1.	**Course Title**	**Digital Systems**		
2.	**Course Code**	**CCPS2523**		
3.	**Status**	Faculty		
4.	**Credit Hour**	3 (2+1) 2 lecture (2 hours lecture x 14 weeks) 1 tutorials (1.5 hours per x 14 weeks) using simulator & emulator supervised by tutor		
5.	**Semester/Year**	1/2		
6.	**Prerequisites**	None		
7.	**Teaching method:**	Distance Learning (Electronic)		
8.	**Evaluation**	**Assessment and Marking Percentage:** Participation 5% Quizzes 15% Project 15% Mid Sem Exam 15% Final Examination 50%		
9.	**Lecturer**			
10.	**Objective of the Subject**	To provide sound understanding and practical knowledge of the fundamentals of logic design of digital circuits.		
11.	**Learning Outcomes**	By the end of the subject, students should be able to: • Describe and interpret the basics about digital circuit logic elements, various logical operations and design of logic circuits. • Explain the functionalities of basic building blocks of a microcomputer • Demonstrate a good understanding in the operation of multiprocessors computers		
12.	**Synopsis**	The course introduces for expose student to the field of Digital technology elements such as Logic elements, Counters and registers and etc.		
13.	**Topics**	Details	Lecture (Hrs)	Tutorial (Hrs)
	Topic 1	**1.Introduction** Digital and Analog Systems . Number Systems, Binary/Octal/Hex Number Systems .Binary Arithmetic. Other Codes: BCD, Excess-3, Gray, ASCII.	2	3
	Topic 2	**2.Logic Elements** Logic operators. Symbols, Logic Gates, Truth tables, Evaluation of logic circuit output , Gate level circuit, TTL, Boolean Algebra Boolean & DeMorgan's Theorems. NAND and NOR gates.	4	3
	Topic 3	**3.Combination Logic Circuit** Sum-of-Product&Product-of-Sum, Simplification of Logic Circuit .Designing Combinational Logic. K-Map, Basic characteristics of Digital ICS. XOR and XNOR circuits, and Parity generator.	4	3
	Topic 4	**4.Sequential Logic.** Delays & Latches, Clock signal, JK & Flip- flops.D flip –flops, Timing & State, Asynchronous inputs, Master/slave flip-flop, Flip-flop synchronisation and application. Monostable and astable multivibrators.	3	1.5
	Topic 5	**5.Arithmetic Circuits.** Signed numbers.2's complement, Addition & subtraction, Multiplications and Division, BCD Addition, Half & Full Adder, Parallel/Aerial Adder and Carry propation.	3	1.5

	Topic 6	**6.MSI Logic circuits** Decoder/Encoder, 7 – Segment drivers, Multiplexer & Demultiplexer, Code Converter & Comparators and Tristate register.	3	1.5
	Topic 7	**7.Counters and Register** Synchronous/Asynchronous counters. Up/down counters, Design counters, Shift register Parallel & series load). Counter / Shift register ICs and Counter/Shift applications	3	1.5
	Topic 8	**8.IC logic families** TTL/CMOS/ECL Characteristics, Loading & Fan-out, Open Collectors & Open drain and Tristate TTL	3	1.5
	Topic 9	**9.Interfacing with analog devices** DAC &ADC, Converter circuits and Digital-ramp ADC.	2	1.5
	Topic 10	**10.Memori Devices** Memory Architecture, Memory Operations, CPU-memory Connection, ROM/RAM/EPROM And Read/Write Cycle.	2	3
		Total contact hours	28	21
		Equivalent lecture hours	28	14
		Total lecture hours	42	
		Credit hours	3	
14.	**Main reference: Textbook:**	Thomas L. Floyd, "**Digital Fundamentals"** 10th Edition, Pearson Education International, 2008.		
15.	**Additional References:**	1. M.Moris Mano and Michael D. Ciletti, "Digital Design", 4th Edition, 2007, Prentice hall. **2.** Ronald J. Tocci, Neal S.Wldmer, and Gregory L.Moss, "Digital Systems : Principles and Application", 10th Edition, Pearson education International, 2007		
	Other Materials:	All materials will be available to the students online.		