

Lesson Plans Computer Engg.

Name of Faculty: Narender kumar
 Department: Computer Engineering
 Semester: 3rd
 Subject: Data Communication
 Lesson Plan Duration: 15 weeks

**Work load (Lecture / Practical) per week(in hours): Lectures-04, Practicals -Nil

Week	Theory	
	Lect. day	Topic (Including assignment / test)
1st	1st	1. Introduction : Data Communication- Components
	2nd	Data representation
	3rd	Data flow Networks
	4th	Distributed processing
2nd	1st	Network criteria
	2nd	Physical structures Network Category- LAN
	3rd	WAN, MAN
	4th	2. Data and Signals : Analog and Digital data
3rd	1st	Analog and digital signals
	2nd	Periodic and Non Periodic signals
	3rd	periodic analog signals
	4th	Digital Signals- Bit rate, Bit length
4th	1st	Digital signal as a composite analog signal
	2nd	Transmission of digital signals
	3rd	Transmission Impairment- Attenuation, Distortion and noise
	4th	Performance- bandwidth, throughput
5th	1st	Latency, jitter
	2nd	Revision
	3rd	3. Digital and Analog Transmission : Analog transmission- Digital to Analog Conversion- ASK
	4th	PSK, FSK
6th	1st	Analog to Analog Conversion- AM
	2nd	PM,FM(No mathematical treatment)
	3rd	Digital transmission- Digital to digital conversion- coding and schemes
	4th	Digital transmission- Digital to digital conversion- coding and schemes
7th	1st	Analog to digital conversion- PCM
	2nd	Delta Modulation (DM)
	3rd	Transmission modes- Serial transmission
	4th	Transmission modes- parallel transmission
8th	1st	Revision
	2nd	Revision
	3rd	4. Multiplexing – FDM
	4th	FDM
9th	1st	WDM
	2nd	WDM
	3rd	TDM
	4th	TDM
10th	1st	Revision
	2nd	Revision
	3rd	5. Transmission media : Guided media
	4th	Twisted pair cable
11th	1st	Twisted pair cable
	2nd	Co-axial cable
	3rd	Co-axial cable
	4th	Fibre optics cable
12th	1st	Fibre optics cable
	2nd	Unguided Media
	3rd	Radio wave
	4th	Microwave
13th	1st	Infrared
	2nd	Revision
	3rd	6. Error Detection and Correction : Types of Errors
	4th	Redundancy

14th	1st	Detection v/s correction
	2nd	Forward error correction
	3rd	Forward error correction v/s retransmission.
	4th	Error detection through Parity bit
15th	1st	Block parity to detect double errors and correct single errors.
	2nd	General principles of error detection and correction using cyclic redundancy check
	3rd	Revision
	4th	Revision

Name of Faculty: Devender Saini
 Department: Computer Engineering
 Semester: 3rd
 Subject: Digital Electronics
 Lesson Plan Duration: 15 weeks

