


General course information



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 Term: Spring 2017 Subject: Bioengineering Course Number: 242

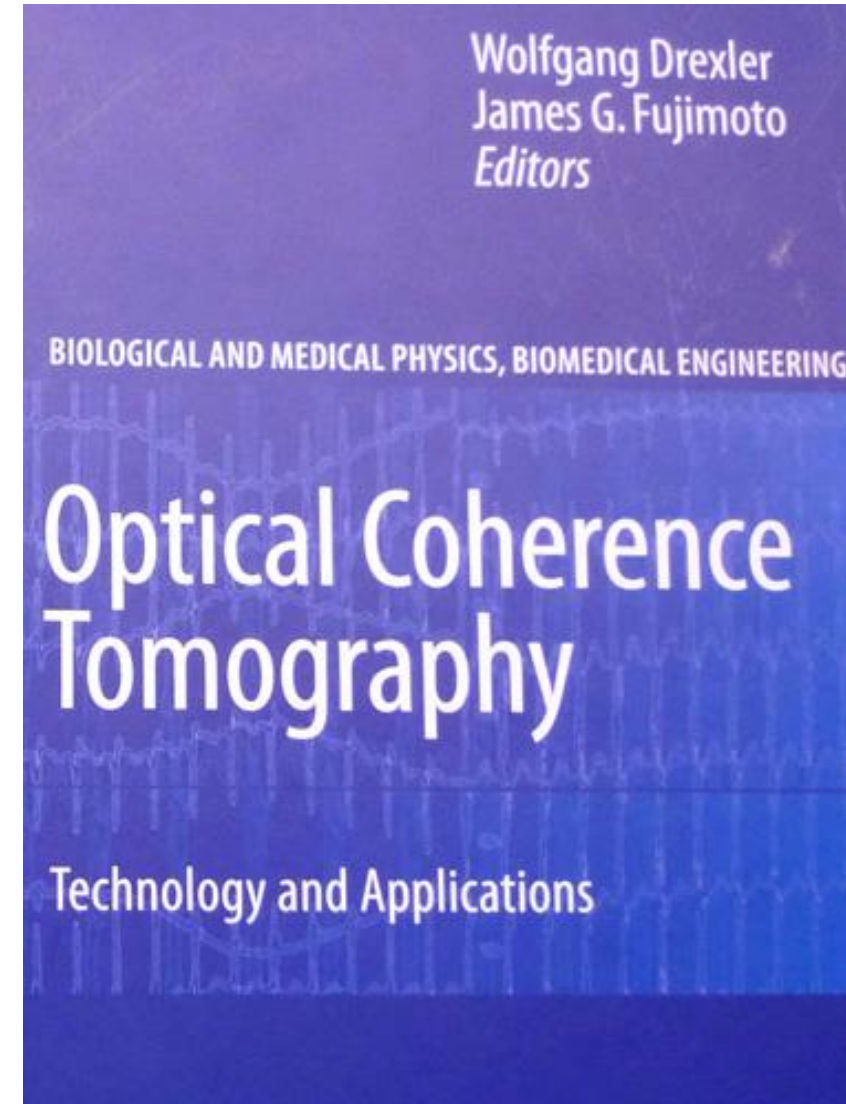
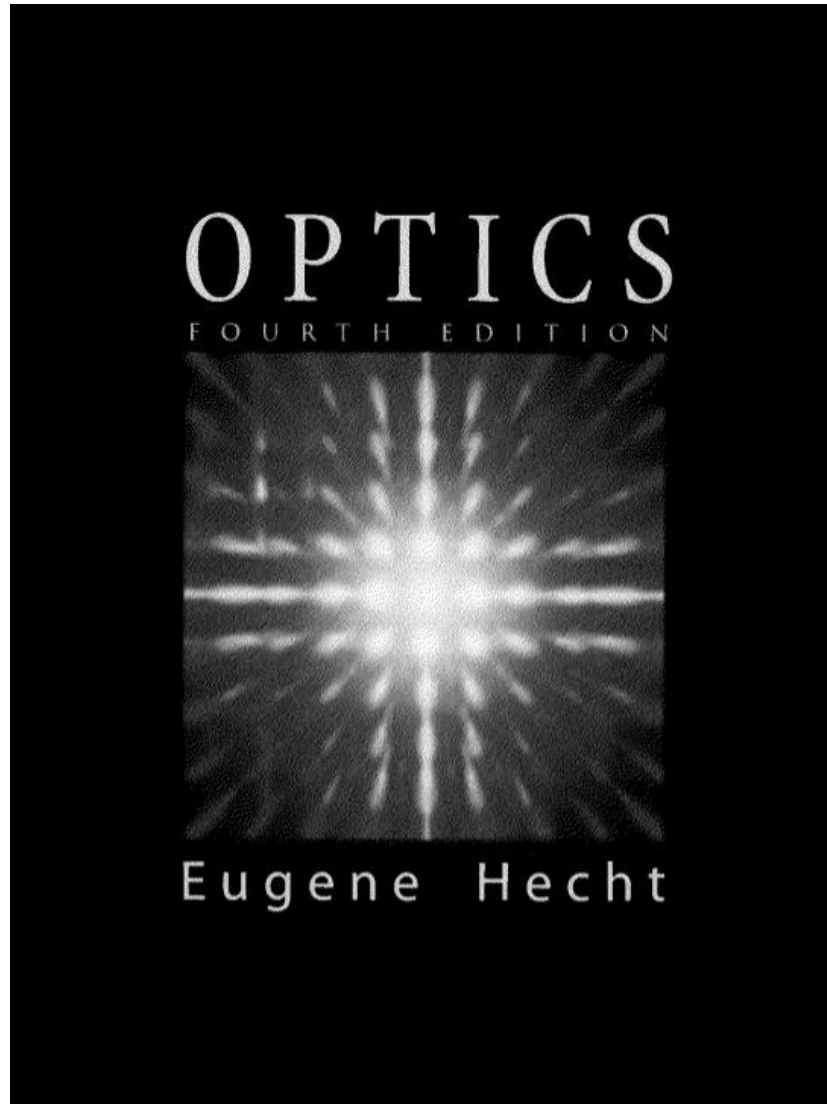
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CRN	Subject	Subject Description	Course Number	Section	Title	Units	Meeting Times	Instructor	Status	
61383	BIEN	Bioengineering	242	001	ADVANCED BIOMEDICAL OPTICAL I... Lecture	4	S M T W T F S 02:10 PM - 03:00 PM Building: Sproul Hall Room: 100	Park, Boris (Primary)	4 of 20 seats remain. LINKED	View Linked
61384	BIEN	Bioengineering	242	021	ADVANCED BIOMEDICAL OPTICAL I... Discussion	0 OR 4	S M T W T F S 01:10 PM - 02:00 PM Building: Sproul Hall Room: 100	Park, Boris (Primary)	4 of 20 seats remain. LINKED	View Linked

