

Electrical Engineering - Lasers & Optical Engineering Concentration

Degree requirements - 126 credits

| FIRST YEAR | Fall - 13-14 credits | | | Spring - 16-17 credits | | |
|------------|--|---|---------|------------------------------------|--|---------|
| | | | Credits | | | Credits |
| | ECE102 or ECE103 | Digital Circuit Logic (F,S) or DC Circuit Analysis (F,S; <i>MATH159 with a C or higher or MATH160 with a C or higher</i>) | 3-4 | ECE102 or ECE103 | Digital Circuit Logic (F,S) or DC Circuit Analysis (F,S; <i>MATH159 with a C or higher or MATH160 with a C or higher</i>) | 3-4 |
| | MATH160 Fulfills AUCC Category 1B | Calculus for Physical Scientists I (F,S,SS; <i>MATH124 with a B or higher; MATH126 with a B or higher or MATH127 with a B or higher</i>) | 4 | MATH161 | Calculus for Physical Scientists II (F,S,SS; <i>MATH124 or MATH127; MATH159 or MATH160</i>) | 4 |
| | CS150B ¹ Fulfills AUCC Category 3B | Culture and Coding: Python (F,S) | 3 | CS164 ¹ | CS1 - Computational Thinking with Java (F,S; <i>CS150B with a B or higher or CS152 with a B or higher B or CS163</i>) | 4 |
| | CO150 ² Fulfills AUCC Category 1A | College Composition (F,S,SS; <i>CO 130 or Placement</i>) | 3 | PH141 Fulfills AUCC Category 3A | Physics for Scientists and Engineers I (F,S,SS; <i>MATH126; MATH159, may be taken concurrently or MATH160, may be taken concurrently</i>) | 5 |

| SECOND YEAR | Fall - 16 credits | | | Spring - 16 credits | | |
|-------------|------------------------------------|---|---------|---------------------|--|---------|
| | | | Credits | | | Credits |
| | University Core | AUCC Category 1C, 3B, 3D (F,S,SS) | 3 | ECE202 | Circuit Theory Applications (S,SS; <i>ECE103 with a C or higher; MATH161 with a C or higher</i>) | 4 |
| | CHEM111 | General Chemistry I (F,S,SS; <i>MATH118 or MATH127 MATH160 or MATH161 or MATH229 or MATH261</i>) | 4 | ECE232 | Introduction to Project Practices (F,S; <i>ECE202, may be enrolled concurrently or ECE395B, may be enrolled concurrently</i>) | 1 |
| | PH142 Fulfills AUCC Category 3A | Physics for Scientists and Engineers II (F,S,SS; <i>PH141; MATH161, may be taken concurrently</i>) | 5 | ECE303 | Introduction to Communications Principles (S; <i>MATH261 with a C or higher; MATH340, may be taken concurrently</i>) | 3 |
| | MATH261 | Calculus for Physical Scientists III (F,S,SS; <i>MATH161</i>) | 4 | MATH340 | Introduction to Ordinary Differential Equations (F,S,SS; <i>MATH261</i>) | 4 |
| | | | | PH314 | Introduction to Modern Physics (S; <i>PH 142; MATH261, may be taken concurrently</i>) | 4 |

| THIRD YEAR | Fall - 17 credits | | | Spring - 15 credits | | |
|------------|-------------------|---|---------|--|---|---------|
| | | | Credits | | | Credits |
| | ECE311 | Linear Systems Analysis I (F; <i>ECE202 with a C or higher; MATH340 with a C or higher; ECE331, may be taken concurrently; ECE341, may be taken concurrently</i>) | 3 | CO301B or JTC300 Fulfills AUCC Category 2 | Writing in the Disciplines-Sciences (F,S; <i>CO150 or HONR193</i>) or Strategic Writing and Communication (F,S,SS; <i>CO150 or HONR193</i>) | 3 |
| | ECE331 | Electronics Principles I (F; <i>ECE202 with a C or higher; MATH340 with a C or higher; PH142 with a C or higher; ECE311, may be taken concurrently; ECE341, may be taken concurrently</i>) | 4 | ECE332 Fulfills AUCC Category 4 | Electronic Principles II (S; <i>ECE331 with a C or higher</i>) | 4 |
| | ECE341 | Electromagnetic Fields & Devices I (F; <i>ECE202 with a C or higher; MATH340 with a C or higher; PH142 with a C or higher; ECE311, may be taken concurrently; ECE331, may be taken concurrently</i>) | 3 | ECE342 | Electromagnetic Fields & Devices II (S; <i>ECE341 with a C or higher</i>) | 3 |
| | PH353 | Optics & Waves (F; <i>MATH261; PH142</i>) | 4 | SME Electives ³ | Science/Math/Engineering Elective (F,S,SS) | 2 |
| | University Core | AUCC Category 1C, 3B, 3D (F,S,SS) | 3 | ECON202 Fulfills AUCC Category 3C | Microeconomics (F,S,SS; <i>MATH117 or MATH118 or MATH160</i>) | 3 |

| FOURTH YEAR | Fall - 17 credits | | | Spring - 15 credits | | |
|-------------|---|---|---------|------------------------------------|--|---------|
| | | | Credits | | | Credits |
| | ECE401 ⁴ Fulfills AUCC Category 4 | Senior Design Project I (F,S; <i>ECE311 and ECE312 with a C or higher or (PH353 and PH314 with a C or higher); ECE331 and ECE332 with a C or higher; ECE341 and ECE342 with a C or higher</i>) | 3 | ECE402 Fulfills AUCC Category 4 | Senior Design Project II (F,S; <i>ECE401</i>) | 3 |
| | ECE404 | Experimental Optical Electronics (F; <i>concurrent enrollment in ECE441</i>) | 2 | ECE457 | Fourier Optics (S; <i>ECE311 with a C or higher; ECE342 with a C or higher</i>) | 3 |
| | ECE441 | Optical Electronics (F; <i>ECE342 with a C or higher</i>) | 3 | Technical Electives ³ | See Approved List (F,S) | 6 |
| | PH451 | Introductory Quantum Mechanics I (F; <i>PH314; MATH340</i>) | 3 | University Core | AUCC Category 1C, 3B, 3D (F,S,SS) | 3 |
| | Technical Electives ³ | See Approved List (F,S) | 6 | | | |

¹ Students may also choose one of the following: 1) Arts/Humanities AUCC + CS152 + CS162; or 2) Arts/Humanities AUCC + CS163

² College Composition must be completed within the first 60 credits taken (CSU and transfer credits)

³ See list of approved courses on the ECE website: <https://www.engr.colostate.edu/ece/undergraduates/degree-programs/electrical-engineering-with-lasers-optics/>

⁴ Must have a faculty advisor from Lasers & Optics and be in a Lasers and Optical Engineering related topic

ECE courses required for the major at the 100, 200, and 300 level must be passed with a minimum grade of C; grades below a C will require the student to retake the course. ECE courses designated as an elective are exempt from the C or higher minimum grade requirement.