

Computer Engineering

Computer Engineering Major

The Computer Engineering program provides a background in three broad areas: computer hardware, software, and hardware-software integration. Fundamental computer topics included in the program are microprocessors, embedded systems, computer architecture, digital systems, data communications and other related computing material. In addition, the program includes core engineering subjects that are common to all engineering disciplines and basic university studies in humanities and social science. The Computer Engineering program at NDSU is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Major Requirements

Major: Computer Engineering

Degree Type: B.S.Cpr.E.

Required Degree Credits to Graduate: 126

General Education Requirements

First Year Experience (F):

UNIV 189	Skills For Academic Success (Students transferring in 24 or more credits do not need to take UNIV 189.)	1
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Communication (C):

ENGL 110	College Composition I	3
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ENGL 120	College Composition II	3
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Select one of the following:		3
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ENGL 320	Business and Professional Writing	
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ENGL 321	Writing in the Technical Professions	
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ENGL 324	Writing in the Sciences	
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ENGL 459	Researching and Writing Grants and Proposal	
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COMM 110	Fundamentals of Public Speaking	3
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Quantitative Reasoning (R):

MATH 165	Calculus I	4
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Science & Technology (S):

CHEM 121	General Chemistry I	3
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CHEM 121L	General Chemistry I Laboratory	1
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or PHYS 251L	University Physics I Laboratory	
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CSCI 161	Computer Science II (This course is approved for computer engineering only)	4
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PHYS 251	University Physics I	4
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Humanities & Fine Arts (A): Select from current general education list		6
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Social & Behavioral Sciences (B): Select from current general education list		6
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Wellness (W): Select from current general education list		2
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Cultural Diversity (D): Select from current general education list		
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Global Perspectives (G): Select from current general education list		
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Total Credits		43
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Major Requirements

General Education Requirements		40
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Computer Engineering Core Requirements		
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ECE 111	Introduction to Electrical and Computer Engineering	3
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ECE 173	Introduction to Computing *	3
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ECE 275	Digital Design *	4
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ECE 320	Electronics I	3
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ECE 341	Random Processes	3
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ECE 343	Signals & Systems	4
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ECE 374	Computer Organization	4
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ECE 376	Embedded Systems	4
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ECE 401	Design I (capstone)	1
ECE 403	Design II (capstone)	2
ECE 405	Design III (capstone)	3
ECE 474	Computer Architecture	3
ECE 475	Advanced Digital Design	4
Math Courses Required		
MATH 129	Basic Linear Algebra *	2
MATH 166	Calculus II *	4
MATH 265	Calculus III (w/ vectors) *	4
MATH 266	Introduction to Differential Equations *	3
CSCI Courses Required		
CSCI 161	Computer Science II	4
CSCI 222	Discrete Mathematics	3
CSCI 413	Principles of Software Engineering	3
CSCI 459	Foundations of Computer Networks	3
CSCI 474	Operating Systems Concepts	3
Other Courses Required		
EE 206	Circuit Analysis I *	4
ENGR 402	Engineering Ethics and Social Responsibility	1
ECE Electives	Select 6 cr. of ECE 400 level electives (excluding 494 and 496); may include CSCI 467	6
Includes the cross listed courses of ECE/IME 427; ECE/IME 429; ECE/PHYS 411; & ECE/PHYS 411L		
Tech Electives: Select 6 credits from the following:		6
CSCI 336	Theoretical Computer Science II	
CSCI 366	Database Systems	
CSCI 372	Comparative Programming Languages	
CSCI xx04	(Any CSCI 400 level didactic course)	
ECE 311	Circuit Analysis II	
ECE 321	Electronics II †	
ECE 351	Applied Electromagnetics	
ECE xx04	(Any ECE 400 level didactic course)	
ECE 494	Individual Study	
ECE 496	Field Experience (max. of 3 cr.)	
ENGR 310	Entrepreneurship for Engineers and Scientists	
IME 440	Engineering Economy	
IME 456	Program and Project Management	
IME 460	Evaluation of Engineering Data	
IME 470	Operations Research I	
PHYS 252	University Physics II	
Total Credits		126

* No grade less than a C accepted in these courses.

Degree Requirements and Notes

- A student must complete at least 60 semester credits of professional level course work in his/her program while in residence and enrolled in the college. Students transferring into the college from programs with professional accreditation are exempt from this residency requirement but are subject to the residency requirement of NDSU.
- Transfer Students – Transfer courses with grades less than 'C' in Biology, Chemistry, Computer Science, Mathematics, Physics, and any type of engineering class will not be accepted as a major requirement.
- In order to graduate, an ECE student must have at least a 2.0 GPA in all required EE and ECE courses taken at NDSU. Elective ECE courses are not included in this GPA requirement.
- All Students – Students are required to attain a grade of 'C' or better in ECE 173 Introduction to Computing, ECE 275 Digital Design, EE 206 Circuit Analysis I, and all required MATH courses.