BSCoE in Computer Engineering

Degree Program Description

The computer engineering degree offers a balanced approach to both hardware and software, as well as other areas of engineering. Focused areas of work in additional hardware or software, communications, discrete and integrated electronics, and robotics are offered by the department.

Major Program Requirements

The computer engineering degree offers a balanced approach to both hardware and software, as well as other areas of engineering. Focused areas of work in additional hardware or software, communications, discrete and integrated electronics, and robotics are offered by the department. (Focus areas are not listed on transcripts or diplomas.)

Students must complete all university requirements (https://catalog.missouri.edu/academicdegreerequirements/universityrequirements/), including general education (https://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/), and Department Level Requirements (https://catalog.missouri.edu/collegeofengineering/computerengineering/#undergraduatetext), in addition to the degree requirements below.

Major Core Requirements		
Constitutional Elective		
Select one of the following:		3
HIST 1100	Survey of American History to 1865	3
HIST 1200	Survey of American History Since 1865	3
HIST 1400	American History	5
HIST 2210	Twentieth Century America	3
HIST 2440	History of Missouri	3
HIST 4000	Age of Jefferson	3
HIST 4220	U.S. Society Between the Wars 1918-1945	3
HIST 4230	Our Times: United States Since 1945	3
POL_SC 1100	American Government	3
POL_SC 2100	State Government	3
Humanities/Fine Arts courses		9
Social Science/Behavioral Science courses		6
Other major core requirement courses:		
MATH 1500	Analytic Geometry and Calculus I	5
MATH 1700	Calculus II	5
MATH 2300	Calculus III	3
MATH 2320	Discrete Mathematical Structures	3
MATH 4100	Differential Equations	3
STAT 4710	Introduction to Mathematical Statistics	3
PHYSCS 2750	University Physics I	5
PHYSCS 2760	University Physics II	5
CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Laboratory	4
ENGLSH 1000	Writing and Rhetoric	3
ENGINR 1200	Statics and Elementary Strength of Materials	3
or ENGINR 2300	Engineering Thermodynamics	
or ISE 2710	Engineering Economic Decision-Making	
ENGINR 1000	Introduction to Engineering *	1
ENGINR 1050	Foundations of Engineering **	2
CMP_SC 1050	Algorithm Design and Programming I	4
CMP_SC 2050	Algorithm Design and Programming II	4
ECE 2100	Circuit Theory I	4
ECE 2210	Introduction to Logic Systems	3
ECE 3280	Computer Organization and Assembly Language	3
ECE 3810	Circuit Theory II	4
ECE 3830	Signals and Linear Systems	3
ECE 3410	Electronic Circuits and Signals I	4
ECE 3220	Software Design in C and C++	3
ECE 4220	Real Time Embedded Computing	3
ECE 4250	VHDL and Programmable Logic Devices	4
ECE 4270	Computer Architecture	4
ECE 3840	Measurement and Instrumentation	3
ECE 4960W	Senior Capstone Design I - Writing Intensive	3
ECE 4980	Senior Capstone Design II (Senior Capstone Design II)	3
Electives		
2000+ ECE or CMP_SC Elective		3
ECE 4000+ Technical Elective		6
Any Elective		2

* ENGINR 1000 waiver: Students with 60 or more credits have completed the ENGINR 1000 requirement.

** ENGINR 1050 waiver: Students with 60 or more credits have completed the ENGINR 1050 requirement

Accelerated BSCoE to MS in Computer Engineering

The accelerated option will allow students to earn a bachelors and masters degree within five years. Eligible students who have completed at least 90 credit hours with a cumulative GPA of 3.0 or higher. The academic requirements of the accelerated MS program will require a total of 30 graduate credit hours, to graduate. Accepted undergraduate students can take up to 15 hours of graduate level courses that will count toward both the undergraduate and the graduate degrees. The shared-credit graduate-level courses should be elective courses. Once the student has completed 120 credit hours, (includes at least 12 credit hours of dual enrollment), the corresponding bachelor's degree will be conferred and they will become graduate students in our MS program to complete the remaining 18 hours of graduate credit. A minimum of 15 credit hours must be from courses at the 8000 level or above and no more than 9 credit hours can be from a combination of research and/or problems courses. The student's graduate course GPA must be 3.0 or greater.

Total credits required for graduation must be at least 144 total credit hours:

- Total undergraduate credit hours: 120
- Total dual enrollment credit hours: 12-15
- Total graduate credit hours: 30

Thesis/Non-Thesis Option

During the program, students will conduct an independent study that will result in a thesis or project report, under the guidance of their graduate advisor. In their last semester in the program, they must defend their thesis or project in front of an examination committee composed of their graduate advisor and at least two other faculty members.

Dual Degree

Electrical Engineering and Computer Engineering

Many students in the EECS department combine the BS in Electrical Engineering with the BS in Computer Engineering in a special 138-credit program. These students receive both the BS EE and BS CoE degrees.

