

**ELECTRICAL ENGINEERING DEGREE
LASERS & OPTICAL ENGINEERING CONCENTRATION
STANDARD SCHEDULE OF COURSE WORK**

Fall Semester	Credits	Spring Semester	Credits
<u>Freshman Year</u>			
CO150 College Composition	3	CS160 Foundations in Programming	OR
Univ. Core (Historical Perspectives)	3	CS155 Unix, CS156 CI, CS157 C II,	3-4
ECE102 Digital Circuit Logic	4	MATH161 Calculus for Physical	
MATH160 Calculus for Physical		Scientists II	4
Scientists I	<u>4</u>	PH141 Physics for Scientists	
		and Engineers I	5
	14	ECE103 DC Circuit Analysis	<u>3</u>
			15-16
<u>Sophomore Year</u>			
MATH261 Calculus for Physical		ECE202 Circuit Theory Application	4
Scientists III	4	MATH340 Intro to Ordinary Differential	
PH142 Physics for Scientists		Equations	
and Engineers II	5	OR	
ECON202 Microeconomics	3	MATH345 Differential Equations **	4
CHEM111 General Chemistry I	<u>4</u>	PH314 Intro. to Modern Physics	4
	16	Univ. Core (Arts & Humanities)	<u>3</u>
			15
<u>Junior Year</u> (CO150 must be passed before the Junior Year)			
ECE311 Linear Systems Analysis I	3	ECE332 Electronics Principles II	4
ECE331 Electronics Principles I	4	ECE342 Electromagnetic Fields & Devices	3
ECE341 Electromagnetics	3	Science/Math/Engineering Elective	3
PH353 Optics and Waves	4	Univ Core (Arts & Humanities)	3
Univ Core (Global & Cultural Awareness)	<u>3</u>	CO301B Writing in the Disciplines-Sci.	OR
		JTC300 Professional & Technical Comm.	<u>3</u>
	17		16
<u>Senior Year</u> (ECE332, and 342 must be completed before starting ECE401)			
ECE/STAT303 Intro to Communications		ECE402 Senior Design Project II	3
Principles	3	Technical Electives in Optoelectronics	9
ECE401 Senior Design Project I	3	ECE457 Fourier Optics	<u>3</u>
ECE404 Experimental Optical Electronics	2		
ECE441 Optical Electronics	3		
Technical Electives in Optoelectronics	3		
PH451 Intro to Quantum Mechanics I	<u>3</u>		
	17		15

Grand Total: 125-126 Credits

Prepared by the Undergraduate Curriculum Committee; approved by the ECE faculty effective Fall 2008

*See page 3 for explanation of this requirement.

Students taking MATH 345 **MUST take the prerequisite, MATH229. MATH229 may be counted as 2 credits towards the Science/Math/Engineering elective requirement.

THE SIX ACADEMIC REQUIREMENTS

1. Required Total Credits

Electrical Engineering -- 125-126; Lasers & Optical Engineering Concentration – 125-126

2. Grade Requirements

University -- 2.00 GPA (p. 94)

College -- 2.00 GPA in all required engineering, math, chemistry and physics courses (p. 182)

Department -- every 100-, 200-, and 300-level required ECE course must be passed with a minimum grade of C. Students receiving a grade below C will not be allowed to take any ECE course for which that course is a prerequisite until such time as the C or above grade requirement is met. 2.00 ECE GPA (in all ECE courses taken)

Courses taken outside of the ECE Department. Students must meet **all** grade minimums set by other Departments for prerequisite courses.

3. Science/Math/Engineering Electives¹ 9 credits (EE Concentration), 3 credits (Lasers & Optical Engineering concentration) chosen from the list available on the ECE Department web site.

NOTES:

* Alternative courses may be taken with PRIOR written approval of the Department Head. Courses used for major requirements may NOT be counted as Science/Engineering Elective Credits.

Students may substitute additional Technical Elective credits in place of Science/Engineering Elective credits.

4. Technical Electives

EE Concentration -- 15 credits. Any 400 or 500 level ECE course which is not required for the major or any course listed as a Technical Elective for Lasers & Optical Engineering or Computer Engineering for which the student has met all prerequisites.

Lasers & Optical Engineering Concentration -- 9 credits chosen from the following list:

ECE450 Digital System Design Lab	ECE507 Plasma Physics & Apps.
ECE451 Digital System Design	ECE525 Fiber Optic Communications
ECE503 Ultrafast Optics	ECE546 Laser Fundamentals & Dev.
ECE504 Physical Optics	ECE574 Optical Materials & Devices
ECE505 Nanostructures Fund. & Apps.	PH452 Intro. Quantum Mechanics II
ECE506 Optical Interferometry & Laser Metrology	

* Courses required in the concentration may not also be used as an elective.

This list is subject to frequent changes. Contact the Department or check the ECE Department web site for the most current listing of acceptable technical elective courses.

5. All-University Core Curriculum

Category 1 - Basic Competencies

A – Intermediate Writing

B - Mathematics

CO150¹ 3 cr.
MATH160 3 cr.

Category 2 – Advanced Writing

CO301B OR
JTC300

Category 3 - Foundations & Perspectives

A - Biological/Physical Sciences

PH141 5 cr.

PH142 5 cr.

B - Arts/Humanities (6 credits)

Choose from the list available in the current General Catalog or Class Schedule. No more than 3 credits of intermediate foreign languages may be used toward this category.

C - Social/Behavioral Sciences

ECON202 3 cr.

D - Historical Perspectives (3 credits)

Choose from the list available in the current General Catalog or Class Schedule

E - Global & Cultural Awareness (3 credits)

Choose from the list available in the current General Catalog or Class Schedule

6. Professional Learning Institute

Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program. Please review information and graduation requirements at <http://www.engr.colostate.edu/pli>.

¹ Students in the Honors Program substitute HP193.

BACKGROUND INFORMATION

STUDENTS ARE ULTIMATELY RESPONSIBLE FOR KNOWING AND FULFILLING THE REQUIREMENTS FOR GRADUATION. THESE REQUIREMENTS ARE LISTED IN THE GENERAL CATALOG AND EACH SEMESTER'S COURSE SCHEDULE.

1. Required Total Credits

A minimum of 30 upper-division semester credits must be completed in residence at CSU as a major in the College of Engineering as verified by the Electrical and Computer Engineering Department. A minimum of 42 upper-division semester credits (300-400 level) is required of all students completing a bachelor's degree program. Elective credits taken at the 500 level may be used to fulfill this requirement.

2. Grade Requirements

All courses must be taken for a grade. The original grade and grades earned in repeated courses are both used in calculating grade point averages, unless a student exercises Repeat/Delete policy explained in the Grading and Scholastic Standards section of the General Catalog. Only the most recent grade of a repeated course is used in calculating the ECE GPA.

3. Prerequisites and Co-requisites

Meeting course prerequisites and co-requisites is the responsibility of the student. Math department policy is that module prerequisites must be satisfied on the first day of class.