**Work load (Lecture / Practical) per week(in hours): Lectures-03, Practicals -03

Week	Theory		Practical	
	Lect. day	Topic (Including assignment / test)	Pract. Day	Topic
1st	1st	1. Introduction a) Distinction between analog and digital signal.	1st	Verification and interpretation of truth tables for AND, OR, NOT gates
	2nd	b) Applications and advantages of digital signals.	2nd	Verification and interpretation of truth tables for AND, OR, NOT gates
	3rd	2. Number System a) Binary, octal and hexadecimal number system: Conversion from decimal to binary	3rd	Verification and interpretation of truth tables for AND, OR, NOT gates
2nd	1st	Conversion from hexadecimal to binary	1st	Verification and interpretation of truth tables for NAND, NOR gates
	2nd	Conversion from binary to decimal	2nd	Verification and interpretation of truth tables for NAND, NOR gates
	3rd	Conversion from binary to hexadecimal	3rd	Verification and interpretation of truth tables for Exclusive OR (EXOR) gate
3rd	1st	b) Binary addition and subtraction including binary points. 1's and 2's complement method of addition/subtraction.	1st	Verification and interpretation of truth tables for Exclusive OR (EXOR) gate
	2nd	3. Codes and Parity a) Concept of code, weighted and non-weighted codes	2nd	Verification and interpretation of truth tables for Exclusive OR (EXOR) gate
	3rd	Examples of 8421, BCD, Excess-3 and Gray code.	3rd	Verification and interpretation of truth tables for Exclusive NOR (EXNOR) gate
4th	1st	b) Concept of parity, single and double parity, Error detection	1st	Verification and interpretation of truth tables for Exclusive NOR (EXNOR) gate
	2nd	4. Logic Gates and Families a) Concept of negative and positive logic NOT, AND, OR, NAND, NOR, EXOR Gates	2nd	Verification and interpretation of truth tables for Exclusive NOR (EXNOR) gate
	3rd	NAND & NOR as universal gates. (c) Introduction to TTL and CMOS logic families	3rd	Realisation of logic functions with the help of NAND gate
5th	1st	5. Logic Simplification a) Postulates of Boolean algebra, De Morgan's Theorems.	1st	Realisation of logic functions with the help of NAND gate
	2nd	Implementation of Boolean (logic) equation with gates	2nd	Realisation of logic functions with the help of NOR gate
	3rd	Implementation of Boolean (logic) equation with gates	3rd	Realisation of logic functions with the help of NOR gate
6th	1st	Karnaugh map (2 variables) and simple application in developing combinational logic circuits	1st	To design a half adder using XOR gate and verification of its operation
	2nd	Karnaugh map (3 variables) and simple application in developing combinational logic circuits	2nd	To design a half adder using XOR gate and verification of its operation
	3rd	Karnaugh map (4 variables) and simple application in developing combinational logic circuits	3rd	To design a half adder using NAND gate and verification of its operation
7th	1st	Karnaugh map (4 variables) and simple application in developing combinational logic circuits	1st	To design a half adder using NAND gate and verification of its operation
	2nd	6. Arithmetic circuits Half adder circuit, design and implementation.	2nd	Construction of a full adder circuit using XOR gate and verify its operation
	3rd	Full adder circuit, design and implementation.	3rd	Construction of a full adder circuit using NAND gate and verify its operation
8th	1st	4 bit adder circuit	1st	Construction of a full adder circuit using NAND gate and verify its operation
	2nd	7. Decoders, Multiplexers, De Multiplexers and Encoder a) Four bit decoder circuits for 7 segment display and decoder/driver ICs.	2nd	Verification of truth table for positive edge triggered IC flip-flops of D latch
	3rd	b) Basic functions and block diagram of MUX with different Ics	3rd	Verification of truth table for positive edge triggered IC of D flip-flop
9th	1st	b) Basic functions and block diagram of DEMUX with different Ics	1st	Verification of truth table for positive edge triggered IC of JK flip-flops.
	2nd	c) Basic functions and block diagram of Encoder	2nd	Verification of truth table for Negative edge triggered IC flip-flops of D latch
	3rd	8. Latches and flip flops a) Concept and types of latch with their working and applications	3rd	Verification of truth table for negative edge triggered IC of D flip-flop
10th	1st	b) Operation using waveforms and truth tables of RS & T flip flops.	1st	Verification of truth table for negative edge triggered IC of JK flip-flops.
	2nd	Operation using waveforms and truth tables of D & Master/Slave flip flops.	2nd	Verification of truth table for level triggered IC flip-flops of D latch
	3rd	Operation using waveforms and truth tables of JK flip flops. c) Difference between a latch and a flip flop	3rd	Verification of truth table for level triggered IC of D flip-flop
11th	1st	9. Counters a) Introduction to Asynchronous and Synchronous counters	1st	Verification of truth table for level triggered IC of JK flip-flops.

