

EE411 Fundamentals of Photonics (3-0)

2021 Autumn, Monday: 13:30-16:30

Course Coordinator: Dr. Kivılcım Yüksel Aldoğan

Text Book: Fundamentals of Photonics, B.E.A. Saleh, M.C. Teich, Wiley-Inter science

Content:

<p>Ray optics Postulates of ray optics Simple optical components Matrix optics</p> <p>Wave optics Postulates of wave optics Monochromatic waves Simple optical components Interference Polychromatic and pulsed light</p> <p>Beam Optics The Gaussian beam Transmission through optical components Hermite-Gaussian beams</p>	<p>Electromagnetic optics Electromagnetic theory of light Electromagnetic waves in dielectric media Monochromatic electromagnetic waves Elementary electromagnetic waves Absorption and dispersion Pulse propagation in dispersive media</p> <p>Polarisation optics Polarisation of light Reflection and refraction Optics of anisotropic media Optical activity and magneto-optics Optics of liquid crystals Polarisation device</p>
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Grading

Final Exam (written and oral) 50 %

Quiz Score50 %

A total of **5 quizzes** will be applied throughout the semester (4 best quizzes out of 5 will be used for grading).

There will be two Final Examinations (written and oral) at the end of the semester.

Students are expected to attend at least 70% of the lectures and problem sessions

Course plan:

EE411 (2021)			
Week	Course (13:30-15:15)	Problem/Quiz Hour (15:30-16:15)	Chapter No. (textbook)
Week-1	Ray optics	Exercise Session-1, HW-1	1
Week-2	Ray optics	Exercise Session-2, HW-2	1
Week-3	Ray optics	Exercise Session-3, HW-3	1
Week-4	Wave Optics	Quiz-1 (ray optics)	2
Week-5	Wave Optics	Exercise Session-4, HW-4	2
Week-6	Wave Optics	Exercise Session-5, HW-5	2
Week-7	Beam optics	Quiz-2 (wave optics)	3
Week-8	Beam optics	Exercise Session-6, HW-6	3
Week-9	Beam optics	Exercise Session-7, HW-7	3
Week-10	EM Optics	Quiz-3 (beam optics)	5
Week-11	EM Optics	Exercise Session-8, HW-8	5
Week-12	EM Optics	Exercise Session-9, HW-9	5
Week-13	Polarisation Optics	Quiz-4 (EM optics)	6
Week_14	Polarisation Optics	Quiz-5 (Polarisation optics)	6
Week 15	Final Exam (Written exam and oral exam)		All chapters

ACADEMIC ETHICS

According to Personal Data Protection Law, sharing any kinds of lecture materials (lecture videos, handouts, homework/quiz/exam questions, etc.) with third parties, use them on the web, or publish them through any social network without written approval of our institution is strictly forbidden even after your graduation (<https://uzem.iyte.edu.tr/en/duyuru/distance-learning-and-the-personal-data-protection-law>).

All written submissions (homework assignments, exams, etc.) must reflect purely independent and individual efforts. All reference material (books, scientific papers, web sites, etc.) in these submissions should be properly cited. Academic dishonesty, including any form of cheating will not be tolerated and may result in failure of the course and/or formal disciplinary proceedings that may lead to suspension. Cheating includes but is not limited to such acts as offering or receiving unpermitted assistance in the exams, using any type of unauthorized written material during the exams, handing in any part or all of someone else's work as your own, copying from an internet source. Plagiarism is a specific form of cheating. It means using someone else's work without giving credit and it is a form of literary theft.