



College of Engineering  
The Klipsch School of  
Electrical and Computer Engineering

## BSEE REQUIREMENTS

2020-2021, Rev 1

### Electrical Engineering Program Educational Objectives

The Klipsch School is dedicated to providing a quality, hands-on, educational experience for our students. Below are the program educational objectives (PEOs) that describe the expected accomplishments of graduates 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.

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 2020-2021 Undergraduate Catalog.

Catalog Selection: The requirements outlined below are specific to the 2020-2021 catalog and may be different from those of other catalogs. The requirements set forth in the 2020-2021 catalog are in effect from the beginning of the 2020 summer term until the end of the 2024 spring term. 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 available at [ece.nmsu.edu](http://ece.nmsu.edu)
2. Assisting students in curriculum planning, selection of electives, and scheduling. Each semester, before registering for classes, all undergraduate students must be advised or mentored. The department office maintains a list of mentor 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 2020-2021 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 2020-2021 NMSU catalog. A few of the college requirements are highlighted below:
  - a. **Students must earn a grade of C- or better in all** engineering, technology, math and science **courses required** for the degree and also courses taken to satisfy the general education requirements for Area I-Communications, Area II-Mathematics/Algebra, and Area III-Laboratory Science. If a grade lower than C- is earned in any of these courses, the student is required to retake the course immediately during the next semester it is offered.
  - b. An undergraduate student may attempt an engineering, math, or physical science course no more than three times to earn a passing grade of C- or better. Anytime a student earns less than a C-, a meeting with the appropriate Engineering academic advisor is required to develop a plan for addressing this issue. If the student fails to pass any of these courses **after three attempts**, then the student will not be able to continue as an Engineering major and will be counseled on other degree options.
3. Following all departmental requirements, as listed in the 2020-2021 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 120 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 2020-2021 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

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.

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.
- Cornerstone and Capstone, and EE Electives may not be transferred.

## Table 1

### BSEE Degree Requirements 2020-2021

#### General Education Requirements (41 credits)

| <b>State of New Mexico General Education Common Core</b> (35 credits) |   | Credits |
|---|---|---------|
| Area I: Written Communication   | Two courses <sup>1</sup>                      | 7       |
| Oral Communication  | One course <sup>1</sup>                       | 3       |
| Area II: Mathematics  | Calculus I (MATH 191)                         | 4       |
| Area III: Laboratory Science  | General Chemistry I <sup>2</sup> (CHEM 111)   | 4       |
|   | Engineering Physics I <sup>2</sup> (PHYS 215) | 4       |
| Area IV: Social & Behavioral Sciences                                 | One course <sup>1</sup>                       | 3       |
| Area V: Humanities  | One course <sup>1</sup>                       | 3       |
| Area VI: Creative & Fine Arts   | One course <sup>1</sup>                       | 3       |
| Gen. Education Elective   | Calculus II (MATH 192)                        | 4       |
| <b>NMSU General Education Requirements</b> (6 credits)                |   |         |
| Viewing a Wider World Electives                                       | Two courses <sup>1,3</sup>                    | 6       |