	2nd	b) Binary counters	2nd	Verification of truth table for encoder ICs
	3rd	c) Divide by N ripple counters, Decade counter	3rd	Verification of truth table for decoder ICs
12th	1st	Ring counter	1st	Verification of truth table for Mux
	2nd	10. Shift Register Introduction and basic concepts including shift left and shift right.	2nd	Verification of truth table for DeMux
	3rd	a) Serial in parallel out, serial in serial out	3rd	To design a 4 bit SISO shift registers using JK/D flip flops and verification of their operation.
13th	1st	Parallel in serial out, parallel in parallel out.	1st	To design a 4 bit SIPO shift registers using JK/D flip flops and verification of their operation.
	2nd	b) Universal shift register	2nd	To design a 4 bit PISO shift registers using JK/D flip flops and verification of their operation.
	3rd	11. A/D and D/A Converters Working principle of A/D and D/A converters	3rd	To design a 4 bit PIPO shift registers using JK/D flip flops and verification of their operation.
14th	1st	Brief idea about different techniques of A/D conversion • Stair step Ramp A/D converter	1st	To design a 4 bit ring counter and verify its operation.
	2nd	• Dual Slope A/D converter • Successive Approximation A/D Converter	2nd	To design a 4 bit ring counter and verify its operation.
	3rd	Detail study of : • Binary Weighted D/A converter • R/2R ladder D/A converter	3rd	To design a 4 bit ring counter and verify its operation.
15th	1st	• R/2R ladder D/A converter Applications of A/D and D/A converter.	1st	Use of Asynchronous Counter ICs (7490 or 7493)
	2nd	12. Semiconductor Memories Memory organization, classification of semiconductor memories (RAM, ROM, PROM, EPROM, EEPROM)	2nd	Use of Asynchronous Counter ICs (7490 or 7493)
	3rd	Static and dynamic RAM, Introduction to 74181 ALU IC	3rd	Use of Asynchronous Counter ICs (7490 or 7493)

Lesson Plan

Name of the Faculty : Prashant Suhag
Discipline : Computer Engg.
Semester : 3rd
Subject : **Multimedia Applications**
Lesson Plan Duration : 15weeks

Work Load (Lecture / Practical) per week (in hours): Lectures-03, Practical-03

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
1 st	1 st	Concept of Multimedia, History of Multimedia	1st	Prac. 1 Installation of various multimedia software like Photoshop, Flash, Director or any open source software
	2 nd	Multi media hardware and software		
	3 rd	-various classes, components		
2 nd	4 th	Quality criteria and specifications of different capturing devices	2nd	Installation of various multimedia software like Photoshop, Flash, Director or any open source software
	5 th	Communication devices,		
	6 th	Storage devices, Display devices		
3 rd	7 th	Elements of Multimedia, different multimedia file formats	3rd	Prac. 2 Installing and use of various multimedia devices - Scanner - Digital camera, web camera - Plotter and printers -
	8 th	Applications of multimedia – benefits and problems		
	9 th	Revision		
4 th	10 th	Planning steps and process, Audio encoding techniques, ,	4th	- Mike and speakers - Touch screen
	11 th	Concept of data compression, Text encoding,		
	12 th	Types of images, Capturing images using camera/scanner,		
5 th	13 th	coding techniques for Moving Images,	5th	- DVD - Audio CD and Video CD
	14 th	Editing , Editing of images audio		
	15 th	text, video and graphics,		
6 th	16 th	Revision	6th	Prac. 3 Reading and writing of different format on CD/DVD
	17 th	Revision		

Week	Theory		Practical	
	Lecture day	Topic (including assignment / test)	Practical Day	Topic
	18 th	navigation and user interface designing,		
7 th	19 th	Use of various codes like bar code, QR code in multimedia applications.	7th	Prac. 4 Transporting audio and video files
	20 th	Use of various codes like bar code, QR code in multimedia applications		
	21 st	Revision		
8 th	22 nd	Photo-shop workshop,	8th	Prac. 5 Using various features of Flash
	23 rd	, image editing tools,		
	24 th	specifying and adjusting colors		
9 th	25 th	using gradient tools,	9th	Using various features of Flash
	26 th	selection and move tools,		
	27 th	transforming path drawing and		
10 th	28 th	editing tools,	10th	Prac. 6 Using various features of Photo-shop/GIMP
	29 th	using channels,		
	30 th	layers, filters and actions		
11 th	31 st	layers, filters and actions	11th	Prac. 7 Making multimedia presentations combining, Flash, Photo-shop, such as department profile, lesson presentation, games and project presentations
	32 nd	Revision		
	33 rd	Revision		
12 th	34 th	Types of Authoring programmes	12th	Making multimedia presentations combining, Flash, Photo-shop, such as department profile, lesson presentation, games and project presentations
	35 th	Icon based, Time based,		
	36 th	Story boarding/scripting and object oriented working in macromedia flash,		
13 th	37 th	exploring interface using selection of PEN tools.	13th	Prac. 8 Generation and recognition of bar code & QR code using pre built application/mobile applications.
	38 th	Working with drawing and painting tools,		
	39 th	, applying colour viewing and manipulating time line		
14 th	40 th	animating, processing, guiding layers,	14th	Generation and recognition of bar code & QR code using pre built application/mobile applications.
	41 st	importing and editing sound and		
	42 nd	video clips in flash		