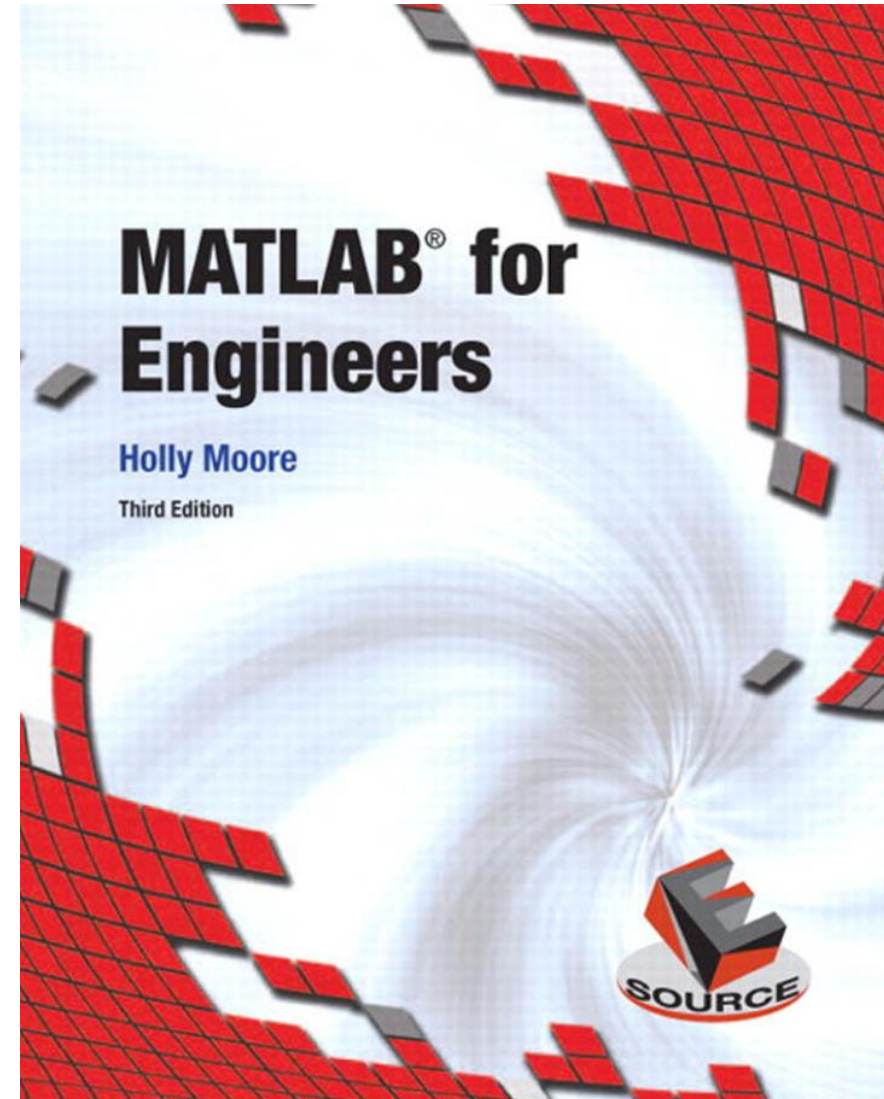
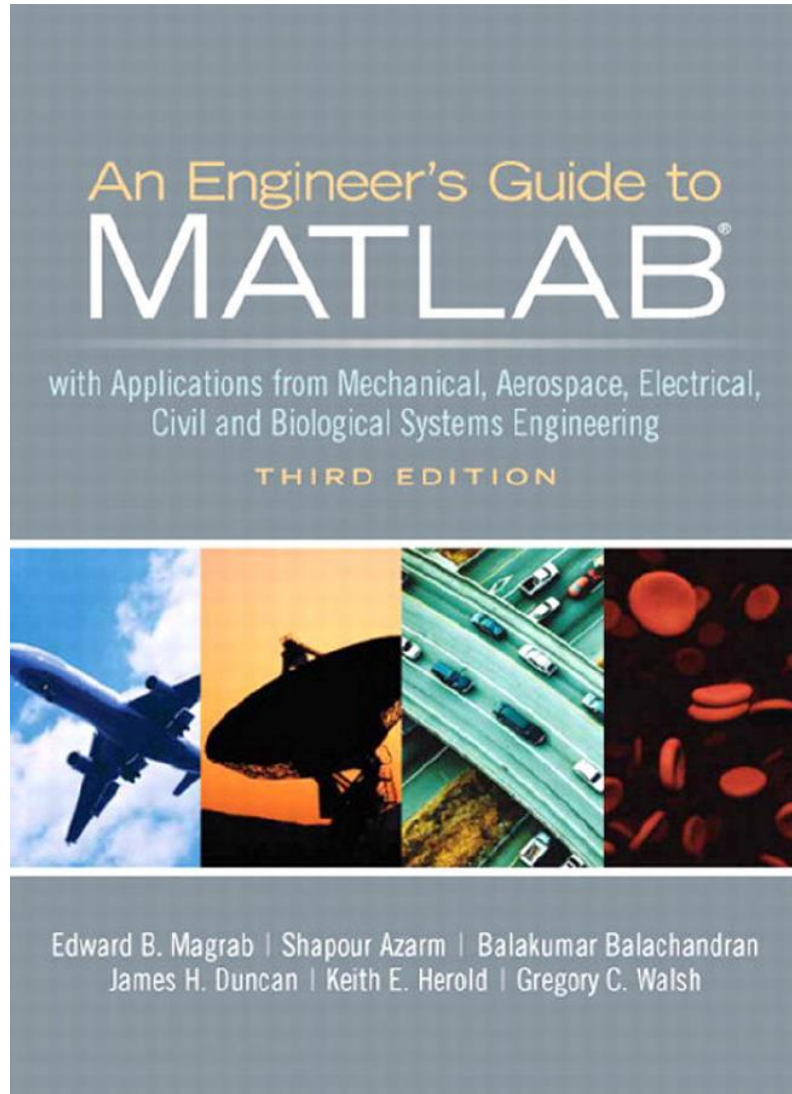
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- Instructor: B. Hyle Park (MSE 243 / Bourns B207, hylepark@engr.ucr.edu)
- Office hours: Thursdays from 12-1 pm
- Objectives: “4 Units, Lecture 3, Discussion 1, Prerequisite(s): BIEN 142 or equivalent; graduate standing or consent of instructor Examines advanced theory and optimized design of biomedical optical imaging systems. Topics include a full understanding of the working principles of optical components, diagnostic light-tissue interaction, and design of imaging systems to exploit the interaction of light with biological phenomena. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.”

