

PHYS 434 – OPTICS

Winter 2019 Calendar Version 1

NOTE: The calendar might be subject to change.

Class #	Date	Topics	Reading Material in <i>Optics</i> by Hecht
PART I – Review of Electromagnetism and Light Propagation			
1	Mon. Jan 7	Course Introduction, Waves and EM in a Nutshell	2.1 – 2.7, 3.1
2	Wed. Jan 9	Light Propagation, Lorentz Model, Scattering	3.2, 3.3.1, 3.3.2, 3.5, 4.1, 4.2
3	Mon. Jan 14	Reflection, Refraction, Huygens' & Fermat's Principle	4.3 – 4.5
4	Wed. Jan 16	EM Approach, Fresnel Equations, Total Internal Reflection	4.6, 4.7
PART II – Geometric Optics			
5	Mon. Jan 21	Introduction to Lenses; PROBLEM SET #1 DUE	5.1, 5.2
6	Wed. Jan 23	Mirrors, Prisms	5.4, 5.5
7	Mon. Jan 28	Optical Systems, Gravitational Lensing	5.7 – 5.9
8	Wed. Jan 30	Matrix Methods (GUEST LECTURE); PROBLEM SET #2 DUE	6.1, 6.2
9	Mon. Feb 4	Aberrations	6.3
PART III – Superposition, Polarisation and Interference			
10	Wed. Feb 6	Wave superposition	7.1, 7.2
COMPLETE DEMO #1 BY FRI. FEB 8			
11	Mon. Feb 11	Fourier Series, Coherence	7.3. 7.4
12	Wed. Feb 13	Introduction to Polarisation; PROBLEM SET #3 DUE	8.1 – 8.3
13	Mon. Feb 18	Birefringence, Scattering, Reflection, Retarders	8.4 – 8.7
14	Wed. Feb 20	MIDTERM EXAM	
15	Mon. Feb 25	Polarisers, Optical Activity, Modulators, Liquid Crystals	8.8 – 8.12
16	Wed. Feb 27	Introduction to Interference; PROBLEM SET #4 DUE	9.1 – 9.3
READING WEEK (Mar 4 – 8)			

COMPLETE DEMO #2 BY FRI. MAR 8			
17	Mon. Mar 11	Amplitude-splitting & Multi-beam Interferometry	9.4 – 9.6
18	Wed. Mar 13	Multi-layer Films	9.7
PART IV – Diffraction, Fourier Optics and Modern Optics			
19	Mon. Mar 18	Diffraction through Slits	10.1
20	Wed. Mar 20	Frauenhofer Diffraction; PROBLEM SET #5 DUE	10.2
21	Mon. Mar 25	Fresnel Diffraction	10.3
22	Wed. Mar 27	Fourier Transforms	11.1 – 11.2
23	Mon. Apr 1	Fourier Optics (GUEST LECTURE)	11.3
24	Wed. Apr 3	Lasers (GUEST LECTURE); PROBLEM SET #6 DUE	13.1
COMPLETE DEMO #3 BY FRI. APR 5			
25	(DATE TBD)	Gaussian Beams, Lens Transformations	13.1
26	Wed. Apr, 10	Holography	13.3
FINAL EXAM – DATE TBD			