Southern Illinois University

ECE 448- Photonics
Spring 2014

Instructor: Dr. Sareh Taebi
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Office Phone: 618-453-7034

Office Hours: MW, 10 am-1 pm
Lecture: MWF, 1:00 – 1:50 p.m., ENGR A-207
Lab: TBA, ENGR E-205

Teaching assistant: Mohammad Tafazoli
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Office Hours: TR, 1-2 pm

Objectives: This course introduces the fundamentals of Photonics with a focus on guided-wave optics. Passive optical devices are covered for various applications including telecommunications and photonic switching. This course is intended for senior undergraduate and master’s students.


Topics:
1. Introduction to Photons and Photonics (Chapter 13) (3 classes)
2. Electromagnetic Waves (Chapter 5) (5 classes)
3. Waveguide Design (Chapter 7, 8) (8 classes)
4. Fiber Optics (Chapter 9) (5 classes)
5. Optical Resonators (Chapter 10) (6 classes)
6. Electro-Optics (Chapter 20) (6 classes)
7. Optical Interconnects and switches (Chapter 23) (6 classes)

Laboratory experiments:
1. Handling Fibers and Determination of Numerical Aperture (1 week)
2. Studying Wave Optics and Modes in Optical Fibers (1 week)
3. Assembling and Testing of a Fiber-Optic Datalink (1 week)
4. Laser Light Modulation Using Acousto-optic Modulator (1 week)

Grading/Evaluation:

Homework 20%
Midterm exam 25%
Final exam 25%
Labs (4) 20%
Class participation (readings) 10%

Grades:
A: [88 - 100]
B: [78 – 87.5]
C: [68 – 77.5]
D: [58 – 67.5]
F: [< 58 ]

Classroom Policies: Attendance is mandatory for this class, please make sure to attend all classes.