



weekly lesson schedule

Course Lecturer		Dr.Rasheed Almansory			
e-mail					
Title		Digital Techniques			
Course Coordinator					
Course Objectives		- To provide advanced knowledge of digital systems and their applications in laser and optoelectronics. - To enable students to design, analyze, and implement digital circuits relevant to optical and photonic devices.			
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					

The Republic of Iraq
Ministry of Higher Education
and Scientific Research
Scientific Supervision and
Evaluation Authority



University: Shatt Al-Arab
College: College of technical Engineering
Department: Laser and Optoelectronics
Engineering Technology
The First stage
Lecturer Name: Dr.rasheed Almansory
..Scientific title:
Academic qualification:
Place of work: Shatt Al-Arab University

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Week	Date	Topics Covered	Number of Hours	Notes
١	13-11-2024	Review of Digital Techniques 1 Combinational Logic Design		
٢	20-11-2024	Sequential Circuits		
٣	27-11-2024	Finite State Machines (FSM)		
٤	4-12-2024	Memory Systems		
٥	11-12-2024	Introduction to VHDL/Verilog		
٦-٧	18-11-2024 25-11-2024	Digital System Design Using FPGA Digital-to-Analog (DAC) and Analog-to-Digital Converters (ADC)		
٨-٩	8-1-2025-	Digital Signal Processing (DSP) Basics		
١٠-١١-١٢	15-1-2025 22-1-2025	Interfacing Digital Circuits with Optoelectronic Devices		
١٣-١٤	29-1-2025 5-2-2025	Data Transmission & Error Control Microcontroller Applications in Optoelectronics		
١٥	12-2-2025	Advanced Topics System Integration		

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Head of Department signature: