



## Electrical Engineering Curriculum Notes

1. **ECE Technical Electives:** At least 15 credit hours of ECE technical elective courses are required. Of these, 9 must be EE focus courses chosen from the following list. (New EE focus courses may appear in future semesters.) The remaining credit hours can be any 300, 400, or 500 level ECE courses, excluding ECE 394.

| <b>EE Focus Courses</b>                  |  |
|--|--|
| ECE 324 Renewable Energy                 | ECE 467 Solar Cells and Their Applications |
| ECE 427 Electric Power Systems           | ECE 464 Microelectronics Science           |
| ECE 450/451 Power Electronics/Laboratory | ECE 453 Microwave Engineering              |
| ECE 455/456 Electric Drives/Laboratory   | ECE 484 Communications Engineering         |
| ECE 444 Analog Integrated Circuits       | ECE 465 Into to Sensors                    |
| ECE 445 Digital Integrated Circuits      | ECE 466 Sensor Technology                  |
| ECE 462 Intro to Semiconductor Devices   | ECE 498 Selected Topics (EE focus)         |
|  | ECE 498 Selected Topics (EE focus)         |

2. **Generic Technical Electives:** 6 credit hours of generic technical electives are required. These courses include 300 and 400 level ECE courses, as well as other engineering, science, computer science, mathematics, and business courses that are approved by your advisor or the department Chair. The courses listed below are approved exceptions to the above guidelines.

| <b>Generic Technical Electives Exceptions</b> |   |
|---|---|
| CHB 200 Fundamentals of Process Engineering   | MEE 252 Statics and Strength of Materials         |
| CIE 231 Fundamentals of Environmental Eng.    | MEE 270 Applied Mechanics: Dynamics               |
| COS 221 Data Structures in C++                | INV 180 Create: Innovation Engineering I          |
| EET 276 Programmable Logic Controllers        | INV 282 Communicate: Innovation Engineering II    |
| MEE 150 Applied Mechanics: Statics            | INV 392 Commercialize: Innovation Engineering III |
| MEE 252 Thermodynamics I                      | ECE 198 Selected Topics in ECE                    |
| PHY 236 Introductory Quantum Physics          |   |

3. **General Education Requirements:** The University requires that all students successfully complete at least 18 credit hours of designated general education courses associated with Human Values and Social Context (HV&SC). These 18 credit hours must encompass the five content areas (i) western cultural tradition, (ii) social contexts and institutions, (iii) cultural diversity and international perspectives, (iv) population and the environment, and (v) artistic and creative expression. The required CMJ 103 course meets the social contexts and institutions content area requirement. Each of the five content areas must be covered. Within these general education courses, students must also take one course that satisfies the ECE ethics requirement. Information regarding general education requirements can be found on the Office of Student Records web page. (Note that all other general education requirements beyond HV&SC and Ethics are met by the required ECE curriculum.)

4. With advisor approval, you may petition for an exception to any ECE requirement. Such petitions are generally decided by the entire ECE faculty.



# 2013-2014 Electrical Engineering Technical Electives

Offered Spring  
(prerequisites)

Offered Fall  
(prerequisites)

Offered  
Fall and Spring  
(prerequisites)

**EE Focus Technical Electives: You must take at least *three* of these**

ECE 324  
Renewable  
Energy Engineering  
(ECE209 or ECE210)

ECE 450/451  
Power  
Electronics  
(ECE314)

ECE 484  
Communications  
Engineering  
(ECE314 & ECE 316)

ECE 444  
Analog IC  
Design  
(ECE314 & ECE343)

ECE 462  
Semiconductor  
Devices  
(Chy131,PHY122,MAT258)

ECE 465  
Introduction to  
Sensors  
(junior standing)

ECE 427  
Electric Power  
Systems  
(ECE210 & ECE 214)

ECE 455/456  
Electric  
Drives  
(ECE314)

ECE 453  
Microwave  
Engineering  
(ECE351)

ECE 445  
Digital IC  
Design  
(ECE342)

ECE 464  
Microelectronics  
Engineering  
(Chy131,PHY122,MAT258)

ECE 466  
Sensor Technology  
and Instrumentation  
(ECE465)

ECE 498  
Selected Topics  
with EE focus  
(varies)

ECE 331  
Intro to Unix  
Sys. Admin.  
(ECE177)

ECE 435  
Network  
Engineering  
(COS221)

ECE 471  
Microprocessor  
Applications  
(ECE271)

ECE 477  
Hardware  
Applications in C  
(ECE271)

ECE 417  
Introduction to  
Robotics  
(ECE177 & MAT228)

Other Courses  
with  
Adviser Approval  
(varies)

ECE 473  
Computer  
Arch. & Org.  
(ECE275)

ECE 478  
Industrial  
Computer Control  
(ECE271)

If you wish to concentrate in an area,  
some possibilities are:

**Power and Alternative Energy**  
ECE324, ECE427, ECE450/451,  
ECE455/456

**Communications and Wireless**  
ECE484, ECE453

**Microelectronics and Circuits**  
ECE444, ECE445, ECE462,  
ECE464, PHY236

**Solid State and Sensors**  
ECE453, ECE465, ECE466,  
ECE462, ECE464, PHY236

## Electrical Engineering 2013-2014 (Class of 2017)

| Fall First Year |  |    |
|-----------------|--|----|
| CHY 131         | Chemistry for Engineers                                  | 3  |
| CHY 133         | Chemistry for Engineers Lab                              | 1  |
| CMJ 103         | Fund of Public Communication Human Values/Social Context | 3  |
| ECE 100         | ELE & CEN Eng Seminar                                    | 1  |
| ECE 101         | Intro to ELE & CEN Eng                                   | 3  |
| MAT 126         | Calculus I   | 4  |
|                 |  | 15 |

| Spring First Year |                             |    |
|-------------------|-----------------------------|----|
| ECE 177           | Intro to Prog for Engineers | 4  |
| ENG 101           | College Composition         | 3  |
| MAT 127           | Calculus II                 | 4  |
| PHY 121           | Physics for Engineers I     | 4  |
|                   |                             | 15 |

| Fall Sophomore |   |    |
|----------------|---|----|
| ECE 210        | Electrical Networks I                                       | 4  |
| ECE 275        | Sequential Logic Systems                                    | 3  |
| Elective       | HV & SC (1) Cultural Diversity & International Perspectives | 3  |
| MAT 228        | Calculus III  | 4  |
| PHY 122        | Physics for Engineers II                                    | 4  |
|                |   | 18 |

| Spring Sophomore |  |    |
|------------------|--|----|
| ECE 214          | Electrical Networks Lab                  | 2  |
| ECE 271          | Micro Arch & Applications                | 3  |
| ECE 351          | Fields and Waves                         | 3  |
| ECP 214          | Engineering Writing I                    | 1  |
| MAT 258          | Diff Eqn. & Linear Algebra               | 4  |
| Elective         | HV & SC (2) - Western Cultural Tradition | 3  |
|                  |  | 16 |

| Fall Junior       |                                     |    |
|-------------------|-------------------------------------|----|
| ECE 316   MAT 332 | Random Signal Analysis   Statistics | 3  |
| ECE 342           | Electronics I                       | 4  |
| ECE 314           | Signals and Systems                 | 3  |
| ECP 342           | Engineering Writing II              | 1  |
| Elective          | ECE Technical Elective (1)          | 3  |
|                   |                                     | 14 |

| Spring Junior |                            |    |
|---------------|----------------------------|----|
| ECE 343       | Electronics II             | 4  |
| ECE 401       | Design Project             | 1  |
| ECE 486       | Digital Signal Processing  | 4  |
| Elective      | Electrical Focus (1)       | 3  |
| Elective      | ECE Technical Elective (2) | 3  |
|               |                            | 15 |

| Fall Senior |  |    |
|-------------|--|----|
| ECE 402     | Design Project II                          | 4  |
| Elective    | Electrical Focus (2)                       | 3  |
| Elective    | Generic Focus (2)                          | 3  |
| Elective    | Generic Focus (1)                          | 3  |
| Elective    | HV & SC (3) Population and the Environment | 3  |
|             |  | 16 |

| Spring Senior |  |    |
|---------------|--|----|
| ECE 403       | Design Project III                         | 2  |
| ECP 403       | Engineering Writing III                    | 1  |
| ECE 414       | Feedback Control Systems                   | 3  |
| Elective      | Electrical Focus (3)                       | 3  |
| Elective      | HV & SC (4) Artistic & Creative Expression | 3  |
| Elective      | HV & SC (5) Ethics                         | 3  |
|               |  | 15 |

|                    |            |
|--------------------|------------|
| Total Credit Hours | <b>124</b> |
|--------------------|------------|

|                |
|----------------|
| ECE            |
| Math & Science |
| English        |
| Gen Ed         |