#### Program Specific Requirements (80-82 credits)

|   |  |          |
|---|--|----------|
| <b>Mathematics &amp; Natural Science</b> (14 credits)                       |  |          |
| EE 200 Linear Algebra, Probability and Statistics Applications <sup>2</sup> |  | 4        |
| EE 240 Multivariate and Vector Calculus Applications                        |  | 3        |
| MATH 392 Differential Equations   |  | 3        |
| PHYS 216 and PHYS 216L Engineering Physics II <sup>2</sup>                  |  | 4        |
| <b>Engineering</b> (59-61 credits)  |  |          |
| ENGR 100 Introduction to Engineering  |  | 3        |
| EE 100 Introduction to Electrical and Computer Engineering <sup>2</sup>     |  | 4        |
| EE 112 Embedded Systems <sup>2</sup>  |  | 4        |
| EE 212 Introduction to Computer Architecture and Organization <sup>2</sup>  |  | 4        |
| EE 230 Circuit Analysis and Introduction to Electronics <sup>2</sup>        |  | 4        |
| EE 300 Cornerstone Design <sup>4</sup>                                      |  | 2        |
| EE 317 Semiconductor Devices and Electronics <sup>2,4</sup>                 |  | 4        |
| EE 320 Signals and Systems I <sup>4</sup>                                   |  | 3        |
| EE 325 Signals and Systems II <sup>2,4</sup>                                |  | 4        |
| EE 333 AC Circuit Analysis and Introduction to Power Systems <sup>2,4</sup> |  | 3        |
| EE 340 Fields and Waves <sup>2,4</sup>                                      |  | 4        |
| EE 402 or ENGR 401 Capstone Design I <sup>4</sup>                           |  | 3        |
| EE 404 or ENGR 402 Capstone Design II <sup>4</sup>                          |  | 3        |
| EE Concentration Courses (Four courses from Table 2) <sup>4</sup>           |  | 12 or 13 |
| Two STEM Electives (Two courses from Table 4) <sup>3</sup>                  |  | 6        |
| Object-Oriented Programming (One course from Table 3)                       |  | 3 or 4   |

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|       |           |
|-------|-----------|
| TOTAL | 121 - 123 |
|-------|-----------|

Notes:

1. See the 2020-2021 Undergraduate Catalog for course lists and details.
2. Including laboratory.
3. Three 300+ courses (9 credits) in one specific subject count as a VWW course for that subject. Commonly, E E students take upper division MATH or C S courses as STEM Electives. For that reason, it is advised NOT to take a VWW course from the College of Arts and Sciences, at least until all STEM Electives are chosen.
4. Transfer credit not accepted for all E E courses numbered 300 and above.

## Table 2 Electrical and Computer Engineering Concentrations

Select One Concentration Area or No Concentration

Completed Concentration will be Appear on Transcript and Diploma

The sub-fields of Communications and Signal Processing, Computers and Microelectronics, Control and Power, and Electromagnetics and Photonics are significant areas within the broader field of electrical engineering. This concentration give students the opportunity to specialize by a suitable choice of junior/senior elective courses. The goal is to enhance prospects for employment and/or graduate study.

### Communications and Signal Processing (12 credits)

Required (3 cr each):

- EE 395 Introduction to Digital Signal Processing
- EE 496 Introduction to Communications Systems

Choose two such that at least one has EE prefix (3 cr each):

- |   |  |
|---|--|
| EE 444 Advanced Image Processing              | C S 477 Digital Game Design                    |
| EE 446 Digital Image Processing               | C S 478 Computer Security                      |
| EE 447 Neural Signal Processing               | C S 483 Introduction to Robotics               |
| EE 460 Space System Design, Analysis          | C S 486 Bioinformatics                         |
| EE 469 Communications Networks                | MATH 471 Complex Variables                     |
| EE 497 Digital Communication Systems I        | MATH 472 Fourier Series, Boundary Value Prob   |
| C S 343 Algorithm Design & Implementation     | MATH 473 Calculus of Variations, Optimal Cntrl |
| C S 372 Data Structures and Algorithms (4 cr) | MATH 480 Matrix Theory, Appl. Lin. Algebra     |
| C S 453 Python Programming I                  | MATH 481 Advanced Linear Algebra               |
| C S 475 Artificial Intelligence I             | MATH 491 Introduction to Real Analysis I       |
| C S 476 Computer Graphics I                   | STAT 470 Probability: Theory & Applications    |

### Computers and Microelectronics (12 credits)

Required (3 cr each):

- EE 462 Computer Systems Architecture
- EE 480 Introduction to Analog and Digital VLSI

Choose two such that at least one has EE prefix (3 cr each):

- |  |   |
|--|---|
| EE 412 ASIC Design                           | C S 343 Algorithm Design & Implementation     |
| EE 425 Introduction to Semiconductor Devices | C S 370 Compilers and Automata Theory (4 cr)  |
| EE 432 Power Electronics                     | C S 371 Software Development (4 cr)           |
| EE 443 Mobile Application Development        | C S 372 Data Structures and Algorithms (4 cr) |
|  | C S 453 Python Programming I                  |
|  | C S 474 Operating Systems I                   |
| EE 458 Hardware Security and Trust           | C S 478 Computer Security                     |
| EE 467 ARM SOC Design                        | C S 480 Linux System Administration           |
| EE 469 Communications Networks               | C S 481 Visual Programming                    |
|  | C S 482 Database Management Systems I         |
| EE 482 Electronics II                        | C S 491 Parallel Programming                  |
|  |   |
| EE 485 Analog VLSI Design                    |   |

- CHME 467 Nanoscience and Nanotechnology

Table 2 continues on next page.

