



weekly lesson schedule

Course Lecturer		Alaa Naser Khraibet			
e-mail					
Title		optics			
Course Coordinator					
Course Objectives		This includes understanding the principles of stimulated light emission, forming a coherent laser beam, and determining its properties (wavelength, power).			
Course Description		This course provides a comprehensive introduction to the basic principles of lasers. This understanding focuses on how lasers are produced, how their properties are controlled, and how they interact with different materials. It also includes a study of the principles of stimulated emission, the formation of laser beams, and their unique properties (coherence, collimation, monochromaticity, and directivity). The study includes learning about the different types of lasers, such as solid-state lasers, gas lasers, liquid lasers, and semiconductor lasers, with an understanding of the working mechanism of each type. Students are trained to use different laser devices, understand how they work, and perform basic maintenance. Students are trained to use different laser devices, understand how they work, and perform basic maintenance.			
Textbooks		1. <i>Principles of Lasers</i>, by O. Svelto. 2-<i>Laser Fundamentals</i> by W. 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
١	13-11-2024	The electromagnetic spectrum , units		
٢	20-11-2024	Laser process		
٣	27-11-2024	Absorption of electromagnetic Radiation		
٤	4-12-2024	Population inversion		
٥	11-12-2024	Einstein Coefficients. Lasing Processes , Three- and Four-Level Lasers		
٦-٧	18-11-2024 25-11-2024	The Optical Resonator, Basic components of a Laser system		
٨-٩	8-1-2025-	Light and Blackbody Emission , Energy Levels, Radiative and Nonradiative Transitions in Molecules		
١٠-١١-١٢	15-1-2025 22-1-2025	Properties of Laser Radiation . Laser Gain. Linewidth. Thresholds for Lasing. Calculating Threshold Gain. Selective Pumping.. CW Lasing Action. Thermal Population Effects.		
١٣-١٤	29-1-2025 5-2-2025	Solid-State, Dye, and Semiconductor Lasers		
١٥	12-2-2025	Gas, Chemical, Free Electron, and X-Ray Lasers		

lecturers signature:

Head of Department signature: