

## Electrical Engineering - Lasers & Optical Engineering Concentration

Degree requirements - 126 credits

Fall - 15 credits		Credits	Spring - 15 credits		Credits	
<b>FIRST YEAR</b>	ENGR 111	Fundamentals of Engineering (F,S)	3	ENGR114	Engineering for Grand Challenges (F,S; ENGR 111 or CBE104A or CIVE101A or CIVE102 or MECH103 or MECH104A)	3
	MATH160	Calculus for Physical Scientists I (F,S,SU; MATH124 with a B or higher; MATH126 with a B or higher or MATH127 with a B or higher)	4	MATH161	Calculus for Physical Scientists II (F,S,SU; MATH124 or MATH127; MATH159 or MATH160)	4
	CHEM111 and CHEM112	General Chemistry I (F,S,SU; MATH118 or MATH127 or MATH160 or MATH161 or MATH229 or MATH261) and General Chemistry Lab I (F,S,SU; CHEM111 or concurrent registration or CHEM120 or concurrent registration)	5	PH141	Physics for Scientists and Engineers I (F,S,SU; MATH159 or concurrent registration or MATH160 or concurrent registration)	5
	University Core	AUCC Category 1C, 3B, 3C, 3D (F,S,SU) ***Recommend CS150B <sup>1</sup> - Culture and Coding: Python (AUCC 3B)	3	CO150 <sup>2</sup>	College Composition (F,S,SU; CO130 or Placement)	3

Fall - 16 credits		Credits	Spring - 15 credits		Credits	
<b>SECOND YEAR</b>	ECE205	Analog Circuits I (F,S; MATH159 with a C or higher or MATH160 with a C or higher)	2	ECE206	Analog Circuits II (S,SU; ECE103 with a C or higher or ECE205 with a C or higher; MATH161 with a C or higher)	3
	ECE252	Intro to Digital Circuits (F,S)	3	ECE232	Introduction to Project Practices (F,S; ECE202 or concurrent registration or ECE206 or concurrent registration or ECE395B or concurrent registration)	1
	CS164 <sup>1</sup>	CS1 - Computational Thinking with Java (F,S; CS150B with a B or higher or CS152 with a B or higher or ENGR111 with a B or higher or ENGR123 with a B or higher or CS163)	4	SME Electives <sup>3</sup>	Science/Math/Engineering Elective (F,S,SU)	2
	MATH261	Calculus for Physical Scientists III (F,S,SU; MATH161)	4	MATH340	Intro to Ordinary Differential Equations (F,S,SU; MATH261)	4
	University Core	AUCC Category 1C, 3B, 3C, 3D (F,S,SU)	3	PH142	Physics for Scientists and Engineers II (F,S,SU; PH141; MATH161 or concurrent registration)	5

Fall - 17 credits		Credits	Spring - 17 credits		Credits	
<b>THIRD YEAR</b>	ECE311	Linear Systems Analysis I (F; ECE202 with a C or higher or ECE206 with a C or higher; MATH340 with a C or higher; ECE331 or concurrent registration; ECE341 or concurrent registration)	3	PH314	Introduction to Modern Physics (S; PH 142; MATH261 or concurrent registration)	4
	ECE331	Electronics Principles I (F; ECE202 with a C or higher or ECE206 with a C or higher; MATH340 with a C or higher; PH142 with a C or higher; ECE311 or concurrent registration; ECE341 or concurrent registration)	4	ECE332	Electronic Principles II (S; ECE331 with a C or higher)	4
	ECE341	Electromagnetic Fields & Devices I (F; ECE202 with a C or higher or ECE206 with a C or higher; MATH340 with a C or higher; PH142 with a C or higher; ECE311 or concurrent registration; ECE331 or concurrent registration)	3	ECE342	Electromagnetic Fields & Devices II (S; ECE341 with a C or higher)	3
	ECE303	Introduction to Communications Principles (S; MATH261 with a C or higher; MATH340 or concurrent registration)	3	CO301B or JTC300	Writing in the Disciplines-Sciences (F,S; CO150 or HONR193) or Strategic Writing and Communication (F,S,SU; CO150 or HONR193)	3
	PH353	Optics & Waves (F; MATH261; PH142)	4	University Core	AUCC Category 1C, 3B, 3C, 3D (F,S,SU)	3

Fall - 17 credits		Credits	Spring - 14 credits		Credits	
<b>FOURTH YEAR</b>	ECE401 <sup>3</sup>	Senior Design Project I (F,S; ECE232 with a C or higher; 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)	3	ECE402	Senior Design Project II (F,S; ECE401)	3
	ECE404	Experimental Optical Electronics (F; concurrent registration in ECE441)	2	ECE457	Fourier Optics (S; ECE311 with a C or higher; ECE342 with a C or higher)	3
	ECE441	Optical Electronics (F; ECE342 with a C or higher)	3	Technical Electives <sup>4</sup>	See Approved List (F,S)	2
	PH451	Introductory Quantum Mechanics I (F; PH314 with a C or higher; MATH340 or MATH345)	3	University Core	AUCC Category 1C, 3B, 3C, 3D (F,S,SU)	6
	Technical Electives <sup>4</sup>	See Approved List (F,S)	6			

<sup>1</sup> Students may also choose one of the following: 1) CS150B + CS164; or 2) CS152 + CS162; or 3) CS163

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

<sup>3</sup> Must have a faculty advisor from Lasers & Optics and be in a Lasers and Optical Engineering related topic

<sup>4</sup> See list of approved courses on the ECE website: <https://www.engr.colostate.edu/ece/undergraduates/degree-programs/electrical-engineering-with-lasers-optics/>

ECE prefix 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.