## Table 2 (Cont'd)

### Control and Power (12 credits)

Required (4 cr each):

EE 431 & EE 431L Power Systems II

EE 493 Power Systems III

Choose two such that at least one has EE prefix (3 cr each):

EE 432 Power Electronics

CHME 361 Engineering Materials

M E 481 Alternative and Renewable Energy

EE 475 Automatic Control Systems

M E 487 Mechatronics

EE 476 Computer Control Systems

MATH 480 Matrix Theory, App. Linear Algebra

C S 343 Algorithm Design & Implementation

C S 483 Introduction to Robotics

### Electromagnetics and Photonics (14 credits)

Required (7 credits):

EE 454 Antennas and Radiation (4 cr)

EE 473 Introduction to Optics (3 cr)

Choose two such that at least one has EE prefix (3 cr each):

EE 425 Introduction to Semiconductor Devices

CHME 467 Nanoscience and Nanotechnology

EE 449 Smart Antennas

M E 328 Engineering Analysis II

EE 452 Introduction to Radar

ASTR 402 Intro to Astronomical Observations

MATH 471 Complex Variables

EE 453 Microwave Engineering

MATH 472 Fourier Series, Boundary Value Prob.

MATH 480 Matrix Theory, App. Linear Algebra

EE 478 Fundamentals of Photonics (4 cr)

PHYS 315 Modern Physics

PHYS 471 Modern Experimental Optics

EE 479 Lasers and Applications (4 cr)

CHME 311 Engineering Data Analysis

### Space Systems Concentration (12 credits)

Required (3 cr each):

EE 460 Space System Mission Design and Analysis

ASTR 402 Intro to Astronomical Observations

Choose two, such that one must be an EE course: (3 cr each):

EE 395 Introduction to Digital Signal Processing

EE 454 Antennas and Radiation (4 cr)

EE 473 Introduction to Optics

EE 478 Fundamentals of Photonics (4 cr)

EE 496 Intro to Communications Systems

A E 362 Orbital Mechanics

ASTR 401 Topics in Modern Astrophysics

### No Concentration (12 credits total)

One of the required courses from three different concentrations (9 credits)

A third course from Table 4, STEM Elective (3 credits)



### Table 3 Object-Oriented Programming Elective

Select One Course (3 or 4 credits)

|                      |                                   |        |
|----------------------|-----------------------------------|--------|
| C S 151              | C++ Programming                   | (3 cr) |
| C S 152              | Java Programming                  | (3 cr) |
| C S 154              | Python Programming II             | (3 cr) |
| C S 172              | Computer Science I (Java)         | (4 cr) |
| C S 271 <sup>1</sup> | Object-Oriented Programming (C++) | (4 cr) |

Notes:

1. Recommended elective, after completing E E 112, Embedded Systems.

### Table 4 STEM Electives

Select One Course (3 credits)

1. Any additional 300+ course in E E from Table 2
2. Any 300+ in A E, C E, CHME, I E, M E (see Exception List below)
3. Any 300+ in ASTR, BIOL, CHEM, C S, MATH, PHYS, STAT (see Exception List below)

