

ECE 5137: Photonics Lab

Course Description

Students perform experiments from among: solar cells, laser diode physics, liquid crystals, acousto-optics, optical sensing, and fiber optics.

Prior Course Number: 737

Transcript Abbreviation: Photonics Lab

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad, Graduate

Student Ranks: Junior, Senior, Masters, Doctoral

Course Offerings: Autumn

Flex Scheduled Course: Never

Course Frequency: Odd Years

Course Length: 7 Week

Credits: 0.5

Repeatable: Yes

Maximum Repeatable Credits: 1.0

Total Completions Allowed: 2

Allow Multiple Enrollments in Term: Yes

Time Distribution: 3.0 hr Lab

Expected out-of-class hours per week: 0.0

Graded Component: Laboratory

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Prereq: 3010 (312) and 3030 (432), and enrollment in ECE major; or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences.

Exclusions: Not open to students with credit for 294.05 or 737.

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1001

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
CpE	Computer Engineering
EE	Electrical Engineering

Course Goals

Master a variety of modern optical technologies and their applications
Master designing and building optical experiments

Be competent at technical writing
Be competent at teamwork
Be competent at life-long learning

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Fiber optic communications			6.0					
Laser diode physics			6.0					
Solar cells			6.0					
Liquid crystals			6.0					
Acousto-optics			6.0					
Optical sensing			6.0					

Representative Assignments

Lab reports
Lab notebook
Homework

Grades

Aspect	Percent
Lab reports	75%
Lab notebook	5%
Team member evaluations	10%
Homework	10%

Representative Textbooks and Other Course Materials

Title	Author
<i>Photonics Lab Manual</i>	Anderson et al.

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
***	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
*	c	An ability to design a system, component, or process to meet desired needs.
***	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
*	f	An understanding of professional and ethical responsibility.
***	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
*	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.

Course Contribution		College Outcome
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Additional Notes or Comments

Students perform three of the six available experiments in a term. They may do the other three by repeating the class in a subsequent offering of the course.

Updated prereqs and exclusions and course goals to match university format.

Reword course goals to reflect level of mastery 4.29/14, BLA

Prepared by: Betty Lise Anderson