National University
of Computer & Emerging Sciences

Course Outline of BS (Computer Science) Degree Program --Spring 2021

Course Title	Digital Logic Design (DLD)	Course Code	EE227	
Pre-requisite(s)	Basic Electronics	Credit Hrs.	3 + 1	
Instructor	Behraj Khan			
Office	Faculty Room No.16 (Cubicle-A) opposite HOD CS office			
Email	behraj.khan@nu.edu.pk			

Text Book (1)	Title	Digital Fundamentals
	Author	Thomas L. Floyd
	Publisher	Pearson Education , 10th or 11th Edition
Text Book (2)	Title	Digital Design
	Author	M. Morris Mano, Michael Ciletti
	Publisher	Pearson Education , 4th Edition
Ref. Book (1)	Title	Digital Principles and Applications
	Author	Donald P Leach, Albert Paul Malvino, Goutam Saha
	Publisher	McGraw Hill Companies, 6th Edition
Ref. Book (2)	Title	Digital Systems Principles and Applications
	Author	Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss
	Publisher	Pearson Education, 10th Edition

Objective:	The objective of this course is to introduce concept & tools for the design of digital electronics circuits using sequential and combinational

Week	Course Contents/Topics	Chapter
01	Introduction. Digital Electronics. Digital Principles. Analog Vs. Digital. Basic Logic operations.	1
02	Number Systems. Binary to Decimal. Decimal to Binary conversion. Hexadecimal Number system. BCD code. The Byte, Nibble and Word.	2
03	Logic Gates, AND OR & NOT Gates, NOR NAND XOR Gates.	3
04	Boolean Algebra and logic simplification. DeMorgan's Theorems. Boolean analysis of Logic circuits. Truth Tables. The Karnaugh Map.	4
05	Basic Combinational circuits. Implementing Combinational Logic. Using NAND and NOR Gates.	5
06	**Mid Term 1**	
07 & 08	Basic Adders. Parallel Binary Adders. Ripple v/s Look-Ahead carry adders. Comparators. Decoders. Encoders. Multiplexers. Demultiplexers.	6
09 & 10	Latches. Edge-Triggered Flip-Flops. Flip-Flop Operating Characteristics. Flip-Flop applications.	7
11	Asynchronous Counters. Synchronous Counters. Cascaded Counters. Counter Decoding.	8

Studied till the end of MID 2

Final

12	**Mid Term 2**	
13 & 14	Basic Shift Register Operations. Serial In/Serial Out Shift Registers. Serial In/Parallel Out and Parallel In/Parallel Out Shift Registers. Bidirectional Shift Registers.	9
15 & 16	Memory Basics, the Random-Access Memory. The Read-only Memory. Programmable ROM. The Flash Memory. Memory Expansion. Special Types of Memories. Magnetic & Optical Storage.	10

Grading Policy:

Midterm	30%	15+15
Assignments/Project/Viva	20%	15+05
Final Exam	50%	
Total	100%	

Official Excuses: Only excuses obtained officially are accepted. Personal excuses are not accepted. No make-up tests/quizzes/exams will be provided. If an official excuse exists, the student will be given the average of his grades, or as advised by the academic committee.

Chapter	Recommended Problems
Announced as course proceeds. Mostly from text and self-designed problems.	

Google class code: **cj6dvs2**
Google meet code: **df26zlbbxa**