

Bachelor of Science in Computer Engineering

Computer Engineering with a Major in Modeling & Simulation Engineering (BSCE)

Degree Program Guide

The Degree Program Guide is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.

Computer Engineering with a Major in Modeling & Simulation Engineering (BSCE)

Course	Title	Credit Hours
Freshman		
Fall		
ENGN 110	Explore Engineering and Technology	2
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N or CHEM 120	Foundations of Chemistry I Laboratory ** or Foundations of Chemistry I Laboratory for Online Degree Programs	1
MATH 211	Calculus I	4
ENGL 110C	English Composition (grade of C or better required)	3
COMM 101R	Public Speaking	3
Credit Hours		16
Spring		
ECE 111	Information Literacy and Research for Electrical and Computer Engineering	2
CHEM 123N	Foundations of Chemistry II Lecture	3
MATH 212	Calculus II	4
PHYS 231N	University Physics I	4
ENGN 150	Computer Programming for Engineering Problem Solving	4
Credit Hours		17
Sophomore		
Fall		
MATH 307 or MATH 280	Ordinary Differential Equations (280) or Transfer Credit for Ordinary Differential Equations	3
ECE 201	Circuit Analysis I	3
ECE 241	Fundamentals of Computer Engineering	4
PHYS 232N	University Physics II	4

ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research or Writing, Rhetoric, and Research: Special Topics	3
Credit Hours		17
Spring		
ECE 202	Circuit Analysis II	3
ECE 287	Fundamental Electric Circuit Laboratory	2
CS 250	Programming with C++	4
CS 252	Introduction to Unix for Programmers	1
CS 381	Introduction to Discrete Structures	3
Literature Way of Knowing		3
Credit Hours		16
Junior		
Fall		
ECE 302	Linear System Analysis	3
ECE 313	Electronic Circuits	4
ECE 341	Digital System Design	3
ECE 306	Discrete System Modeling and Simulation	3
ECE 304	Probability, Statistics, and Reliability	3
Credit Hours		16
Spring		
ECE 346	Microcontrollers	3
ECE 348	Simulation Software Design	3
ECE 320	Continuous System Modeling and Simulation	3
ENMA 480	Ethics and Philosophy in Engineering Applications	3
Interpreting the Past Way of Knowing		3
Credit Hours		15
Senior		
Fall		
ECE 406	Computer Graphics and Visualization	3
ECE 484W	Computer Engineering Design I (grade of C or better required)	3
ECE 486	Preparatory ECE Senior Design II	2
Technical Elective ***		3
Human Creativity Way of Knowing		3
Upper-Division General Education course		3
Credit Hours		17
Spring		
ECE 487	ECE Senior Design II	2
Technical Elective ***		3
Technical Elective ***		3
Human Behavior Way of Knowing		3
Upper-Division General Education course		3
Credit Hours		14
Total Credit Hours		128

- * Does not include the University's General Education language and culture requirement. Additional hours may be required.
- ** CHEM 120 is for online program students only.
- *** Computer Engineering-Modeling & Simulation Engineering major students need three technical elective courses selected from one of two options: (1) three 400-level ECE technical elective courses; and (2) two 400-level ECE technical elective courses and one 300-level ECE technical elective course or one approved 300- or 400-level CS/MATH/Engineering course.

Electrical Engineering (BSEE) Dual Major/Degree with Modeling & Simulation Engineering Major (BSCE)

