ELECTRICAL ENGINEERING MAJOR

Major Requirements

Bachelor of Science in Electrical Engineering

128 credits

Natural Science Requirements

Code	Title	Credits
MATH 1141	Calculus I for Chemistry, Engineering, and Physics Majors [1]	4
MATH 1142	Calculus II for Chemistry, Engineering, and Physics Majors [1]	4
MATH 2243	Calculus III for Chemistry, Engineering, and Physics Majors	4
MATH 2251	Ordinary Differential Equations	3
MATH 3351	Probability Theory	3
PHYS 1171 & 1171L	General Physics I and General Physics I Lab [1]	4
PHYS 1172 & 1172L	General Physics II and General Physics II Lab [1]	4
PHYS 3271	Electricity and Magnetism	3
Select one additional elective in Natural Sciences (with lab)		4
Total Credits		**33**

[1] Fulfills *Magis* Core requirement

Major Requirements

For a major in electrical engineering, students complete the following:

Code	Title	Credits
Electrical Engineering Major Requirements		
CPEG 2245	Digital Design I	3
CPEG 2245L	Digital Design I Lab	1
CPSC 1131	Fundamentals of Programming	3
ELEG 2213	Introduction to Electric Circuits	3
ELEG 2213L	Electric Circuits Lab	1
ELEG 3348	Embedded Microcontrollers	3
ELEG 3348L	Embedded Microcontrollers Lab	1
ENGR 1031	Fundamentals of Engineering	3
ENGR 2130	Engineering Graphics I	3
ELEG 2221	Frequency Domain Circuit Analysis	3
ELEG 3231	Introduction to Electronics Circuits and Devices	3
ELEG 3231L	Electronics Circuits Lab	1
ELEG 3301	Signal and Systems I	3
ELEG 4331	Analog Electronics Design	3
ELEG 4331L	Analog Electronics Lab	1
ENGR 2145	Mathematical Analysis	3

Code	Title	Credits
ENGR 4301	Feedback Control Systems	3
Select one elective in Mechanical Engineering		3
ENGR 4961	Senior Design Project I	3
ENGR 4962	Senior Design Project II	3
Select four Electrical and Computer Engineering Major electives [2]		12
Total Credits		**62**

[2] Major Electives are courses that enable students to explore areas of interest and obtain hands-on exposure to additional topics. These courses are taken in consultation with a curriculum adviser. Options may include courses in: Power Generation and Distribution, Power Electronics, Microelectronics, Nanoelectronics, Power Systems, Communications Systems, Computer Networks, Computer Architecture, and Digital Electronic Design II., Biomedical Signal Processing, Biomedical Imaging.

Note: In addition to the undergraduate courses listed, advanced juniors and seniors may take appropriate graduate courses as electives with the permission of the department chair and the instructor.

Computer Engineering Concentration

Students enrolled in the BS in Electrical Engineering program may also complete a concentration in Computer Engineering. The concentration consists of four courses, for a total of 13 or 14 credits. The courses include the following:

Code	Title	Credits
CPEG 3246	Digital Electronics Design II	3
CPEG 3346	Computer Systems Architecture	3
ELEG 3348 & 3348L	Embedded Microcontrollers and Embedded Microcontrollers Lab [3]	4
Select one course from the following:		3-4
CPEG 3331	Biomedical Signal Processing	
CPEG 4320	Computer Networks	
CPEG 4332	Biomedical Imaging	
CPSC 2232 & 2232L	Data Structures and Data Structures Lab	
Total Credits		**13-14**

[3] Required as part of the BS in Electrical Engineering degree.

Magis Core Requirements

Magis Core Relationship to the Electrical Engineering Program

In addition to the engineering specific major requirements, students are required to fulfill the University's *Magis* Core requirements. The following table relates the *Magis* Core requirements to the electrical engineering program

Tier I: Orientation

Code	Title	Credits
English		
ENGL 1001	Introduction to Rhetoric and Composition	3
History		

Select one HIST 1000-level course		3
or CLST 1115 or CLST 1116		
Mathematics		
MATH 1141	Calculus I for Chemistry, Engineering, and Physics Majors	4
Modern or Classical Language		
Select one language course based on placement [1]		3
Philosophy		
PHIL 1101	Introduction to Philosophy	3
Religious Studies		
Select one RLST 1000-level course		3
Modern/Classical Language or Mathematics		
MATH 1142	Calculus II for Chemistry, Engineering, and Physics Majors	4
Total Credits		**23**

[1] If starting a new language, a placement exam is not necessary.

