

Bachelor of Information Technology in Management Information System (Hons)

1.	Course Title	Digital Systems		
2.	Course Code	CCPS2523		
3.	Status	Major		
4.	Credit Hour	3 (2+1) 2 for lecture (2 hours per week x 14 weeks) 1 for lab (2 hours per week 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	After completing this subject, it is expected that you will 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)	Lab (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	3	1.5

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		synchronisation and application. Monostable and astable multivibrators.		
	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	1.5
		Total contact hours	28	21
		Equivalent lecture hours	28	14
		Total lecture hours	42	
		Credit hours	3	
14.	Main reference:	1. Thomas L. Floyd, “ Digital Fundamentals ” 10 th Edition, Pearson Education International, 2008.		
15	Additional References:	1. M.Moris Mano and Michael D. Ciletti, “ Digital Design ”, 4 th 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 other materials will be available to students online.		