an emphasis on interacting with other disciplines, just like real-world engineers.

The Computer Science program at Embry#Riddle Aeronautical University's **Daytona Beach Campus** offers a strong technical foundation combined with specialized expertise in areas like cybersecurity, software engineering, artificial intelligence and systems development, all within a STEM-focused environment that emphasizes hands-on projects, industry connections and preparation for careers in aerospace, technology and other high-growth sectors. The Bachelor of Science in Computer Science program is accredited by the Computing Accreditation Commission (https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-computing-programs-2025-2026/) of ABET (http://www.abet.org/) under the General Criteria and Program Criteria for Computer Science and Similarly Named Computing Programs.

Program-Level Student Learning Outcomes

Students will:

- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Communicate effectively in various professional contexts.
- Analyze complex computing problems and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate computing-based solutions to meet specific computing requirements within their program's discipline.
- Function effectively as members or leaders of teams engaged in activities appropriate to their program's discipline.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

Daytona Beach Program Requirements

General Education Requirements	39
Core Requirements	60
Area of Concentration	21
Total Credits	**120**

Program Details

The Bachelor of Science in Computer Science program requires successful completion of a minimum of 120 semester hours. The program may be completed in eight regular semesters, assuming appropriate background and full-time enrollment. Students pursuing this undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all work completed at the University.

General Education Requirements

For a full description of Embry-Riddle General Education guidelines, please see the General Education (https://catalog.erau.edu/general-education/) section of this catalog. These minimum requirements are applicable to all degree programs.

Communication		9
COMM 122	English Composition	
COMM 219	Speech	
COMM 221	Technical Communication	
Humanities - Lower Level		3
Social Sciences - Lower Level		3
Humanities/Social Sciences - Lower or Upper Level		3
Humanities/Social Sciences - Upper Level		3
Computer Science/Information Technology		3
CPSC 223	Scientific Programming in C	
Mathematics		8
MATH 241	Calculus and Analytical Geometry I	
MATH 242	Calculus and Analytical Geometry II	
Physical/Life Sciences (must include a lab)		7
Total Credits		**39**

Core Requirements

CESC 220	Digital Circuit Design	3
CESC 220L	Digital Circuit Design Laboratory	1
CESC 320	Microprocessor Systems	3
CESC 320L	Microprocessor Systems Laboratory	1
CESC 470	Computer Architecture	3
CPSC 222	Introduction to Discrete Structures	3
CPSC 225	Computer Science II	3
CPSC 225L	Computer Science II Laboratory	1
CPSC 303	Cryptography and Network Security	3
CPSC 315	Data Structures and Analysis of Algorithms	3
CPSC 317	Files and Database Systems	3
CPSC 332	Organization of Programming Languages	3
CPSC 344	C Programming and UNIX	3
CPSC 362	Computing Theory	3
CPSC 420	Operating Systems	3
CPSC 432	Information and Computer Security	3
CPSC 462	Computer Networks	3
CPSC 490	Computer Science Capstone Design I	3
CPSC 491	Computer Science Capstone Design II	3
ENGR 101	Introduction to Engineering	2
MATH 412	Probability and Statistics	3
SFTW 300	Software Engineering Practices	3
UNIV 101	College Success	1
Total Credits		**60**

Areas of Concentration

Standard Track

CPSC 455	Artificial Intelligence	3
Specified Electives *		9
Open Electives		9
Total Credits		**21**

* 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 computer science or related disciplines.

Cybersecurity Engineering AOC

CPSC 426	Digital Forensics	3
CPSC 427	System Exploitation and Penetration Testing	3
CPSC 428	Applied Cryptography	3
CYBR 155	Foundations of Information Security	3
CYBR 465	Cybercrime and Cyberlaw	3

Technical Electives **	6
Total Credits	**21**

** CESC/CPSC/ELEC/SFTW/SYSE Upper-Level Elective, with approval from the Program Coordinator.

Suggested Plan of Study

Standard Track

Year One

Requirements	Credits
COMM 122 - English Composition	3
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2
UNIV 101 - College Success	1
CPSC 223 - Scientific Programming in C	3
Social Sciences - Lower Level	3
Semester Hours	**16**

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
CPSC 225 - Computer Science II	3
CPSC 225L - Computer Science II Laboratory	1
CPSC 222 - Introduction to Discrete Structures	3
Physical/Life Sciences	3
Semester Hours	**14**