Major Program Requirements

Constitutional Elective		
Select one of the following:		3
HIST 1100	Survey of American History to 1865	3
HIST 1200	Survey of American History Since 1865	3
HIST 1400	American History	5
HIST 2210	Twentieth Century America	3
HIST 2440	History of Missouri	3
HIST 4000	Age of Jefferson	3
HIST 4220	U.S. Society Between the Wars 1918-1945	3
HIST 4230	Our Times: United States Since 1945	3
POL_SC 1100	American Government	3
POL_SC 2100	State Government	3
Humanities/Fine Arts courses		9
Social Science/Behavioral Science courses		3
Select two of the following:		6
ENGINR 1200	Statics and Elementary Strength of Materials	3
ENGINR 2300	Engineering Thermodynamics	3
ISE 2710	Engineering Economic Decision-Making	3
Other major core requirement courses:		
MATH 1500	Analytic Geometry and Calculus I	5
MATH 1700	Calculus II	5
MATH 2300	Calculus III	3
MATH 2320	Discrete Mathematical Structures	3
MATH 4100	Differential Equations	3
STAT 4710	Introduction to Mathematical Statistics	3
PHYSCS 2750	University Physics I	5
PHYSCS 2760	University Physics II	5
CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Laboratory	4
ENGLSH 1000	Writing and Rhetoric	3
ECONOM 1014 or ECONOM 1015	Principles of Microeconomics Principles of Macroeconomics	3
ENGINR 1000	Introduction to Engineering	1
ENGINR 1050	Foundations of Engineering	2
CMP_SC 1050	Algorithm Design and Programming I	4
CMP_SC 2050	Algorithm Design and Programming II	4
ECE 2210	Introduction to Logic Systems	3
ECE 2100	Circuit Theory I	4
ECE 3210	Microprocessor Engineering for Electrical Engineers	4
ECE 3810	Circuit Theory II	4
ECE 3220	Software Design in C and C++	3
ECE 3830	Signals and Linear Systems	3
ECE 3510	Electromagnetic Fields	3
ECE 3410	Electronic Circuits and Signals I	4
ECE 3610	Semiconductors and Devices	3
ECE 4220	Real Time Embedded Computing	3
ECE 4250	VHDL and Programmable Logic Devices	4
ECE 4270	Computer Architecture	4
ECE 3840	Measurement and Instrumentation	3
ECE 4960W	Senior Capstone Design I - Writing Intensive	3
ECE 4980	Senior Capstone Design II	3
Electives		
2000+ ECE or CMP_SC Elective		6
ECE 4000+ Technical Elective		6
ECE 4000-level Senior Lecture/Lab		4
Any Elective		1

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year					
Fall	**CR**		**Spring**	**CR**	
CMP_SC 1050	4	ECE 2210		3	
ENGINR 1000	1	CMP_SC 2050		4	
MATH 1500	5	MATH 1700		5	
ENGLSH 1000	3	ENGINR 1050		2	
CHEM 1400	3	Humanities or Fine Arts Elective		3	
CHEM 1401	1				
	17			**17**	
Second Year					
Fall	**CR**		**Spring**	**CR**	
ECE 2100	4	ECE 3810		4	
ECE 3280	3	MATH 4100		3	
MATH 2300	3	PHYSCS 2760		5	
PHYSCS 2750	5	Humanities or Fine Arts Elective		3	
	15			**15**	
Third Year					
Fall	**CR**		**Spring**	**CR**	
ECE 3220	3	ECE 4250		4	
ECE 3410	4	ENGINR 1200, 2300, or ISE 2710		3	
ECE 3830	3	ECE 4220		3	
STAT 4710	3	Soc/Beh Science Elective		3	
MATH 2320	3	2000 or Higher ECE or CMP_SC Elective/Science 2000 or Higher		3	
	16			**16**	
Fourth Year					
Fall	**CR**		**Spring**	**CR**	
ECE 3840	3	ECE 4980 (Senior Capstone Design II)		3	

ECE 4270	4	ECE 4000+ Technical Elective	3
ECE 4960W	3	Constitutional Elec Soc/Beh Science	3
ECE 4000+ Technical Elective	3	Humanities /Fine Arts Elective	3
Social/Behavioral Science Elective	3	Free Elective	2
	16		**14**

Total Credits: 126

Semester Plan for Double Major

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	**CR**	**Spring**	**CR**
CMP_SC 1050	4	ECE 2210	3
MATH 1500	5	CMP_SC 2050	4
ENGINR 1000	1	Constitution SOC/BEH	3
ENGLSH 1000	3	MATH 1700	5
CHEM 1400	3	ENGINR 1050	2
CHEM 1401	1		
	17		**17**
Second Year			
Fall	**CR**	**Spring**	**CR**
ECE 2100	4	ECE 3810	4
ECE 3210	4	MATH 4100	3
MATH 2300	3	PHYSCS 2760	5
PHYSCS 2750	5	Humanities/Fine Arts Elective	3
	16		**15**
Third Year			
Fall	**CR**	**Spring**	**CR**
ECE 3410	4	ECE 3610	3
ECE 3220	3	ECE 4250	4
ECE 3510	3	MATH 2320	3
ECE 3830	3	2000 or Higher ECE or CMP_SC Elective/Science 2000 or Higher	3
STAT 4710	3	ECE 4000+ Technical Elective	3
	16		**16**
Fourth Year			
Fall	**CR**	**Spring**	**CR**
ECE 4220	3	ECE 3840	3
ECE 4270	4	ECE 4960W	3
ENGINR 1200, 2300, or ISE 2710	3	ENGINR 1200, 2300, or ISE 2710	3
2000 or Higher ECE or CMP_SC Elective/Science 2000 or Higher	3	ECE 4000+ Technical Elective	3
SOC/BEH Elective	3	Humanities/Fine Arts Elective	3
	16		**15**
Fifth Year			
Fall	**CR**		
ECE 4980 (Senior Capstone Design II)	3		
ECE 4000-level Senior Lecture/ Lab	4		
Flexible Elective	1		
Humanities/Fine Arts Elective	3		
ECONOM 1014 (SOC/BEH Elective)	3		
	14		

Total Credits: 142