#### STEM Elective Exception List (Courses NOT allowed as STEM Electives)

|                              |   |
|------------------------------|---|
| C E/CHME/E E/E T/I E/M E 330 | Environmental Management Seminar I                                      |
| CHME 430                     | Environmental Management Seminar II                                     |
| C E 355V <sup>1</sup>        | Technology and the Global Environment                                   |
| CHME 395V <sup>1</sup>       | Brewing Science and Society   |
| ASTR 301V <sup>1</sup>       | Revolutionary Ideas in Astronomy  |
| ASTR 305V <sup>1</sup>       | The Search for Life in the Universe                                     |
| ASTR 308V <sup>1</sup>       | Into the Final Frontier   |
| ASTR 330V <sup>1</sup>       | Planetary Exploration   |
| CHEM 310V <sup>1</sup>       | Chemistry and Society   |
| C S 450 <sup>2</sup>         | C Programming   |
| C S 451                      | C++ Programming (similar to C S 151)                                    |
| C S 452                      | Java Programming (similar to C S 152)                                   |
| C S 460-469                  | ... Transition (courses intended for C S graduate students only)        |
| C S 473 <sup>2</sup>         | Architectural Concepts I  |
| C S 484 <sup>2</sup>         | Computer Networks I   |
| C S 494 <sup>2</sup>         | Introduction to Smart Grids   |
| E E 490 <sup>4</sup>         | Special Topics courses that are 1 credit (for Supplemental Instruction) |
| MATH 313                     | Fundamentals of Algebra and Geometry I (for math education majors)      |
| MATH 316                     | Calculus with Hands-on Applications (for math education majors)         |
| MATH 391 <sup>2</sup>        | Vector Analysis   |
| MATH 392 <sup>3</sup>        | Introduction to Ordinary Differential Equations                         |
| MATH 411V <sup>1</sup>       | Great Theorems: The Art of Mathematics                                  |
| PHYS 303V <sup>1</sup>       | Energy and Society in the New Millennium                                |
| PHYS 305V <sup>1</sup>       | The Search for Water in the Solar System                                |
| PHYS 473 <sup>2</sup>        | Introduction to Optics  |
| PHYS 477 <sup>2</sup>        | Fiber Optic Communication   |
| PHYS 478 <sup>2</sup>        | Fundamentals of Photonics   |
| PHYS 479 <sup>2</sup>        | Lasers and Applications   |
| STAT 371 <sup>2</sup>        | Statistics for Engineers and Scientists I                               |

Notes:

1. All Viewing a Wider World Courses NOT allowed
2. Courses with similar/same content found in E E courses NOT allowed
3. BSEE program required course
4. E E 490 Special Topics 3 credit courses are allowed as STEM electives



