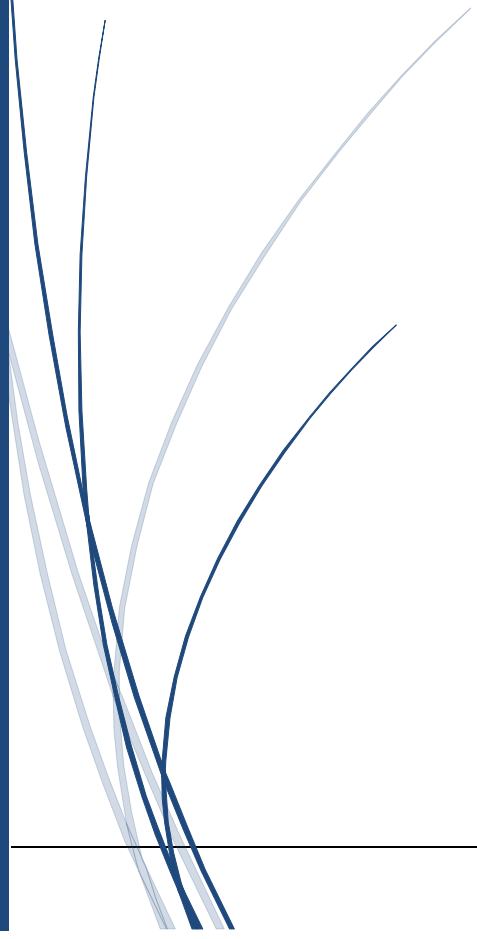
6/3/2023

Digital Technologies

EET1102



Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1:	• Numerical Systems: Decimal, Binary, Octal, Hexadecimal.
Week 2:	• Conversion between Decimal and Binary. • Conversion between Decimal and Octal.
Week 3:	• Conversion between Decimal and Hexadecimal. • Conversion between Octal and Binary.
Week 4:	• Conversion between Hexadecimal and Binary. • Binary Arithmetic: Addition and Subtraction.
Week 5:	• Binary Arithmetic: Using Complements for Subtraction. • Introduction to Logic Gates: AND, OR, NOT.
Week 6:	• Implementing Logic Gates with Switches. • Implementing AND and OR Gates with Diodes and Resistors.
Week 7:	• Implementing AND, OR, and NOT Gates with Transistors. • Introduction to XOR and XNOR Gates.
Week 8:	• Boolean Algebra: De Morgan's Theorems. • Boolean Algebraic Relationships.
Week 9:	• Implementing Different Gates using NAND Gate. • Implementing Different Gates using NOR Gate.
Week 10:	• Circuits with Different Gates: Truth Table and Logic Equation. • Simplification of Logic Circuits with Boolean Algebra.
Week 11:	• Introduction to Karnaugh Map: 2-variable and 3-variable Maps. • Transferring Truth Table to Karnaugh Map.
Week 12:	• Karnaugh Map: 4-variable Map. • Examples of Digital Circuits with Karnaugh Map.
Week 13:	• Simplification of Logic Circuits with Karnaugh Map: Don't Care Conditions. • Logic Circuits with the Property of Folding and Interlocking.
Week 14:	• Arithmetic Circuits: Half-Adder and Full-Adder. • Arithmetic Circuits: Half-Subtractor and Full-Subtractor.
Week 15:	• Review and Revision. • Practice Exam and Preparation for Final Assessment.
Week 16	• Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1:	• Introduction to Laboratory Equipment and their Usage. • Deriving Truth Tables for NOT, AND, and OR Gates using Switches.
Week 2:	• Deriving Truth Tables for NOT, AND, and OR Gates using Diodes and

	Transistors. • Implementing NOR and NAND Gates using Diodes and Transistors.
Week 3:	• Implementing and Verifying Exclusive OR (EXOR) and Exclusive NOR (EXNOR) Gates. • Implementing De Morgan's First and Second Laws.
Week 4:	• Constructing Basic Gates using NAND Gate IC7400. • Constructing Basic Gates using NOR Gate IC7402.
Week 5:	• Constructing EXOR Gate using NAND Gate and again using NOR Gate. • Half-Adder Circuit using Different Gates and NAND Gate again.
Week 6:	• Half-Subtractor Circuit using Different Gates and NAND Gate again. • Full-Adder Circuit using Different Gates and NAND Gate again.
Week 7:	• Full-Subtractor Circuit using Different Gates and NAND Gate again. • Implementing Full-Adder and Full-Subtractor Circuits.
Week 8:	• Implementing Half-Adder and Half-Subtractor Circuits.
Week 9:	• Implementing Full-Adder and Full-Subtractor Circuits using ICs. • Using Integrated Circuits for Addition and Subtraction.
Week 10:	• Introduction to Integrated Circuits (ICs). • Implementing 4-bit Binary Addition using ICs.
Week 11:	• Implementing 4-bit Binary Subtraction using ICs. • Implementing Arithmetic Circuits using ICs.
Week 12:	• Practice Exam and Preparation for Assessment.
Week 13:	• Implementing Half-Carry and Full-Carry Lookahead Adders. • Introduction to Carry Lookahead Adder Circuits.
Week 14:	• Implementing Multiplexers and Demultiplexers.
Week 15:	• Design, Implementation, and Testing of a Complex Digital Circuit. • Course review and feedback.
Week 16	• Preparatory week before the final Exam.