

Advanced Optoelectronics

ECSE 6270

Tuesday, Friday, 10am – 11:20pm (changes every semester)

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Office hours: Tuesday, Friday 1-2pm, or by appointment

Textbook:

1. *Semiconductor Optoelectronic Devices* by Pallab Bhattacharya, 2nd edition, Prentice Hall (tentative)
2. Class handouts

Course Pre-requisites:

ECSE 2210 Microelectronics (required)

ECSE 4691 Introduction to Optoelectronics Technology or equivalent

Course Objectives:

The objective of this class is to provide students the advanced knowledge of integrated lightwave circuits and the key optoelectronic components for optical communication, imaging and display, and optical analog computing applications. The topics cover material properties for optoelectronic devices, device characteristics of laser diodes, photodetectors, light modulators, and passive lightwave components such as micro-ring resonators, array waveguide grating (AWG), grating couplers etc. The class will reflect the technology trend of the field with a particular focus on Si photonics. In the class project, students will form two groups and work on the design of a passive lightwave circuit component using a commercial software package.

Grade Composition:

Quiz 1: 30%

Quiz 2: 30%

Homework: 10%

Project: 30%