Course	Title	Credit Hours
Freshman		
Fall		
ENGN 110	Explore Engineering and Technology	2
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N or CHEM 120	Foundations of Chemistry I Laboratory** or Foundations of Chemistry I Laboratory for Online Degree Programs	1
MATH 211	Calculus I	4
ENGL 110C	English Composition	3
COMM 101R	Public Speaking	3
Credit Hours		16
Spring		
ECE 111	Information Literacy and Research for Electrical and Computer Engineering	2
CHEM 123N	Foundations of Chemistry II Lecture	3
MATH 212	Calculus II	4
ENGN 150	Computer Programming for Engineering Problem Solving	4
PHYS 231N	University Physics I	4
Credit Hours		17
Sophomore		
Fall		
MATH 307 or MATH 280	Ordinary Differential Equations or Transfer Credit for Ordinary Differential Equations	3
ECE 201	Circuit Analysis I	3
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research or Writing, Rhetoric, and Research: Special Topics	3
PHYS 232N	University Physics II	4
CS 381	Introduction to Discrete Structures	3
Human Creativity Way of Knowing		3
Credit Hours		19

Spring		
ECE 202	Circuit Analysis II	3
ECE 287	Fundamental Electric Circuit Laboratory	2
ECE 241	Fundamentals of Computer Engineering	4
CS 250	Programming with C++	4
CS 252	Introduction to Unix for Programmers	1
MATH 312 or MATH 285	Calculus III or Transfer Credit for Calculus III	4
Credit Hours		18
Junior		
Fall		
ECE 302	Linear System Analysis	3
ECE 304	Probability, Statistics, and Reliability	3
ECE 306	Discrete System Modeling and Simulation	3
ECE 313	Electronic Circuits	4
ECE 341	Digital System Design	3
Credit Hours		16
Spring		
ECE 303	Introduction to Electrical Power	3
ECE 320	Continuous System Modeling and Simulation	3
ECE 348	Simulation Software Design	3
ECE 346	Microcontrollers	3
ECE 381	Introduction to Discrete-time Signal Processing	3
Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)		3
Credit Hours		18
Senior		
Fall		
ECE 323	Electromagnetics	3
ECE 332	Microelectronic Materials and Processes	3
ECE 406	Computer Graphics and Visualization	3
ECE 484W	Computer Engineering Design I	3
ECE 485W	Electrical Engineering Design I	3
ECE 486	Preparatory ECE Senior Design II	2
Credit Hours		17
Spring		
ECE 387	Microelectronics Fabrication Laboratory	3
ECE 487	ECE Senior Design II	2
ENMA 480	Ethics and Philosophy in Engineering Applications	3
Technical Elective***		3
Literature Way of Knowing		3

Credit Hours	17
Total Credit Hours	138

- * Does not include the University's General Education language and culture requirement. Additional hours may be required.
- ** CHEM 120 is for online program students only.
- *** Electrical & Computer Engineering students pursuing the double major/degree need their final technical elective course to be a 400-level ECE technical elective course.

The General Education requirements in information literacy and research, impact of technology, and philosophy and ethics are met through the major. The upper-division General Education requirement is met through the completion of a second major/degree.

Electrical & Computer engineering majors must earn a grade of C or better in all 200-level ECE courses and all CS courses prior to taking the next course in the sequence.

Any ECE course registration issues are to be resolved with the ECE Academic Coordinator and Program Manager.

The four-year plan is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.

Students seeking two degrees must complete a minimum of 150 credit hours.

Modeling & Simulation Engineering Major (BSCE) Dual Degree with Computer Science (BSCS)

Course	Title	Credit Hours
Freshman		
Fall		
ENGN 110	Explore Engineering and Technology	2
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N or CHEM 120	Foundations of Chemistry I Laboratory ¹ or Foundations of Chemistry I Laboratory for Online Degree Programs	1
MATH 211	Calculus I	4
ENGL 110C	English Composition (grade of C or better required)	3
Human Creativity Way of Knowing		3
Credit Hours		16
Spring		
ECE 111	Information Literacy and Research for Electrical and Computer Engineering ²	2
CHEM 123N	Foundations of Chemistry II Lecture	3
MATH 212	Calculus II	4
PHYS 231N	University Physics I	4
ENGN 150	Computer Programming for Engineering Problem Solving ³	4
Credit Hours		17

