



weekly lesson schedule

Course Lecturer		Alaa Naser Khraibet			
e-mail					
Title		Laser physics			
Course Coordinator		The overall goal of studying laser physics is to understand and apply the principles of lasers, including the generation of coherent light, their properties, and their interactions with various materials, with an emphasis on their practical applications in diverse fields such as medicine, industry, and communications.			
Course Objectives		•			
Course Description		This includes studying the principles of laser operation, such as stimulated emission, coherent beamforming, and classifying different types of lasers, along with understanding the properties of light emitted by lasers, such as coherence, collimation, monochromacy, and directivity, and how these properties affect different applications. In short, the overall goal of studying laser physics is to build a generation of experts capable of understanding and applying laser principles in various fields, thus contributing to the development of modern technologies and innovations.			
Textbooks		. Laser Electronics , THIRD EDITION JOSEPH T. VERDEYEN 2. Laser Fundamentals, SECOND EDITION WILLIAM T. SILFVAST Lasers, by A. Siegman Lasers fundamentals and applications by K. Thyagarajan, A. Ghatak			
final exam 50	project	Assignment	daily exams	lab	Midterm Exam
	10	10	10	10	10
General Notes					



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Week	Date	Topics Covered	Number of Hours	Notes
1	10-3-2025	Introductory Concepts: - Laser gain		
2	17-3-2025	Fluorescence line shape & fluorescence line width		
3	24-3-2025	Mathematica expressions of fluorescence line width		
4	31-3-2025	- Laser gain curve & Natural broadening		
5	7-4-2025	Doppler broadening & Pressure Broadening		
6	14-4-2025	Loop Gain (without loss) - Loop gain (with loss)		
7	21-4-2025	calculating threshold gain		
8	28-4-2025	- Holl bernning and active medium gain		
9	5-5-2025	Saturation gain in cw laser Gain and output power of cw laser		
10	12-5-2025	- Continues wave laser & Pulsed laser.		
11	19-5-2025	- Pulse shape out of a pulsed Ruby laser		
12	26-5-2025	-Laser radiation properties.		

lecturers signature:

Head of Department signature: