

Sabanci University
Faculty of Engineering and Natural Sciences

EE 403: Optoelectronics

Instructor: Kürşat Şendur **Office:** 1065 **Tel:** 9527

E-Mail: sendur@sabanciuniv.edu

Class Hours: Friday 09:40-12:30

In-Person Class Location: FENS L065

Zoom Link and ID for Online Attendance:

<https://sabanciuniv.zoom.us/j/97595641870?pwd=L01aMINnWGxVMHlCK0tvMndnM28wQT09>

Meeting ID: 975 9564 1870

Passcode: 403403

Teaching Assistants: Amin Balazadeh Koucheh: aminb@sabanciuniv.edu

Onur Demirel: onur.demirel@sabanciuniv.edu

Text Book:

Fundamentals of Photonics, B.E.A. Saleh & M.C. Teich (John Wiley Sons, New York)

Grading (Tentative):

Homeworks: 30%

Exam: 40%

Project: 30%

Tentative Syllabus:

Week 1: Introduction and Examples of Novel Optical Applications

Weeks 2-3: A review of Maxwell's equations and EM basics

Week 4: Polarization

Week 5: Guided Waves

Weeks 6-7: Field propagators, paraxial approximation, Gaussian Beams, Laguerre-Gaussian Beams, Hermite-Gaussian Beams

Week 8: Midterm Exam

Week 9: Propagation and focusing of fields, Focusing near planar interfaces

Week 10: Tutorial for Numerical Tools (HFSS)

Week 11: Optical Properties of Metals, Drude Model, Lorentz Model

Week 12: Surface Plasmon Polaritons and their dispersion characteristics

Weeks 13-14: (Time Permitting) Thin Film Plasmons, Localized Plasmons, Resonator Optics, Photon Optics