**Table 5**  
Co- and Pre-requisites, (**Required courses in 2020-2021 catalog in bold**)

| Course  | Title   | Pre-requisites <sup>1</sup>                                      | Pre/Co-requisites |
|---------|---|--|-------------------|
| E E 100 | <b>Intro to Electrical &amp; Computer Engineering</b> |  | <b>MATH 190</b>   |
| E E 112 | <b>Embedded Systems</b>                               |  | <b>E E 100</b>    |
| E E 200 | <b>Linear Algebra, Probability, Statistics Apps</b>   | <b>E E 112 and MATH 192</b>                                      |                   |
| E E 212 | <b>Intro to Computer Archit. &amp; Organization</b>   | <b>E E 100 and MATH 190</b>                                      | <b>E E 112</b>    |
| E E 230 | <b>Circuit Analysis &amp; Intro to Electronics</b>    | <b>E E 100 and MATH 192</b>                                      | <b>PHYS 216</b>   |
| E E 240 | <b>Multivariate and Vector Calculus Apps</b>          | <b>E E 112 and MATH 192</b>                                      |                   |
| E E 300 | <b>Cornerstone Design</b>                             | <b>E E 112, E E 212 and E E 230</b>                              |                   |
| E E 317 | <b>Semicond. Devices &amp; Electronics I</b>          | <b>E E 230 and CHEM 111</b>                                      |                   |
| E E 320 | <b>Signals &amp; Systems I</b>                        | <b>E E 200 and E E 230</b>                                       | <b>MATH 392</b>   |
| E E 325 | <b>Signals &amp; Systems II</b>                       | <b>E E 320 and MATH 392</b>                                      |                   |
| E E 333 | <b>AC Circuit Analysis &amp; Intro to Power Sys.</b>  | <b>E E 230</b>   |                   |
| E E 340 | <b>Fields and Waves</b>                               | <b>E E 230, E E 240, and PHYS 216</b>                            |                   |
| E E 395 | Introduction to Digital Signal Processing             | E E 325  |                   |
| E E 400 | Undergraduate Research                                | Consent of Instructor  |                   |
| E E 402 | <b>Capstone Design I</b>                              | <b>E E 300, E E 317, E E 325, E E 333 &amp; E E 340</b>          |                   |
| E E 404 | <b>Capstone Design II</b>                             | <b>E E 300, E E 317, E E 325, E E 333, E E 340 &amp; E E 402</b> |                   |
| E E 412 | ASIC Design   |  | E E 480           |
| E E 425 | Introduction to Semiconductor Devices                 | E E 317 and E E 340  |                   |
| E E 431 | Power Systems II                                      | E E 333  |                   |
| E E 432 | Power Electronics                                     | E E 317 and E E 333  | E E 325           |
| E E 443 | Mobile Application Development                        | C S 151, C S 152, C S 172, C S 271, C S 451 or C S 452           |                   |
| E E 444 | Advanced Image Processing                             | E E 446  |                   |
| E E 446 | Digital Image Processing                              | E E 395  |                   |
| E E 447 | Neural Signal Processing                              | E E 325  |                   |
| E E 449 | Smart Antennas  | E E 325 and E E 340  |                   |
| E E 452 | Introduction to Radar                                 | E E 325 and E E 340  |                   |
| E E 453 | Microwave Engineering                                 | E E 340  |                   |
| E E 454 | Antennas and Radiation                                | E E 340  |                   |
| E E 458 | Hardware Security and Trust                           | E E 212  |                   |
| E E 460 | Satellite Design                                      | Junior Standing (really PHYS 216)                                |                   |
| E E 461 | Program Management                                    | Junior Standing (recommended PHYS 216)                           |                   |
| E E 462 | Computer Systems Architecture I                       | E E 212  |                   |
| E E 465 | Machine Learning I                                    | E E 200  |                   |
| E E 467 | ARM SOC Design  | E E 212 and E E 317  |                   |
| E E 469 | Digital Communications Networks                       | E E 100, E E 112 and (E E 200 or STAT 371)                       |                   |
| E E 473 | Introduction to Optics                                | PHYS 216 or PHYS 217   |                   |
| E E 475 | Automatic Control Systems                             | E E 325  |                   |
| E E 476 | Computer Control Systems                              | E E 325  |                   |
| E E 478 | Optical Sources, Detectors, and Radiometry            | PHYS 216 or PHYS 217   |                   |
| E E 479 | Lasers and Applications                               | E E 340 or PHYS 461  |                   |
| E E 480 | Introduction to VLSI                                  | E E 212 and E E 317  |                   |
| E E 482 | Electronics II  | E E 317  |                   |
| E E 485 | Analog VLSI Design                                    | E E 320 and E E 480  |                   |
| E E 490 | Selected Topics                                       | Consent of Instructor  |                   |
| E E 493 | Power Systems III                                     | E E 333  | E E 431           |
| E E 496 | Introduction to Communications Systems                | E E 325  |                   |
| E E 497 | Digital Communications Systems I                      | E E 200 and E E 325  |                   |

Notes: 1. A grade of C-, or better, is required in all STEM courses for the major.

**Table 6**

## Equivalent Courses between New and Old Curricula

| New Curriculum (2016+ Catalog) |  | Old Curriculum (Prior to 2016 Catalog) |   |
|--------------------------------|--|--|---|
| Course                         | Title  | Course                                 | Title                                   |
| E E 100                        | Introduction to Electrical & Computer Engin. | E E 162                                | Digital Circuit Design                  |
| E E 112                        | Embedded Systems                             | E E 161                                | Computer Aided Prob. Solving <b>AND</b> |
|                                |  | E E 260                                | Embedded Systems                        |
| E E 200                        | Linear Algebra, Probability, Statistics Apps | E E 210                                | Engineering Analysis I                  |
| E E 212                        | Intro to Computer Archit. & Organization     | E E 363                                | Computer Systems Architecture I         |
| E E 230                        | Circuit Analysis & Intro to Electronics      | E E 280                                | DC & AC Circuits                        |
| E E 240                        | Multivariate and Vector Calculus Apps        | E E 310                                | Engineering Analysis II                 |
| E E 300                        | Cornerstone Design                           |  | No equivalent course                    |
| E E 317                        | Semiconductor Devices and Electronics        | E E 380                                | Electronics I                           |
| E E 320                        | Signals & Systems I                          | E E 312                                | Signals & Systems I                     |
| E E 325                        | Signals & Systems II                         | E E 314                                | Signals & Systems II                    |
| E E 333                        | AC Circuit Analysis & Intro to Power Sys.    | E E 391                                | Intro to Electric Power Engineering     |
| E E 340                        | Fields and Waves                             | E E 351                                | App. Electromagnetics                   |
| E E 402                        | Capstone Design I                            | E E 418                                | Capstone Design I                       |
| E E 404                        | Capstone Design II                           | E E 419                                | Capstone Design II                      |

