

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري لمادة برمجة الحاسوب

	Material Covered
Week	Syllabus
1	Introduction to Programming Role of programming in engineering and photonics Programming environments (Python/C/MATLAB)
2	Basic Syntax & Structure Variables, data types, operators, input/output Simple engineering examples
3	Control Structures (I) Conditional statements (if, switch) Applications in decision-making programs
4	Control Structures (II) Loops (for, while) Simulation of repeated experiments
5	<u>Midterm</u>
6	Functions and Modular Programming Function definition and calling Applications in optical signal calculations
7	Arrays and Lists One- and multi-dimensional arrays Signal storage and processing
8	Strings and File Handling Text and numerical data handling Import/export of measurement data
9	Pointers (if C) or Advanced Lists (if Python/MATLAB) Memory handling concepts Applications in numerical computation Data Structures Basics Structures, records, dictionaries Organizing optical parameters
10	Numerical Methods with Programming Solving equations, matrix operations Applications in optics and photonics
11	Error Handling and Debugging Common errors and debugging techniques Reliable code for engineering simulations
12	Introduction to Object-Oriented Programming Classes and objects (if Python or MATLAB OOP) Applications in modular system modeling
13	Applications in Engineering Simulation of noise using random number generators Modeling light intensity distribution
14	Case Studies in Optoelectronics Fiber attenuation calculator BER (Bit Error Rate) simulator for optical communication

15	Final Project & Review Students present coding projects related to laser/optics problems
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