

MAJOR: ELECTRICAL & COMPUTER ENGINEERING, B.S.

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

The electrical & computer engineering program combines traditional electrical engineering topics with current computer design and analysis topics. The program is concerned with the theory, design, and application of electrical phenomena and digital computers, including electronic circuits, signal analysis, system design, and computer architecture. Electrical and computer engineering program educational objectives: 1. Provide a high quality educational opportunity in electrical and computer engineering for students in the region. 2. Prepare students for a successful career in industry, academia, or government by learning the substance and methods of the electrical and computer engineering discipline, including technical, critical thinking, and communication skills. 3. Provide the opportunity for students to fully participate in the liberal education mission of the University. 4. Foster significant scholarly research for faculty and students. 5. Serve the well-being of the community, state, and region through the multifaceted efforts of UMD faculty and graduates. 6. Develop a foundation for lifelong learning.

TYPICAL PROGRAM OF STUDY			
FIRST YEAR			
FALL SEMESTER		SPRING SEMESTER	
WRIT 1120 College Writing	3 cr	CS 1521 Computer Science II	5 cr
CS 1511 Computer Science I	5 cr	ECE 1315 Digital System Design	4 cr
ECE 1001 Intro to Electrical & Computer Engineering	2 cr	MATH 1297 Calculus II	
MATH 1296 Calculus I [^]		or MATH 1597 Honors Calculus II	5 cr
or MATH 1596 Honors Calculus I	<u>5 cr</u>	PHYS 2011 General Physics I	<u>4 cr</u>
	Total: 15 cr		Total: 18 cr
SECOND YEAR			
ECE 2006 Electrical Circuit Analysis	4 cr	ECE 2111 Linear Systems and Signals	4 cr
ECE 2325 Microcomputer System Design	4 cr	ECE 2212 Electronics I	4 cr
MATH 3280 Differential Equations w/ Linear Algebra	4 cr	CHEM 1511 General Chemistry I	5 cr
PHYS 2012 General Physics II	<u>4 cr</u>	MATH 3298 Calculus III	<u>4 cr</u>
	Total: 16 cr		Total: 17 cr
THIRD YEAR			
CS 2511 Software Analysis and Design	4 cr	CS 5631 Operating Systems	4 cr
ECE 3151 Control Systems	3 cr	ECE 3341 Digital Computer Circuits	4 cr
ECE 3235 Electronics II	4 cr	ECE 3611 Solid-state Semiconductors	3 cr
ECON elective ¹	3 cr	STAT 3611 Probability and Statistics	4 cr
Liberal education courses	<u>3 cr</u>	Liberal education courses	<u>3 cr</u>
	Total: 17 cr		Total: 18 cr
FOURTH YEAR			
WRIT 3130 Advanced Writing: Engineering	3 cr	ECE 4999 Senior Design Project ²	3 cr
ECE 3445 Electromagnetic Fields	3 cr	ECE technical elective ³	3 cr
ECE 4899 Senior Design Project ²	1 cr	ECE technical elective ³	3 cr
ECE technical elective ³	3 cr	ENGR 2015 Statics	3 cr
PHIL 3242 Values & Technology	<u>4 cr</u>	Liberal education ⁴ or minor field courses ⁵	<u>3 cr</u>
	Total: 14 cr		Total: 15 cr

[^]First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

¹ Choose one economics course: ECON 1022 Principles of Economics: Macro **or** ECON 1023 Principles of Economics: Micro.

² ECE 4951 ECE Design Workshop may be taken in place of ECE 4899 **and** 4999.

³ Students are required to complete 9 credits of ECE technical electives at the 4xxx or 5xxx level. Electives must include at least one of the following courses: ECE 4305 or ECE 5315. Electives *may not* include ECE 4899, 4951, 4991, or 4999.

FOR ADDITIONAL INFORMATION:

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ELECTRICAL & COMPUTER ENGINEERING, B.S.

MAJOR COURSE REQUIREMENTS	CREDITS	PREREQUISITES	SEMESTER TO BE COMPLETED	GRADE
FIRST YEAR				
WRIT 1120 College Writing	3			
CS 1511 Computer Science I ¹	5	3.5 years HS math		
CS 1521 Computer Science I	5	CS 1511 or 1581		
ECE 1001 Intro to Electrical & Computer Engineering	2	Pre-engineering, ECE, CHE, or IE major only		
ECE 1315 Digital System Design	4	Pre-engineering, ECE, CHE, or IE major only		
MATH 1296 Calculus I [^] or MATH 1596 Honors Calculus I	5	Math placement or MATH 1250 with 'C-' or better Placement		
MATH 1297 Calculus II or MATH 1597 Honors Calculus II	5	MATH 1290, 1296 or 1596 with 'C-' or better MATH 1596		
PHYS 2011 General Physics I	4	MATH 1296 or 1596		
SECOND YEAR				
CHEM 1511 General Chemistry I	5	1 year HS chemistry; HS algebra		
ECE 2006 Electrical Circuit Analysis	4	Phys 2011, concurrent registration with Math 3280		
ECE 2325 Microcomputer System Design	4	ECE 1315		
ECE 2111 Linear Systems and Signals	4	ECE 2006		
ECE 2212 Electronics I	4	ECE 1315		
MATH 3280 Differential Equations w/ Linear Algebra	4	MATH 1297 or 1597 with a grade of 'C-' or better		
MATH 3298 Calculus III	4	MATH 1297 or 1597 with a grade of 'C-' or better		
PHYS 2012 General Physics II	4	PHYS 2011, MATH 1297 or 1597		
THIRD YEAR				
CS 2511 Software Analysis and Design	4	CS 1521		
CS 5631 Operating Systems	4	CS 2511, 2521		
ECON elective ¹	3	15 credits or departmental approval		
ECE 3151 Control Systems	3	ECE 2111		
ECE 3235 Electronics II	4	ECE 2212		
ECE 3341 Digital Computer Circuits	4	ECE 2325		
ECE 3611 Solid-state Semiconductors	3	PHYS 2012		
STAT 3611 Introduction to Probability & Statistics	4	MATH 1290 or 1296 or 1596		
FOURTH YEAR				
WRIT 3130 Advanced Composition	3	WRIT 1120 and 60 credits		
ECE 3445 Electromagnetic Fields	3	MATH 3280, MATH 3298, PHYS 2012		
ECE 4899 Senior Design Project ²	1	ECE 3341, BSECE candidate		
ECE 4999 Senior Design Project ²	3	ECE 4899, BSECE candidate		
ECE technical elective ³	3			
ECE technical elective ³	3			
ECE technical elective ³	3			
ENGR 2015 Statics	3	MATH 1297 or 1597, PHYS 2011		
PHIL 3242 Values & Technology	4	60 credits		

[^]First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

¹ Choose one economics course: ECON 1022 Principles of Economics: Macro **or** ECON 1023 Principles of Economics: Micro.

² ECE 4951 ECE Design Workshop may be taken in place of ECE 4899 **and** 4999.

³ Students are required to complete 9 credits of ECE technical electives at the 4xxx or 5xxx level. Electives must include at least one of the following courses: ECE 4305 or ECE 5315. Electives *may not* include ECE 4899, 4951, 4991, or 4999.