ELECTRICAL ENGINEERING (COMPUTERS AND MICROELECTRONICS) - BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Overview

The Electrical Engineering Bachelor of Science program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the commission's General Criteria and Program Criteria for Electrical, Computer, Communications, Telecommunication(s), and Similarly Named Engineering Programs. This particular concentration in the B.S. EE program gives students the opportunity to explore more deeply the area of **computers and microelectronics**.

Electrical Engineering Program Educational Objectives

Below are the program educational objectives (PEOs) that describe the expected accomplishments of graduate during their first few years after graduation.

1. Our graduates will obtain relevant, productive employment in the private sector, government and/or pursue an advanced degree.
2. Our graduates will be using their engineering foundation to innovate solutions to the problems of the real world.

Transfer Credit Guidelines for Electrical Engineering Degrees

Credit earned at other institutions are generally accepted; however, the following restrictions apply to transfer credits:

- Engineering credit must be earned at an ABET accredited school.
- Physics coursework must be calculus based.
- If the NMSU required course includes a lab, the transfer credit must include a lab.
- A grade of C- or better, must have been earned for transfer coursework.
- E E Courses numbered 300/3000 or higher, Cornerstone and Capstone courses may not be transferred for credit.
- Transfer credits for courses above 300/3000 level are not accepted.

Requirements (123-125 credits)

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 129 credits with 48 credits in courses numbered 300/3000 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

Bachelor of Science in Electrical Engineering students must earn a grade of C- or better in all engineering, technology, math and science courses (including associated prerequisite courses) required for the degree. If a grade lower than C- is earned in any of these courses, the student is required to retake the course immediately the next semester it is offered. Students who earn a grade less than a C- the first time will be contacted by the department and/or academic advising center and advised about this policy and resources to help in their academic success. If the student fails to achieve a C- or better in any of these courses a second time, then the student must submit a written request to the Associate Dean of Academics in the College of Engineering to enroll in the course a third time. The student should explain the circumstances impacting their grade and the actions planned to improve their performance.

Prefix	Title	Credits
General Education		
Area I: Communications		
English Composition - Level 1		*4*
ENGL 1110G	Composition I	
or ENGL 1110H	Composition I Honors	
or ENGL 1110M	Composition I	
English Composition - Level 2 [1]		*3*
Oral Communication [1]		*3*
Area II: Mathematics		*4*
MATH 1511G	Calculus and Analytic Geometry I [2]	
or MATH 1511H	Calculus and Analytic Geometry I Honors	
Area III: Laboratory Sciences		*8*
CHEM 1215G	General Chemistry I Lecture and Laboratory for STEM Majors	
PHYS 1310G & PHYS 1310L	Calculus -Based Physics I and Calculus -Based Physics I Lab	
Area IV: Social/Behavioral Sciences [1]		*3*
Area V: Humanities [1]		*3*
Area VI: Creative and Fine Arts [1]		*3*
General Education Elective [1]		*4*
MATH 1521G	Calculus and Analytic Geometry II	
or MATH 1521H	Calculus and Analytic Geometry II Honors	
Viewing A Wider World		6
Departmental/College Requirements		
Program Specific Requirements		
Mathematics and Natural Science		*18*
MATH 3160	Introduction to Ordinary Differential Equations	
PHYS 1320G & PHYS 1320L	Calculus -Based Physics II and Calculus -Based Physics II Lab	
ENGR 190	Introduction to Engineering Mathematics	
E E 200	Linear Algebra, Probability and Statistics Applications	
E E 240	Multivariate and Vector Calculus Applications	
STEM		*12*
Choose four STEM electives [3]		
Electrical and Computer Engineering		*43*
ENGR 120	DC Circuit Analysis	
ENGR 130	Digital Logic	
ENGR 140	Introduction to Programming and Embedded Systems	
ENGR 230	AC Circuit Analysis	
E E 300	Cornerstone Design	
E E 317	Semiconductor Devices and Electronics I	
E E 320	Signals and Systems I	
E E 325	Signals and Systems II	
E E 340	Fields and Waves	
E E 362	Introduction to Computer Organization	
ENGR 401	Engineering Capstone I [4]	
ENGR 402	Engineering Capstone II	
E E Concentration Required Courses		*6*
E E 462	Computer Systems Architecture [5]	

or E E 562	Computer Systems Architecture	
E E 480	Introduction to Analog and Digital VLSI [5]	
or E E 510	Introduction to Analog and Digital VLSI	
E E Concentration Electives: Choose two courses from the following (one must be an E E course): [6]		*6-7*
E E 409	Hardware & Software Codesign	
or E E 556	Hardware & Software Codesign	
E E 412	ASIC Design	
or E E 512	ASIC Design	
E E 458	Hardware Security and Trust	
or E E 558	Hardware Security and Trust	
E E 467	ARM SOC Design	
or E E 567	ARM SOC Design	
E E 485	Analog VLSI Design	
or E E 523	Analog VLSI Design	
E E 490	Selected Topics (Applications of Parallel Computing XSEDE Collaborative Course)	
CSCI 3790	Algorithm Design & Implementation	
CSCI 3730	Compilers and Automata Theory	
CSCI 3710	Software Development	
CSCI 3720	Data Structures and Algorithms	
CSCI 4120	Operating Systems I	
CSCI 4205	Computer Security	
CSCI 4140	Database Management Systems I	
Non-Departmental Requirements (in addition to Gen.Ed)		
Programming Elective		
Select one course from the following:		3-4
CSCI 1240	C++ Programming I [7]	
or CSCI 4510	C++ Programming	
CSCI 1210	Computer Programming Fundamentals [7]	
or CSCI 4505	Java Programming	
CSCI 1720	Computer Science I	
CSCI 2210	Object-Oriented Programming	
Second Language: (not required)		
Elective, to bring the total credits to 123		**0**
Total Credits		**129-131**

1 See the General Education (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/) section of the catalog for a full list of courses.

2 MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1511G Calculus and Analytic Geometry I first.

3 STEM Elective: Course at the 300/3000 level or above from E E that is not used to satisfy any other E E program requirement or courses at the 300/3000 level or above from A E, C E, CHME, I E, M E, ASTR, BIOL, CHEM, CSCI, MATH, PHYS and STAT. Excluded courses include VWW courses and those which are substantially equivalent to an E E course. Click to view a list of excluded STEM Electives (https://ece.nmsu.edu/undergrad-study/BSEE-STEM-electives.html).

4 The prequisite for ENGR 401 Engineering Capstone I for BSEE students is E E 300 Cornerstone Design.

5 Students must take both (E E 462 Computer Systems Architecture or E E 562 Computer Systems Architecture) and (E E 480 Introduction to Analog and Digital VLSI or E E 510 Introduction to Analog and Digital VLSI), both of which are currently offered in the Fall semester.

6 Some of these elective courses may have additional prerequisites.

7 Only one of the 100/1000-level or the 400/4000-level course may be taken to satisfy degree requirements. Students may not take the 100/1000-level of a course to satisfy the programming elective requirement and the 400/4000-level of the same course to satisfy other degree requirements.