## Electrical Engineering with Honors 2013-2014 (Class of 2017)

| Fall First Year |                         |    |
|-----------------|-------------------------|----|
| ECE 100         | ELE & CEN Eng Seminar   | 1  |
| ECE 101         | Intro to ELE & CEN Eng  | 3  |
| HON 111         | Civilizations I         | 4  |
| MAT 126         | Calculus I              | 4  |
| PHY 121         | Physics for Engineers I | 4  |
|                 |                         | 16 |

| Spring First Year |                             |    |
|-------------------|-----------------------------|----|
| ECE 177           | Intro to Prog for Engineers | 4  |
| HON 112           | Civilizations II            | 4  |
| MAT 127           | Calculus II                 | 4  |
| PHY 122           | Physics for Engineers II    | 4  |
|                   |                             | 16 |

| Fall Sophomore |                          |    |
|----------------|--------------------------|----|
| ECE 210        | Electrical Networks I    | 4  |
| ECE 275        | Sequential Logic Systems | 3  |
| HON 211        | Civilizations III        | 4  |
| MAT 228        | Calculus III             | 4  |
|                |                          | 15 |

| Spring Sophomore |                            |    |
|------------------|----------------------------|----|
| ECE 214          | Electrical Networks Lab    | 2  |
| ECE 271          | Micro Arch & Applications  | 3  |
| ECE 351          | Fields and Waves           | 3  |
| ECP 214          | Engineering Writing I      | 1  |
| HON 212          | Civilizations IV           | 4  |
| MAT 258          | Diff Eqn. & Linear Algebra | 4  |
|                  |                            | 17 |

| Fall Junior          |                                    |    |
|----------------------|------------------------------------|----|
| CHY 131              | Chemistry for Engineers            | 3  |
| CHY 133              | Chemistry for Engineers Lab        | 1  |
| ECE 316  <br>MAT 332 | Random Signal Analysis  Statistics | 3  |
| ECE 342              | Electronics I                      | 4  |
| ECE 314              | Signals and Systems                | 3  |
| ECP 342              | Engineering Writing II             | 1  |
| HON 180              | A Cultural Odyssey                 | 1  |
|                      |                                    | 16 |

| Spring Junior |                            |    |
|---------------|----------------------------|----|
| ECE 343       | Electronics II             | 4  |
| ECE 401       | Design Project             | 1  |
| ECE 486       | Digital Signal Processing  | 4  |
| HON 3XX       | Honors Tutorial            | 3  |
| Elective      | Electrical Focus (1)       | 3  |
| Elective      | ECE Technical Elective (2) | 3  |
|               |                            | 18 |

| Fall Senior |                            |    |
|-------------|----------------------------|----|
| HON 498     | Honor Directed Study       | 3  |
| Elective    | Electrical Focus (2)       | 3  |
| Elective    | ECE Technical Elective (1) | 3  |
| Elective    | Generic Focus (2)          | 3  |
| Elective    | Generic Focus (1)          | 3  |
|             |                            | 15 |

| Spring Senior |  |    |
|---------------|--|----|
| ECP 403       | Engineering Writing III                                  | 1  |
| ECE 414       | Feedback Control Systems                                 | 3  |
| HON 499       | Honors Thesis  | 3  |
| Elective      | Electrical Focus (3)                                     | 3  |
| CMJ 103       | Fund of Public Communication Human Values/Social Context | 3  |
|               |  | 13 |

Total Credit Hours

126

|                |
|----------------|
| ECE            |
| Math & Science |
| English        |
| Gen Ed         |

