



College of Engineering  
The Klipsch School of  
Electrical and Computer Engineering

## BSEE REQUIREMENTS 2012-2013

This document presents a summary of the requirements for earning a Bachelor of Science degree in Electrical Engineering (BSEE) from New Mexico State University (NMSU). It is intended as a guide and is in no way meant to replace or amend the 2012-2013 Undergraduate Catalog.

Catalog Selection: The requirements outlined below are specific to the 2012-2013 catalog and may be different from those of other catalogs. The requirements set forth in the 2012-2013 catalog are in effect from the beginning of the 2012 summer I semester until the end of the 2018 spring semester. Students graduating after their catalog of matriculation has expired may meet the requirements of any catalog in effect at the time of graduation. Note, however, that changing catalogs may render classes already taken inapplicable toward graduation. Always check with an advisor before deciding to change catalogs.

Departmental Responsibilities: The Klipsch School is responsible for:

1. Providing current lists of approved elective courses for each category. The lists of approved electives are subject to change at any time. To ensure proper course selection, when registering be sure to use an up-to-date list, or check with an advisor. Lists of currently acceptable electives are also available at [ece.nmsu.edu](http://ece.nmsu.edu)
2. Assisting students in curriculum planning, selection of electives, and scheduling.
  - a. The ECE department maintains an “Open Door” policy. All faculty members are available for consultation.
  - b. Each semester, before registering for classes, all undergraduate students must be advised. The department office maintains a list of advisor assignments.

Student Responsibilities: *It is the responsibility of each student to ensure that all the requirements for graduation have been met.* In general, each student is responsible for:

1. Following all university regulations, as listed in the 2012-2013 NMSU Catalog. The catalog is the ultimate authority when it comes to regulations, this BSEE REQUIREMENTS handout is merely a summary of the information specific to Electrical Engineering students.
2. Following all college requirements, as listed in the 2012-2013 NMSU catalog.
3. Following all departmental requirements, as listed in the 2012-2013 NMSU catalog. In particular, be aware that elective choices must be made such that:
  - a. The selected course is a **currently** approved elective in the desired category.
  - b. A minimum of 130 credits is completed, of which 45 must be numbered 300-499.

4. Taking courses in the proper sequence. Most courses have co- and/or prerequisites. These are listed in the course descriptions of the 2012-2013 NMSU catalog. A prerequisite **must** have been completed (**with a grade of `C`, or better**) prior to enrolling in the class, while a co-requisite may be taken either at the same time, or prior to, the class. Enrolling in a class without the proper preparation is grounds for administrative removal from the course, potentially impacting on full-time status, financial aid eligibility, and/or graduation plans. A summary of the co- and prerequisites for Electrical Engineering classes is included as Table 5. Co- and prerequisites for a class may change in the future, so check the current catalog, or ask the course instructor, for the latest requirements.

Note also that some prerequisites apply universally and are not listed for individual classes. For example: the university has made ENGL 111 a prerequisite to **all** courses numbered 300-499. The college has made MATH 192 a co-requisite to all engineering courses numbered 300-499. The department has made EE 161 a prerequisite to all EE classes numbered 300-499.

5. Monitoring their official NMSU email account. Each student is issued an email address in the @nmsu.edu domain. This address is used for official communication and students are responsible for all messages sent to that address.

Transfer Credit: Credit earned at other institutions is generally accepted, however:

- Engineering credit must be earned at an ABET accredited school.
- Physics must be calculus-based.
- If the NMSU requirement includes a laboratory, the transfer credit must include a lab.
- A grade of 'C', or better, must have been earned.
- Capstone Design (EE 418 & EE 419) and EE Electives may not be transferred.

## Table 1

### BSEE Degree Requirements 2012-2013

**General Education Requirements** (43 credits)

<b>State of New Mexico General Education Common Core</b> (37 credits).....		Credits
Area I: Written Communication	Two courses <sup>1</sup> .....	7
Oral Communication <sup>1</sup>	One course <sup>1</sup> .....	3
Area II: Mathematics	Calculus I (MATH 191).....	4
Area III: Natural Science	General Chemistry I <sup>2</sup> (CHEM 111).....	4
	Engineering Physics I <sup>2</sup> (PHYS 215).....	4
Area IV: Social & Behavioral Sciences	Two or Three classes <sup>1,3</sup> .....	6-9
Area V: Humanities & Fine Arts	Two or Three classes <sup>1,3</sup> .....	6-9
<b>NMSU General Education Requirements</b> (6 credits)		
Viewing a Wider World Electives	Two courses <sup>1</sup> .....	6

