

Course Syllabus	EECS 4410 – Electro-Optics
Credits & Contact Hours	3 credit hours & three 50-minute lecture contact hours per week
Instructor's Name	Dr. Daniel Georgiev
Textbook	S. O. Kasap, "Optoelectronics and Photonics – Principles and Practices", 2 nd Edition, Prentice Hall (2013)
Course Information	<p>This course is an introduction to laser physics and optics basics, optical waveguides, optical fiber communication systems, photovoltaics, and electro-optics. Semiconductor devices such as light-emitting diodes, laser diodes, solar cells, photodiodes and other detectors will be introduced as well, together with a review of relevant semiconductor physics, materials, and fabrication.</p> <p>Prerequisites: EECS 3710 Electromagnetics I</p> <p>Technical elective for EE program</p>
Student Learning Objectives	<p>The student will be able to</p> <ol style="list-style-type: none"> 1. Apply acquired/reviewed knowledge on light waves in analyzing basic optical systems, and in solving relevant problems. 2. Apply the acquired knowledge on waveguides and fibers, optical sources, and photo-detectors in analyzing basic optoelectronic systems and in solving relevant problems. 3. Apply the acquired knowledge on photovoltaic devices and materials in analyzing basic photovoltaic systems and in solving relevant problems. 4. Apply acquired knowledge on polarization, birefringence, and light modulation in analyzing relevant optical systems and in solving relevant problems. 5. Gain experience in solving relevant numerical problems and performing design calculations, related to all covered topics in the course.
Course Topics	<ol style="list-style-type: none"> 1. Light waves 2. Optical waveguides and fibers 3. Semiconductors and LEDs 4. Lasers 5. Photodetectors 6. Photovoltaic devices 7. Polarization and light modulation 8. Other topics (time permitting)