Supplemental reading



Supplemental reading



Deliverables and grading

Deliverables

- HW01 (10%)
 - HW02 (10%)
 - Midterm (25%)
 - HW03 (10%)
 - HW04 (10%)
 - Final (25%)
 - General conduct (20%)
-
- Late homework will be graded but not count toward your grade.

Scale (rounded to nearest tenth)

- A+ (top 3; above 97.0%)
 - A (92.0 → 96.9)
 - A- (90.0 → 91.9)
 - B+ (87.0 → 89.9)
 - B (82.0 → 86.9)
 - B- (80.0 → 81.9)
-
- Note the extra 10% buffer.



Schedule

	Monday			Tuesday			Wednesday			Thursday			Friday		
Week 1	4/3/2017			4/4/2017	1:10-2:00pm SPROUL 2356 DIS01: Overview HW1 assigned		4/5/2017	2:10-3:00pm MSE 201 LEC02: Point spread functions		4/6/2017	1:10-2:00pm MSE 201 LEC03: Properties of light		4/7/2017		
Week 2	4/10/2017			4/11/2017	1:10-2:00pm MSE 201 LEC04: Fourier transforms		4/12/2017	2:10-3:00pm MSE 201 LEC05: Signal-to-noise		4/13/2017	1:10-2:00pm MSE 201 LEC06: Light manipulation HW1 due		4/14/2017		
Week 3	4/17/2017			4/18/2017	1:10-2:00pm MSE 201 LEC07: Light-matter interaction HW2 assigned		4/19/2017	2:10-3:00pm MSE 201 LEC08: Single lens camera		4/20/2017	1:10-2:00pm MSE 201 LEC09: Standard microscope		4/21/2017		
Week 4	4/24/2017			4/25/2017	1:10-2:00pm MSE 201 LEC10: Fluorescence microscopy		4/26/2017	2:10-3:00pm MSE 201 LEC11: Gaussian beam optics		4/27/2017	1:10-2:00pm MSE 201 LEC12: Confocal microscopy HW2 due		4/28/2017		
Week 5	5/1/2017			5/2/2017	1:10-2:00pm MSE 201 LEC13: Optical spectroscopy Midterm assigned		5/3/2017	2:10-3:00pm MSE 201		5/4/2017	1:10-2:00pm MSE 201 Midterm due		5/5/2017		
Week 6	5/8/2017			5/9/2017	1:10-2:00pm MSE 201 LEC14: Multi-photon microscopy HW3 assigned		5/10/2017	2:10-3:00pm MSE 201 LEC15: Light polarization		5/11/2017	1:10-2:00pm MSE 201 LEC16: Polarized light microscopy		5/12/2017		
Week 7	5/15/2017			5/16/2017	1:10-2:00pm MSE 201 LEC17: Light interference		5/17/2017	2:10-3:00pm MSE 201 LEC18: Speckle contrast imaging		5/18/2017	1:10-2:00pm MSE 201 LEC19: Phase contrast microscopy HW3 due		5/19/2017		
Week 8	5/22/2017			5/23/2017	1:10-2:00pm MSE 201 LEC20: Optical coherence tomography HW4 assigned		5/24/2017	2:10-3:00pm MSE 201 LEC21: Fourier-domain OCT		5/25/2017	1:10-2:00pm MSE 201 LEC22: Fourier-domain OCT		5/26/2017		

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Week 9	5/29/2017	holiday	5/30/2017	1:10-2:00pm MSE 201 LEC23: Phase-resolved OCT	5/31/2017	2:10-3:00pm MSE 201 LEC24: Doppler OCT	6/1/2017	1:10-2:00pm MSE 201 LEC25: Polarization-sensitive OCT HW4 due	6/2/2017	
Week 10	6/5/2017	MS qualifier week (final)	6/6/2017	MS qualifier week (final)	6/7/2017	MS qualifier week (final)	6/8/2017	MS qualifier week (final)	6/9/2017	MS qualifier week (final)
Finals	6/12/2017		6/13/2017		6/14/2017		6/15/2017		6/16/2017	