**Program Specific Requirements** (87 credits)

**Mathematics & Natural Science** (21 credits)

MATH 192	Calculus II.....	4
MATH 291	Calculus III.....	3
MATH 392	Differential Equations.....	3
EE 210	Engineering Analysis I.....	4
EE 310	Engineering Analysis II.....	3
PHYS 216	Engineering Physics II <sup>2</sup> .....	4

**Engineering** (66 credits)

EE 161	Computer Aided Problem Solving <sup>2</sup> .....	4
EE 162	Digital Circuit Design <sup>2</sup> .....	4
EE 260	Embedded Systems <sup>2</sup> .....	4
EE 280	DC and AC Circuits <sup>2</sup> .....	4
EE 312	Signals & Systems I.....	3
EE 314	Signals & Systems II <sup>2</sup> .....	4
EE 351	Applied Electromagnetics <sup>2</sup> .....	4
EE 380	Electronics I <sup>2</sup> .....	4
EE 391	Introduction to Electric Power Engineering <sup>2</sup> .....	4
EE 401	Research Topics.....	1
EE 418	Capstone Design I <sup>4</sup> .....	6
EE 419	Capstone Design II <sup>4</sup> .....	6
EE 461	Systems Engineering & Project Management.....	3
EE Electives	Four courses <sup>4</sup> from Table 2.....	12
Engineering Electives	One course from Table 3.....	3
Technical Electives	Six credits from Table 4.....	6

Total ..... 130

- Notes:
1. See the 2012-2013 Undergraduate Catalog for course lists and details.
  2. Including laboratory.
  3. Students must complete 15 total credits from these two areas, with at least 6 credits from each area.
  4. Transfer credit not accepted.

**Table 2**

**EE Electives**

Select Four Courses (12 Credits Minimum) from Three Areas

<u>Course</u>	<u>Title</u>	<u>Credits</u>
<b>Communications</b>		
EE 496	Communications Systems.....	4
EE 497	Digital Communications Systems I .....	3
<b>Computers</b>		
EE 363	Computer Systems Architecture .....	4
EE 469	Communications Networks.....	3
<b>Controls</b>		
EE 475	Control Systems II.....	3
EE 476	Computer Control Systems.....	3
<b>Digital Signal Processing</b>		
EE 395	Intro to Digital Signal Processing.....	3
EE 442	Real-Time .....	3
EE 446	Digital Image Processing.....	3
<b>Electromagnetics</b>		
EE 452	Introduction to Radar.....	3
EE 453	Microwave Engineering.....	3
EE 454	Antennas and Radiation.....	3

<u>Course</u>	<u>Title</u>	<u>Credits</u>
<b>Micro-Electronics/VLSI</b>		
EE 425	Intro to Semiconductor Devices.....	3
EE 480	Introduction to VLSI.....	4
EE 482	Electronics II.....	3
EE 483	RF Microelectronics.....	3
EE 485	Analog VLSI Design.....	3
EE 486	Digital VLSI Design .....	3
<b>Photonics</b>		
EE 370	Geometrical Optics .....	4
EE 470	Physical Optics .....	3
EE 471	Modern Experimental Optics .....	2
EE 473	Introduction to Optics .....	4
EE 477	Fiber Optics Systems .....	4
EE 478	Optical Sources & Detectors.....	4
EE 479	Lasers and Applications .....	4
<b>Power Systems</b>		
EE 431	Power Systems II .....	3
EE 432	Power Electronics .....	3
EE 493	Power Systems III.....	3
EE 494	Distribution Systems .....	3
<b>Space Systems</b>		
EE 460	Space System Mission Design .....	3

**Table 3****Engineering Electives**  
Select One Course

Course	Title	Credits
C E 233	Mechanics-Statics .....	3
C E 301	Mechanics of Materials.....	3
I E 365	Quality Control .....	3
I E 411	Occupational Safety.....	3
I E 413	Operations Research I.....	3
I E 415	Stochastic Processes Modeling .....	3
I E 423	Operations Research II.....	3
I E 460	Evaluation of Engineering Data .....	3
I E 466	Reliability .....	3
I E 467	Simulation Modeling .....	3
M E 234	Mechanics-Dynamics.....	3
M E 236	Engineering Mechanics I .....	3
M E 237	Engineering Mechanics II .....	3
M E 240	Thermodynamics .....	3

Any A E course numbered 300 – 499

Any CH E course numbered 300 - 490 except: CH E 311, 330, 391, 395V, 398, 430, 451, and 490

Any M E course numbered 300 - 498 except: M E 330, 345, 400, 401, 405, 430, and 449