## Double Major 2013-2014 (Class of 2017)

| Fall First Year |   |    |
|-----------------|---|----|
| CHY 131         | Chemistry for Engineers                                     | 3  |
| CHY 133         | Chemistry for Engineers Lab                                 | 1  |
| CMJ 103         | Fund of Public Communication Human Values/Social Context    | 3  |
| ECE 100         | ELE & CEN Eng Seminar                                       | 1  |
| ECE 101         | Intro to ELE & CEN Eng                                      | 3  |
| MAT 126         | Calculus I  | 4  |
| Elective        | HV & SC (1) Cultural Diversity & International Perspectives | 3  |
|                 |   | 18 |

| Spring First Year |  |    |
|-------------------|--|----|
| ECE 177           | Intro to Prog for Engineers              | 4  |
| ENG 101           | College Composition                      | 3  |
| MAT 127           | Calculus II                              | 4  |
| PHY 121           | Physics for Engineers I                  | 4  |
| Elective          | HV & SC (2) - Western Cultural Tradition | 3  |
|                   |  | 18 |

| Fall Sophomore |                              |    |
|----------------|------------------------------|----|
| COS 221        | Intro to Computer Science II | 3  |
| ECE 210        | Electrical Networks I        | 4  |
| ECE 275        | Sequential Logic Systems     | 3  |
| MAT 228        | Calculus III                 | 4  |
| PHY 122        | Physics for Engineers II     | 4  |
|                |                              | 18 |

| Spring Sophomore |  |    |
|------------------|--|----|
| ECE 214          | Electrical Networks Lab                    | 2  |
| ECE 271          | Micro Arch & Applications                  | 3  |
| ECE 351          | Fields and Waves                           | 3  |
| ECP 214          | Engineering Writing I                      | 1  |
| MAT 258          | Diff Eqn. & Linear Algebra                 | 4  |
| Elective         | HV & SC (3) Population and the Environment | 3  |
|                  |  | 16 |

| Fall Junior        |                                       |    |
|--------------------|---------------------------------------|----|
| ECE 316   MAT 332  | Random Signal Analysis   Statistics   | 3  |
| ECE 342            | Electronics I                         | 4  |
| ECE 314            | Signals and Systems                   | 3  |
| ECP 342            | Engineering Writing II                | 1  |
| ECE 471   Elective | Embedded Systems   Computer Focus (1) | 3  |
|                    |                                       | 14 |

| Spring Junior      |   |    |
|--------------------|---|----|
| ECE 343            | Electronics II                                  | 4  |
| ECE 401/5          | Design Project                                  | 1  |
| ECE 477   Elective | Hardware Applications in C   Computer Focus (1) | 3  |
| ECE 486            | Digital Signal Processing                       | 4  |
| Elective           | Electrical Focus (1)                            | 3  |
| Elective           | Computer Focus (2)                              | 3  |
|                    |   | 18 |

| Fall Senior       |  |    |
|-------------------|--|----|
| ECE 402/6         | Design Project II                          | 4  |
| ECE 473           | Computer Architecture & Org                | 4  |
| MAT 481   COS 250 | Discrete Mathematics   Discrete Structures | 3  |
| Elective          | Electrical Focus (2)                       | 3  |
| Elective          | Computer Focus (3)                         | 3  |
| Elective          | Computer Focus (4)                         | 1  |
|                   |  | 18 |

| Spring Senior     |   |    |
|-------------------|---|----|
| ECE 331   COS 431 | Introduction to UNIX Systems Administration   Operating Systems | 3  |
| ECE 403           | Design Project III  | 2  |
| ECP 403           | Engineering Writing III   | 1  |
| ECE 414           | Feedback Control Systems  | 3  |
| Elective          | Electrical Focus (3)  | 3  |
| Elective          | HV & SC (4) Artistic & Creative Expression                      | 3  |
| Elective          | HV & SC (5) Ethics  | 3  |
|                   |   | 18 |

|                    |            |
|--------------------|------------|
| Total Credit Hours | <b>138</b> |
|--------------------|------------|

|                |
|----------------|
| ECE            |
| Math & Science |
| English        |
| Gen Ed         |

Either ECE 401/402 or ECE 405/406 are required, but not both for double major.