Total Credits

Total Hours for All Requirements: 30

Year Two

Requirements	Credits
CESC 220 - Digital Circuit Design	3
CESC 220L - Digital Circuit Design Laboratory	1
COMM 219 - Speech	3
SFTW 300 - Software Engineering Practices	3
MATH 412 - Probability and Statistics	3
Humanities - Lower Level (140 Series)	3
Semester Hours	**16**

Requirements	Credits
CESC 320 - Microprocessor Systems	3
CESC 320L - Microprocessor Systems Laboratory	1
COMM 221 - Technical Communication	3
CPSC 344 - C Programming and UNIX	3
Physical/Life Sciences	3
Physical/Life Sciences Lab	1
Semester Hours	**14**

Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
CPSC 315 - Data Structures and Analysis of Algorithms	3
CPSC 332 - Organization of Programming Languages	3
CPSC 420 - Operating Systems	3
Humanities/Social Sciences - Upper Level	3
Open Elective	3
Semester Hours	**15**

Requirements	Credits
CPSC 303 - Cryptography and Network Security	3
CPSC 317 - Files and Database Systems	3
CPSC 362 - Computing Theory	3
CPSC 455 - Artificial Intelligence	3
Open Elective	3
Semester Hours	**15**

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
CESC 470 - Computer Architecture	3
CPSC 462 - Computer Networks	3
CPSC 490 - Computer Science Capstone Design I	3
CPSC 432 - Information and Computer Security	3
Specified Elective	3
Semester Hours	**15**

Requirements	Credits
CPSC 491 - Computer Science Capstone Design II	3
Humanities/Social Sciences - Lower or Upper Level	3
Open Elective	3
Specified Elective	3
Specified Elective	3
Semester Hours	**15**

Total Credits

Total Hours for All Requirements: 30

Cybersecurity Engineering Area of Concentration

Year One

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2

UNIV 101 - College Success	1
CPSC 223 - Scientific Programming in C	3
COMM 122 - English Composition	3
Social Sciences - Lower Level	3
Semester Hours	**16**

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
CPSC 225 - Computer Science II	3
CPSC 225L - Computer Science II Laboratory	1
CPSC 222 - Introduction to Discrete Structures	3
Physical/Life Sciences	3
Semester Hours	**14**

Total Credits

Total Hours for All Requirements: 30

Year Two

Requirements	Credits
CESC 220 - Digital Circuit Design	3
CESC 220L - Digital Circuit Design Laboratory	1
COMM 219 - Speech	3
CYBR 155 - Foundations of Information Security	3
SFTW 300 - Software Engineering Practices	3
Humanities - Lower Level (140 Series)	3
Semester Hours	**16**

Requirements	Credits
CESC 320 - Microprocessor Systems	3
CESC 320L - Microprocessor Systems Laboratory	1
COMM 221 - Technical Communication	3
CPSC 344 - C Programming and UNIX	3
Physical/Life Sciences	3
Physical/Life Sciences Lab	1
Semester Hours	**14**

Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
CPSC 315 - Data Structures and Analysis of Algorithms	3
CPSC 332 - Organization of Programming Languages	3
CPSC 420 - Operating Systems	3
MATH 412 - Probability and Statistics	3
Humanities/Social Sciences - Upper Level	3
Semester Hours	**15**

Requirements	Credits
CPSC 303 - Cryptography and Network Security	3
CPSC 317 - Files and Database Systems	3
CPSC 362 - Computing Theory	3
CPSC 426 - Digital Forensics	3
Technical Elective	3
Semester Hours	**15**

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
CESC 470 - Computer Architecture	3
CPSC 462 - Computer Networks	3
CPSC 490 - Computer Science Capstone Design I	3
CPSC 432 - Information and Computer Security	3
CYBR 465 - Cybercrime and Cyberlaw	3
Semester Hours	**15**

Requirements	Credits
CPSC 491 - Computer Science Capstone Design II	3
CPSC 427 - System Exploitation and Penetration Testing	3
CPSC 428 - Applied Cryptography	3
Humanities/Social Sciences - Upper or Lower Level	3
Technical Elective	3
Semester Hours	**15**

Total Credits

Total Hours for All Requirements: 30