Sophomore

Fall

MATH 307 or MATH 280	Ordinary Differential Equations (280) or Transfer Credit for Ordinary Differential Equations	3
ECE 201	Circuit Analysis I	3
PHYS 232N	University Physics II	4
COMM 101R	Public Speaking	3
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research or Writing, Rhetoric, and Research: Special Topics	3
Credit Hours		16

Spring

ECE 202	Circuit Analysis II	3
ECE 287	Fundamental Electric Circuit Laboratory	2
CS 250	Programming with C++	4
CS 252	Introduction to Unix for Programmers	1
CS 381	Introduction to Discrete Structures	3
Human Behavior Way of Knowing		3
Credit Hours		16

Junior

Fall

ECE 241	Fundamentals of Computer Engineering	4
ECE 302	Linear System Analysis	3
CS 330	Object-Oriented Design and Programming	3
CS 390	Introduction to Theoretical Computer Science	3
CS 315	Computer Science Undergraduate Colloquium	1
Literature Way of Knowing		3
Credit Hours		17

Spring

ECE 313	Electronic Circuits	4
ECE 341	Digital System Design	3
ECE 304	Probability, Statistics, and Reliability ⁴	3
CS 361	Data Structures and Algorithms	3
CS 450 or CS 418	Database Concepts or Web Programming	3
Credit Hours		16

Senior

Fall

MATH 316	Introductory Linear Algebra	3
ECE 306	Discrete System Modeling and Simulation	3
CS 350	Introduction to Software Engineering	3
ENMA 480	Ethics and Philosophy in Engineering Applications ⁵	3

ECE Technical Elective I ⁶		3
Credit Hours		15
Spring		
ECE 320	Continuous System Modeling and Simulation	3
ECE 346	Microcontrollers ⁷	3
ECE 348	Simulation Software Design	3
CS 417	Computational Methods and Software	3
CS 355	Principles of Programming Languages	3
CS Upper Level Elective I		3
Credit Hours		18
Fifth Year		
Fall		
ECE 406	Computer Graphics and Visualization	3
ECE 443	Computer Architecture ⁸	3
ECE 484W	Computer Engineering Design I	3
ECE 486	Preparatory ECE Senior Design II	2
CS 410	Professional Workforce Development I	3
CS Upper Level Elective II		3
Credit Hours		17
Spring		
ECE 487	ECE Senior Design II	2
CS 471	Operating Systems	3
CS 411W	Professional Workforce Development II	3
CS Upper Level Elective III		3
Interpreting the Past Way of Knowing		3
Credit Hours		14
Total Credit Hours		162

- * Does not include the University's General Education language and culture requirement. Additional hours may be required.
- 1 CHEM 120 is for online program students only.
- 2 ECE 111 and other ECE required courses satisfy the Computer Science Information Literacy & Research requirement of CS 121G.
- 3 ENGN 150 satisfies the CS 150 requirement in Computer Science curriculum.
- 4 ECE 304 satisfies the STAT 330 requirement in Computer Science curriculum
- 5 ENMA 480 satisfies the Computer Science Philosophy & Ethics requirement.
- 6 Computer Engineering - Modeling & Simulation Engineering Major students pursuing the dual degree with Computer Science have one remaining ECE 400-level Technical Elective course.
- 7 ECE 346 satisfies the CS 170 requirement in Computer Science curriculum.
- 8 ECE 443 satisfies the CS 270 requirement in Computer Science curriculum.

The General Education requirements in information literacy and research, impact of technology, and philosophy and ethics are met through the major. The upper-division General Education requirement is met through a built-in minor in computer science and through the completion of a second major/degree.

Modeling & Simulation Engineering and Computer Science majors must earn a grade of C or better in all 200-level ECE courses and all CS courses prior to taking the next course in the sequence.

Any ECE course registration issues are to be resolved with the ECE Academic Coordinator and Program Manager.

The five-year plan is a suggested curriculum to complete this degree program in five years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.