## Double Major with Honors 2013-2014 (Class of 2017)

| Fall First Year |                         |    |
|-----------------|-------------------------|----|
| ECE 100         | ELE & CEN Eng Seminar   | 1  |
| ECE 101         | Intro to ELE & CEN Eng  | 3  |
| HON 111         | Civilizations I         | 4  |
| MAT 126         | Calculus I              | 4  |
| PHY 121         | Physics for Engineers I | 4  |
|                 |                         | 16 |

| Spring First Year |                             |    |
|-------------------|-----------------------------|----|
| ECE 177           | Intro to Prog for Engineers | 4  |
| HON 112           | Civilizations II            | 4  |
| MAT 127           | Calculus II                 | 4  |
| PHY 122           | Physics for Engineers II    | 4  |
|                   |                             | 16 |

| Fall Sophomore |                              |    |
|----------------|------------------------------|----|
| COS 221        | Intro to Computer Science II | 3  |
| ECE 210        | Electrical Networks I        | 4  |
| ECE 275        | Sequential Logic Systems     | 3  |
| HON 211        | Civilizations III            | 4  |
| MAT 228        | Calculus III                 | 4  |
|                |                              | 18 |

| Spring Sophomore |                            |    |
|------------------|----------------------------|----|
| ECE 214          | Electrical Networks Lab    | 2  |
| ECE 271          | Micro Arch & Applications  | 3  |
| ECE 351          | Fields and Waves           | 3  |
| ECP 214          | Engineering Writing I      | 1  |
| HON 212          | Civilizations IV           | 4  |
| MAT 258          | Diff Eqn. & Linear Algebra | 4  |
|                  |                            | 17 |

| Fall Junior           |                                       |    |
|-----------------------|---------------------------------------|----|
| ECE 316  <br>MAT 332  | Random Signal Analysis   Statistics   | 3  |
| ECE 342               | Electronics I                         | 4  |
| ECE 314               | Signals and Systems                   | 3  |
| ECP 342               | Engineering Writing II                | 1  |
| ECE 471  <br>Elective | Embedded Systems   Computer Focus (1) | 3  |
| HON 180               | A Cultural Odyssey                    | 1  |
|                       |                                       | 15 |

| Spring Junior         |   |    |
|-----------------------|---|----|
| ECE 343               | Electronics II                                  | 4  |
| ECE 401/5             | Design Project                                  | 1  |
| ECE 477  <br>Elective | Hardware Applications in C   Computer Focus (1) | 3  |
| ECE 486               | Digital Signal Processing                       | 4  |
| HON 3XX               | Honors Tutorial                                 | 3  |
|                       |   | 15 |

| Fall Senior          |  |    |
|----------------------|--|----|
| ECE 473              | Computer Architecture & Org                | 4  |
| HON 498              | Honor Directed Study                       | 3  |
| MAT 481  <br>COS 250 | Discrete Mathematics   Discrete Structures | 3  |
| Elective             | Computer Focus (2)                         | 3  |
| Elective             | Electrical Focus (1)                       | 3  |
|                      |  | 16 |

| Spring Senior        |   |    |
|----------------------|---|----|
| ECE 331  <br>COS 431 | Introduction to UNIX Systems Administration   Operating Systems | 3  |
| ECP 403              | Engineering Writing III   | 1  |
| ECE 414              | Feedback Control Systems  | 3  |
| HON 499              | Honors Thesis   | 3  |
| Elective             | Electrical Focus (3)  | 3  |
| Elective             | Computer Focus (3)  | 1  |
| CMJ 103              | Fund of Public Communication Human Values/Social Context        | 3  |
|                      |   | 17 |

| Fall Super Senior |                             |    |
|-------------------|-----------------------------|----|
| CHY 131           | Chemistry for Engineers     | 3  |
| CHY 133           | Chemistry for Engineers Lab | 1  |
| Elective          | Computer Focus (4)          | 3  |
| Elective          | Electrical Focus (2)        | 3  |
|                   |                             | 10 |

Total Credit Hours

**140**

|                |
|----------------|
| ECE            |
| Math & Science |
| English        |
| Gen Ed         |

Either ECE 401 or ECE 405 is required, but not both for double major.