# 2020-2021 BSEE Roadmap (Sample Degree Plan)

(121 – 123 Credits)

| FRESHMAN-FIRST YEAR                    |    |  |    |
|--|----|--|----|
| FALL SEMESTER                          |    | SPRING SEMESTER                            |    |
| Course #                               | CR | Course #                                   | CR |
| EE 100 Intro Electrical & Comp. Engin. | 4  | CHEM 111 General Chemistry I               | 4  |
| ENG 100 Freshman Experience            | 3  | EE 112 Embedded Systems                    | 4  |
| ENGL 111G Rhetoric & Composition       | 4  | MATH 192 Calculus II                       | 4  |
| MATH 191 Calculus I                    | 4  | <i>General Edu Req (I,IV,V, VI or VWW)</i> | 3  |
|  | 15 |  | 15 |

| SOPHOMORE-SECOND YEAR                      |    |  |    |
|--|----|--|----|
| FALL SEMESTER                              |    | SPRING SEMESTER                            |    |
| Course #                                   | CR | Course #                                   | CR |
| EE 212 Intro Comp Arch & Org               | 4  | MATH 392 Differential Equations            | 3  |
| EE 200 Linear Alg, Prob & Stat Apps        | 4  | EE 230 Circuits & Intro Electronics        | 4  |
| PHYS 215 + 215L Physics I                  | 4  | EE 240 Multivariate & Vector Calc Apps     | 3  |
| <i>General Edu Req (I,IV,V, VI or VWW)</i> | 3  | PHYS 216 + 216L Physics II                 | 4  |
|  |    | <i>General Edu Req (I,IV,V, VI or VWW)</i> | 3  |
|  | 15 |  | 17 |

