

## Computer Science

Professors Mich Kabay and Huw Read; Associate Professors David Blythe and Jeremy Hansen; Assistant Professor Susan Helsler; Lecturers Matthew Bovee and Kris Rowley.

The program focuses on practical design and development in computational environments, as well as the underlying theoretical foundations that make these environments operate efficiently, reliably, and securely. Our graduates integrate knowledge from other disciplines, such as mathematics and engineering, and enter into organizations with a broad functional and enterprise perspective.

The Bachelor of Science program in Computer Science provides students with a solid foundation for a wide range of career fields and for entry into graduate-degree programs. This intense and challenging program provides extensive preparation in data structures, algorithms, and mathematics, leading to advanced courses in operating systems, parallelism, software engineering, computer networking, and information security. The graduates of this program have the in-depth knowledge of hardware, software, and applications, required to perform complex trade-off analyses at the hardware and software level. The technical studies in this program, combined with thoughtful selection of electives in the humanities and social sciences, prepare the graduate to be a future leader in our progressive information-based society.

Each student has an individually-assigned faculty advisor from their very first day on campus. The faculty advisor assists in the development of an individualized academic program designed to meet the student's career goals. The student and the faculty advisor work together to keep the student's individualized program on track throughout their enrollment at Norwich. Committed to strong ties linking the classroom, the computer labs, and the real world, this program focuses extensively on the application of classroom work to solving real-world computer-design and computer-application problems.

### Goals:

Graduates will be able to:

- Apply their knowledge of computer science to problems encountered in their professional careers or in pursuit of advanced degrees;
- Use evolving technologies, analytical thinking, and design to address contemporary issues;
- Communicate well orally and in writing, interact professionally, and work effectively on multidisciplinary teams to achieve project objectives; and
- Uphold high ethical standards, including concern for the impact of computing on individuals, organizations, and society.

### Outcomes:

Upon graduation, students will:

- Be competent in theoretical and mathematical foundations of computer science;
- Be proficient in at least one programming language and have a basic knowledge of at least one other;
- Understand the hardware and software architecture of computer systems;
- Demonstrate the ability to participate in professional practices related to software engineering;
- Be able to communicate effectively about computer science-related topics; and,
- Demonstrate the ability to be responsible practitioners of computer science and understand the social and ethical implications of computing.

### Careers for this Major:

- Chief Information Officer
- Chief Technical Officer
- Computer Support Specialist
- Information Systems Manager
- Network Administrator
- Software Engineer
- Software Tester
- Systems Administrator

## Major

### B.S. in Computer Science - Curriculum Map 2018-2019 Catalog

Print PDF Curriculum Map ([http://catalog.norwich.edu/residentialprograms/catalog/collegeofprofessionalschools/schoolofbusinessandmanagement/computerscience/cs\\_1532372488424.pdf](http://catalog.norwich.edu/residentialprograms/catalog/collegeofprofessionalschools/schoolofbusinessandmanagement/computerscience/cs_1532372488424.pdf))

Please refer to the course descriptions for any course prerequisites.

Course	Cr.Comp	Course	Cr.Comp.
<b>FRESHMAN</b>			
<b>Fall</b>		<b>Spring</b>	
CS 100 Foundations of Computer Science and Information Assurance	3	CS 140 Programming and Computing	4
CS 111 Personal & Professional Cyber Safety	1	EN 102 Composition and Literature II	3
EN 101 Composition and Literature I	3	MA 121 Calculus I (General Education Math)	4

General Education History ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	3	General Education Arts & Humanities ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	3
General Education Leadership ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	1-3	Free Elective	3
MA 107 Precalculus Mathematics <sup>1</sup>	4		
Fall Semester Total Cr.:	15-17	Spring Semester Total Cr.:	17
<b>SOPHOMORE</b>			
<b>Fall</b>		<b>Spring</b>	
CS 228 Introduction to Data Structures	3	CS 212 Assembly Language & Reverse Engineering	3
EE 215 Fundamentals of Digital Design	4	CS 260 Data Communications and Networks	3
General Education Lab Science ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	4	General Education Lab Science ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	4
MA 122 Calculus II (General Education Math)	4	QM 213 Business and Economic Statistics I	3
Free Elective	3	Free Elective	3
Fall Semester Total Cr.:	18	Spring Semester Total Cr.:	16
<b>JUNIOR</b>			
<b>Fall</b>		<b>Spring</b>	
CS 301 Software Engineering	3	CS 240 Database Management	3
EE 321 Embedded Systems	4	CS 270 Operating Systems & Parallelism	3
MA 306 Discrete Mathematics	3	MA 380 Theory of Computation	3
Technical Elective <sup>2</sup>	3	Technical Elective <sup>2</sup>	3
Free Elective	3	Free Elective	3
Fall Semester Total Cr.:	16	Spring Semester Total Cr.:	15
<b>SENIOR</b>			
<b>Fall</b>		<b>Spring</b>	
CS 420 Computer Science capstone I or 430 Computer Science Undergraduate Thesis I	3	CS 421 Computer Science capstone II or 431 Computer Science Undergraduate Thesis II	3
PH 303 Survey of Ethics (General Education Ethics) or 322 Money, Meaning and Morality	3	General Education Social Science ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	3
General Education Literature ( <a href="http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals">http://catalog.norwich.edu/archives/2018-19/residentialprograms/catalog/generaleducationgoals</a> )	3	Mathematics Elective <sup>3</sup>	3
Technical Elective <sup>2</sup>	3	Technical Elective <sup>2</sup>	3
Free Elective	3	Free Elective	3
Fall Semester Total Cr.:	15	Spring Semester Total Cr.:	15
TOTAL CREDITS FOR THIS MAJOR: 127-129			

- 1 Requires a math placement score of 2. Students scoring below 2 must successfully complete the appropriate necessary prerequisite math courses first. With a math placement score of 3, the MA107 requirement may be waived and the credit hours replaced with a free elective.
- 2 Any non-duplicate course from CS (higher than CS 300), from DF (DF 242 or higher), from EE (EE 200 or higher), or from IA (IA 241 or higher)
- 3 MA 223, MA 224, MA 240, MA 241, MA 309, MA 318, or MA 421

## Minor

### Computer Science Minor - Curriculum Map 2018-2019

All six courses require a grade of C or higher. Please also refer to the course descriptions for any course prerequisites.

CS 140	Programming and Computing	4
CS 228	Introduction to Data Structures	3

EE 215	Fundamentals of Digital Design	4
MA 306	Discrete Mathematics	3
<b>Minor Elective Courses: choose two of the following</b>		<b>6</b>
CS 212	Assembly Language & Reverse Engineering	3
CS 240	Database Management	3
CS 250	Virtual Systems Administration	3
CS 260	Data Communications and Networks	3
CS 270	Operating Systems & Parallelism	3
CS 301	Software Engineering	3
Total Cr.		20