EE221 Physical Optics and Concepts of Modern Physics (4-0)

2019 Fall, Monday: 8:45-10:30 / Wednesday: 8:45-10:30

Text Books: **Physics for Scientists & Engineers**
A strategic approach with Modern Physics
4th edition
Randall D. Knight
Pearson

Fundamentals of Physics, Extended
Tenth edition
D. Halliday, R. Resnick, J. Walker
John Wiley & Sons, Inc.

Physics for Scientists & Engineers with Modern Physics
Douglas C. Giancoli
Prentice Hall

Additional Reading:

Işığın Öyküsü 2007
Prof.Dr. Hüseyin Gazi Topdemir
Tübitak, Fizik

Fundamentals of Photonics 2007
B.E.A. Saleh, M.C. Teich
Wiley-Interscience

Optics and Photonics 2008
F.Graham Smith
Terry A. King
Dan Wilkins
John Wiley and Sons Ltd.

Course Coordinator: Dr. Kıvılcım Yüksel Aldoğan (office hours: **Wednesday, 10:30-12:00**)
Assistants: Enes Ataç (Office Hrs: **Wednesday 11:00-12:00**, **Thursday 15:30-16:30),**
Ertunga B. Koçal (Office Hrs: **Monday 10:30-12:30**),
Çağın Ekici (Office Hrs: **Tuesday 9:00-10:00**, **Wednesday 11:00-12:00**).

Grading

Midterm…….. ……. 30 %
Final Exam…….. 40 %
Quiz Score……. 30 %
Quiz-1: Maxwell's Equations, Interference and diffraction
Quiz-2: Special Theory of Relativity
Quiz-3: Quantum theory
During the semester, a total of six *Problem Sessions* will be held.

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

Contents

Course plan:

Week-1	Maxwell's Equations and Electromagnetic Waves	K. Yüksel
Week-2/1	Maxwell's Equations and Electromagnetic Waves	K. Yüksel
Week-2/2	Problem session-I (Maxwell Eqn.)	E.B. Koçal
Week-3	Interference: Light as a Wave	K. Yüksel
Week-4	Diffraction	K. Yüksel
Week-5/1	Applications of diffraction	K. Yüksel
Week-5/2	Problem session-II (Interference, diffraction)	E.B. Koçal
Week-6/1	QUIZ-1	E.B.K, E.A, Ç. E
Week-6/2	Review, Intro to Special Theory of Relativity	K. Yüksel
Week-7	Special Theory of Relativity	K. Yüksel
Week-8/1	Problem session-III (Special relativity)	E. Ataç
Week-8/2	Problem session-IV (Special relativity)	E. Ataç
Week-9/1	QUIZ-2	E.B.K, E.A, Ç. E
Week-9/2	MIDTERM	E.B.K, E.A, Ç. E
Week-10	Photon Theory of Light	K. Yüksel
Week-11	Photon Theory of Light	K. Yüksel
Week-12/1	Problem Session-V (Photon theory of light)	Ç. Ekici
Week-12/2	Introduction to Quantum Theory	K. Yüksel
Week-13	Quantum Theory	K. Yüksel
Week-14	QUIZ-3	E.B.K, E.A, Ç. E
Week-15/1	Problem Session-VI (Quantum theory)	Ç. Ekici
Week-15/2	Quantum Theory	K. Yüksel
Week-16	FINAL	E.B.K, E.A, Ç. E

Note

The instructor reserves the right to make changes to this syllabus as necessary.