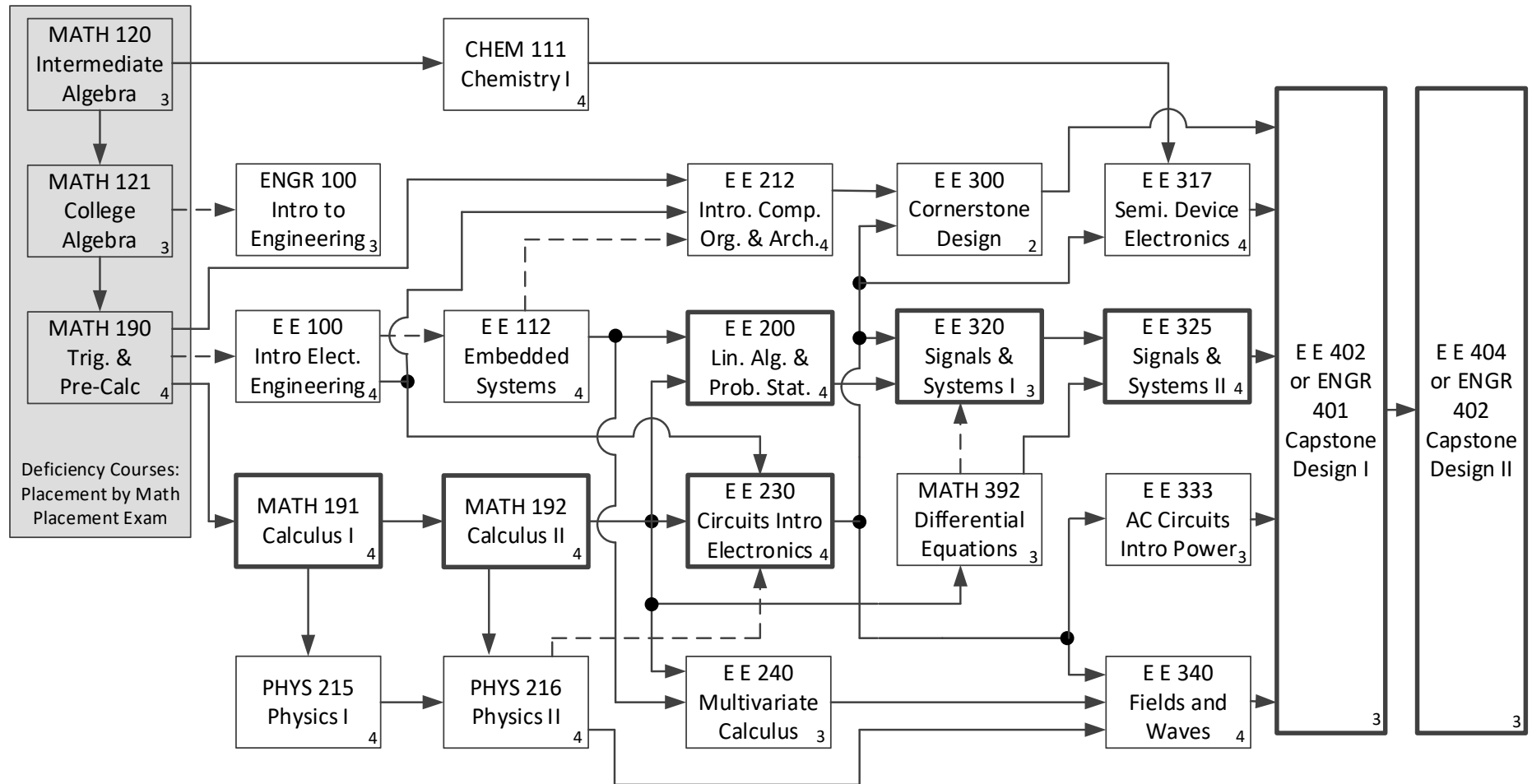
| JUNIOR-THIRD YEAR                      |    |  |    |
|--|----|--|----|
| FALL SEMESTER                          |    | SPRING SEMESTER                        |    |
| Course #                               | CR | Course #                               | CR |
| EE 300 Cornerstone Design              | 2  | EE 317 Semicond. & Electronics         | 4  |
| EE 320 Signals & Systems I             | 3  | EE 325 Signals & Systems II            | 4  |
| EE 340 Fields & Waves                  | 4  | EE Concentration Required              | 3  |
| EE 333 AC Circuits & Intro Power Sys.  | 3  | <i>General Edu Req (I,IV,V or VWW)</i> | 3  |
| <i>General Edu Req (I,IV,V or VWW)</i> | 3  |  |    |
|  | 15 |  | 14 |

| SENIOR-FOURTH YEAR                         |    |  |    |
|--|----|--|----|
| FALL SEMESTER                              |    | SPRING SEMESTER                            |    |
| Course #                                   | CR | Course #                                   | CR |
| EE 402 or ENGR 401 Capstone Design I       | 3  | EE 404 or ENGR 402 Capstone Des. II        | 3  |
| EE Concentration Required                  | 3  | EE Concentration Elective                  | 3  |
| EE Concentration Elective (or 4 CR)        | 3  | STEM Elective                              | 3  |
| STEM Elective                              | 3  | OO Programming Elective (or 4 CR)          | 3  |
| <i>General Edu Req (I,IV,V, VI or VWW)</i> | 3  | <i>General Edu Req (I,IV,V, VI or VWW)</i> | 3  |
| (or 16 CR)                                 | 15 | (or 16 CR)                                 | 15 |