Tier II: Exploration

Code	Title	Credits
Behavioral and Social Sciences		
Select two courses from the following fields:		6
Communication		
Economics		
Politics		
Psychology (except PSYC 1610)		
Sociology and Anthropology (except ANTH 1200 and ANTH 1210)		
History, Philosophy, Religious Studies		
Select two 2000- or 3000-level courses from two different disciplines		6
Literature		
Select one course from the following fields:		3
Classics		
English		
Modern Languages and Literatures		
Natural Sciences		
PHYS 1171 & 1171L	General Physics I and General Physics I Lab	4
PHYS 1172 & 1172L	General Physics II and General Physics II Lab	4
Visual and Performing Arts		
Select one 1000-level course from the following fields in Visual and Performing Arts:		3
Art History and Visual Culture		
Film, Television, and Media Arts		
Music		
Studio Art		
Theatre		
Total Credits		**26**

Plan of Study

A typical, full-time, four-year plan of study appears below. Some variation may be possible. Students should always discuss their individual plan of study with their advisor prior to registering for courses.

Course	Title	Credits
First Year		
Fall		
ENGR 1031	Fundamentals of Engineering	3
MATH 1141	Calculus I for Chemistry, Engineering, and Physics Majors	4
PHYS 1171	General Physics I	3
PHYS 1171L	General Physics I Lab	1
History Orientation Tier [1]		3
Modern/Classical Language Orientation Tier [5]		3
	Credits	**17**
Spring		
CPSC 1131	Fundamentals of Programming	3
ENGR 2130	Engineering Graphics I	3
ENGL 1001	Introduction to Rhetoric and Composition	3
MATH 1142	Calculus II for Chemistry, Engineering, and Physics Majors	4
PHYS 1172	General Physics II	3
PHYS 1172L	General Physics II Lab	1
	Credits	**17**
Second Year		
Fall		
ELEG 2213	Introduction to Electric Circuits	3
ELEG 2213L	Electric Circuits Lab	1
MATH 2243	Calculus III for Chemistry, Engineering, and Physics Majors	4
History or Philosophy or Religious Studies Exploration Tier [2]		3
Natural Science Elective (with lab)		4
	Credits	**15**
Spring		
CPEG 2245	Digital Design I	3
CPEG 2245L	Digital Design I Lab	1
ELEG 2221	Frequency Domain Circuit Analysis	3
ENGR 2145	Mathematical Analysis	3
MATH 2251	Ordinary Differential Equations	3
Behavioral and Social Sciences Exploration Tier [3]		3
	Credits	**16**
Third Year		
Fall		
ELEG 3231	Introduction to Electronics Circuits and Devices	3
ELEG 3231L	Electronics Circuits Lab	1
ELEG 3301	Signal and Systems I	3
ELEG 3348	Embedded Microcontrollers	3
ELEG 3348L	Embedded Microcontrollers Lab	1
MATH 3351	Probability Theory	3

Religious Studies Orientation Tier [1]		3
	Credits	**17**
Spring		
ELEG 4331	Analog Electronics Design	3
ELEG 4331L	Analog Electronics Lab	1
ENGR 4301	Feedback Control Systems	3
PHIL 1101	Introduction to Philosophy	3
Major Elective		3
Behavioral and Social Sciences Exploration Tier [3]		3
	Credits	**16**
Fourth Year		
Fall		
PHYS 3271	Electricity and Magnetism	3
ENGR 4961	Senior Design Project I	3
Literature Exploration Tier [7]		3
Mechanical Elective [4]		3
Major Elective [4]		3
	Credits	**15**
Spring		
ENGR 4962	Senior Design Project II	3
Major Elective [4]		3
Major Elective [4]		3
History or Philosophy or Religious Studies Exploration Tier [2]		3
Visual and Performing Arts Exploration Tier [6]		3
	Credits	**15**
	Total Credits	**128**

[1] Choose an appropriate History or Religious Studies course at the 1000 level.

[2] Choose any appropriate Religious Studies, History, or Philosophy core course.

[3] Core Social Science course may be fulfilled by appropriate courses in Communication, Economics, Psychology, Politics, or Sociology and Anthropology.

[4] Major electives are chosen from the department, but may be chosen with approval of advisor and department chair from among other courses offered in the School of Engineering and Computing.

[5] Choose any language offered by the Department of Modern Languages and Literatures, based on placement exam.

[6] Visual and Performing Art History courses may be chosen from Art History, Music, Film, Television, and Media Arts, Studio Art, or Theatre.

[7] Approved English, Modern Languages and Literatures, or Classics courses.