**Table 4****Technical Electives**  
Select Two Courses

Course	Title	Credits
ASTR 401	Modern Astrophysics .....	3
C S 371	Software Development .....	3
C S 470	Functional Programming .....	3
C S 471	Language Structure I .....	3
C S 472	Logic Programming.....	3
C S 474	Operating Systems I .....	3
C S 475	Artificial Intelligence I.....	3
C S 476	Computer Graphics I .....	3
C S 480	Linux System Administration.....	3
C S 482	Database Management I .....	3
C S 485	User Interface Design .....	3
C S 491	Parallel Programming .....	3
CHEM 313	Organic Chemistry I .....	3
CHEM 314	Organic Chemistry II.....	3
E T 377 <sup>1</sup>	Computer Networking .....	3
MATH 331	Modern Algebra .....	3
MATH 332	Intro to Analysis .....	3
MATH 377	Numerical Methods .....	3
MATH 431	Algebraic Coding .....	3
MATH 471	Complex Variables .....	3
MATH 472	Fourier Series Problems .....	3
MATH 473	Calculus of Variations .....	3
MATH 480	Matrix & Linear Algebra.....	3
MATH 481	Advanced Linear Algebra.....	3
PHYS 315	Modern Physics3 .....	3
STAT 470	Probability .....	3
STAT 480	Statistics .....	3
WERC 381 <sup>1</sup>	Renewable Energy.....	3
WERC 382 <sup>1</sup>	Solar Energy .....	3
WERC 384 <sup>1</sup>	Wind and Water Energy .....	3

Any course from Tables 2or 3

Any EE course numbered 300-499

Any Physics course numbered 400-499

Any Chemistry course numbered 400-499, except CHEM 442

Notes: 1. Only one of these courses allowed.

**Table 5**

## Co- and Pre-requisites

Course	Title	Pre-requisites <sup>1</sup>	Co-requisites
E E 161	Computer Aided Problem Solving		MATH 190
E E 162	Digital Circuit Design	MATH 190 and E E 161	
E E 210	Engineering Analysis I	MATH 192 and E E 161	
E E 260	Embedded Systems	E E 162	
E E 280	DC & AC Circuits	MATH 192 and PHYS 216	
E E 310	Engineering Analysis II	MATH 291 and E E 210	
E E 312	Signals & Systems I	E E 210, E E 280 and MATH 392	
E E 314	Signals & Systems II	E E 312	
E E 351	Applied Electromagnetics	E E 280 and E E 310	
E E 363	Computer Systems Architecture I	E E 260	
E E 370	Geometrical Optics	MATH 191	
E E 380	Electronics I	E E 162, E E 280, and CHEM 111	
E E 391	Introduction to Electric Power Engineering	E E 280	
E E 395	Introduction to Digital Signal Processing	E E 314	
E E 401	Research Topics in Electrical Engineering		E E 418
E E 418	Capstone Design I	E E 260, 314, 351, 380 and 391	E E 461
E E 419	Capstone Design II	E E 418	
E E 425	Introduction to Semiconductor Devices	E E 351 and E E 380	
E E 431	Power Systems II	E E 391	
E E 432	Power Electronics	E E 312, E E 380, and E E 391	E E 314
E E 442	Real-Time Digital Signal Processing	E E 395	
E E 446	Digital Image Processing	E E 395	
E E 452	Introduction to Radar	E E 210 and E E 351	E E 496
E E 453	Microwave Engineering	E E 351	
E E 454	Antennas and Radiation	E E 351	
E E 460	Satellite Design	Junior Standing	
E E 461	Program Management	Junior Standing	
E E 469	Digital Communications Networks	E E 162 and E E 210	
E E 470	Physical Optics	E E 370 and PHYS 216	
E E 471	Modern Experimental Optics		E E 470
E E 473	Introduction to Optics	PHYS 216	
E E 475	Control Systems II	E E 314	
E E 476	Computer Control Systems	E E 314	
E E 477	Fiber Optic Communication Systems	E E 351	
E E 478	Optical Sources, Detectors, and Radiometry	E E 370 and PHYS 217	
E E 479	Lasers and Applications	E E 351	
E E 480	Introduction to VLSI	E E 260 and E E 380	
E E 482	Electronics II	E E 380	
E E 483	RF Microelectronics	E E 351 and E E 480	
E E 485	Analog VLSI Design	E E 312 and E E 480	
E E 486	Digital VLSI Design	E E 260 and E E 480	
E E 490	Selected Topics	Consent of Instructor	
E E 493	Power Systems III	E E 391	
E E 494	Distribution Systems	E E 341	E E 493
E E 496	Introduction to Communications Systems	E E 314	
E E 497	Digital Communications Systems I	E E 314	

Notes: 1. A grade of 'C', or better, is required in all prerequisite classes.

# ECE Core Curriculum (2012-2013)