## 2020-2021 BSEE Roadmap (Sample Degree Plan) (121 – 123 Credits)

| Freshman   |  | Sophomore  |  | Junior   |   | Senior   |  |
|--|--|--|--|--|---|--|--|
| 15 credits   | 15 credits   | 15 credits   | 17 credits   | 15 credits   | 14 credits  | 15-16 credits                                      | 15-16 credits                                      |
| 4  | 4  | 4  | 3  | 4  | 4   | 3  | 3  |
| MATH 191<br>Calculus I   | MATH 192<br>Calculus II                                | E E 200<br>Linear Algebra,<br>Prob. & Stat                                       | E E 240<br>Multivariate &<br>Vector Calc.  | E E 340<br>Fields and<br>Waves   | E E 317<br>Semiconductors<br>& Electronics                        | E E 402 or<br>ENGR 401<br>Capstone Des. I          | E E 404 or<br>ENGR 402<br>Capstone Des. II         |
| MATH 190 or<br>MATH PLCMNT   | MATH 191   | E E 112 &<br>MATH 192  | E E 112 &<br>MATH 192  | E E 230, E E 240<br>& MATH 192   | CHEM 111<br>& E E 230   | E E 300, 317, 325<br>& E E 333, 340                | E E 300, 317, 325<br>E E 333, 340, 402             |
| 3  | 4  | 4  | 4  | 3  | 4   | 3  | 3-4  |
| ENGR 100<br>Intro to<br>Engineering<br><br><i>(MATH 121)</i>                                 | CHEM 111<br>General<br>Chemistry I<br><br>MATH 120     | PHYS 215+215L<br>Engineering<br>Physics I<br><br>MATH 191                        | PHYS<br>216+216L<br>Engineering<br>Physics II<br><br>MATH 192 &<br>PHYS 215                | E E 320<br>Signals and<br>Systems I<br><br>E E 200 & E E<br>230<br><i>(MATH 392)</i> | E E 325<br>Signals and<br>Systems II<br><br>E E 320 &<br>MATH 392 | E E<br>Concentration<br>Required<br><br>2 of 2     | Object-Oriented<br>Programming<br>Elective         |
| 4  | 4  | 4  | 4  | 3  | 3   | 3-4  | 3  |
| E E 100<br>Intro Elect.<br>Engineering<br><br><i>(MATH 190)</i>                              | E E 112<br>Embedded<br>Systems<br><br><i>(E E 100)</i> | E E 212<br>Computer<br>Organization<br>E E 100 &<br>MATH 190<br><i>(E E 112)</i> | E E 230<br>Circuits & Intro<br>Electronics<br><br>EE 100, MATH<br>192<br><i>(PHYS 216)</i> | E E 333<br>AC Circuits &<br>Intro Power Sys.<br><br>E E 230                          | E E<br>Concentration<br>Required<br><br>1 of 2                    | E E<br>Concentration<br>Elective<br><br>1 of 2     | E E<br>Concentration<br>Elective<br><br>2 of 2     |
| 4  | 3  | 3  | 3  | 2  | 3   | 3  | 3  |
| ENGL 111<br>Rhetoric &<br>Composition<br><br>ENGLISH<br>PLCMNT                               | COMM 265<br>Princ. Human<br>Communication              | ENGL 218<br>Technical & Sci.<br>Communication<br><br>ENGL 111                    | MATH 392<br>Differential<br>Equations<br><br>MATH 192                                      | E E 300<br>Cornerstone<br>Design<br><br>E E 212 & E E<br>230                         | General<br>Education Area<br>IV, V, or VI<br><br>3 of 3           | STEM<br>Elective<br><br>1 of 2                     | STEM<br>Elective<br><br>1 of 2                     |
| <b>LEGEND</b><br>Pre-requisite example – E E 100<br>Co-requisite example – <i>(MATH 190)</i> |  |  | 3  | 3  |   | 3  | 3  |
|  |  |  | General<br>Education Area<br>IV, V, or VI<br><br>1 of 3                                    | General<br>Education Area<br>IV, V, or VI<br><br>2 of 3                              |   | Gen. Ed.<br>Viewing a Wider<br>World<br><br>1 of 2 | Gen. Ed.<br>Viewing a Wider<br>World<br><br>2 of 2 |

## ECE Core Curriculum Flowchart (2020-2021)



Pre-requisite →

Co-requisite - - →

Longest Path(s)