Lesson Plan					
Discipline	Computer Engineering				
Semester	3rd				
Subject	Operating System				
Duration	16 WEEKS				
Work Load	Lecture	4(Lecture) per week (in hours)			
	Practical	3 hours Lab per week			
Week	Theory			Practical	
	Day	Topic		Day	Topic
1st	Overview of Operating Systems				
	1st	Definition of Operating Systems		1st	Demonstration of all the controls provided in windows control panel
	2nd	Types of Operating Systems: Batch Systems, Multi-Programming OS		2nd	N/A
	3rd	Types of Operating Systems: Time Sharing Systems, Real Time Systems		3rd	N/A
2nd	4th	Class Test of Topics Covered		4th	N/A
	1st	Operating System Services, User operating system interface		1st	Exercise on Basics of windows
	2nd	System Calls, Types of System Calls		2nd	N/A
	3rd	System Programs		3rd	N/A
3rd	4th	Class Test of Topics Covered		4th	N/A
	1st	Operating System Structure		1st	Installation of Linux Operating System
	2nd	Virtual Machine, Benefits of Virtual Machine		2nd	N/A
	3rd	Revision of the unit		3rd	N/A
4th	4th	Class Test of Unit I		4th	N/A
	Process Management (Principles and Brief Concept)				
	1st	Process concept, Process State, Process Control Block,		1st	Usage of directory management commands of Linux: ls, cd, pwd, mkdir, rmdir
	2nd	Scheduling Queues, Scheduler, Job Scheduler, Process Scheduler		2nd	N/A
5th	3rd	Context Switch, Operations on Processes		3rd	N/A
	4th	Class Test of Topics Covered		4th	N/A
	1st	Interprocess Communication		1st	Usage of File Management commands of Linux: cat, chmod, cp, mv, rm, pg, more, find
	2nd	Shared Memory Systems, Message-Passing Systems		2nd	N/A
6th	3rd	CPU Scheduler, Scheduling Criteria, Process Synchronization.		3rd	N/A
	4th	Class Test of Topics Covered		4th	N/A
	1st	Scheduling Algorithms, Preemptive and Non Preemptive		1st	Use the general purpose commands of Linux: wc, od, lp, cal, date, who, whoami
	2nd	First come first serve (FCFS), Shortest Job first (SJF) Round Robin (RR), Multiprocessor scheduling		2nd	N/A
7th	3rd	Revision of the Unit II		3rd	N/A
	4th	Class Test of Unit I		4th	N/A
	Deadlocks (Principles and Brief Concept)				
	1st	Deadlock, Conditions for Dead lock		1st	Using the simple filters: pr, head, tail, cut, paste, nl, sort
8th	2nd	Methods for handling deadlocks		2nd	N/A
	3rd	Dead Prevention, Deadlock Avoidance		3rd	N/A
	4th	Deadlock detection, Recovery from deadlock		4th	N/A
	Memory Management Function (Principles and Brief Concept)				
9th	1st	Definition – Logical and Physical address Space		1st	Communication Commands: news, write, talk, mseg, mail, wall
	2nd	Swapping, Memory allocation		2nd	N/A
	3rd	Contiguous Memory allocation, Fixed and variable partition		3rd	N/A
	4th	Class Test of Topics Covered		4th	N/A
10th	1st	Internal and External fragmentation and Compaction		1st	Write a shell program that finds the factorial of a number
	2nd	Paging – Principle of operation, Page allocation		2nd	N/A
	3rd	Hardware support for paging, Disadvantages of paging		3rd	N/A
	4th	Class Test of Topics Covered		4th	N/A
11th	1st	Protection and sharing		1st	Write a shell program that finds whether a given number is prime or not
	2nd	Segmentation, Virtual Memory		2nd	N/A
	3rd	Revision of the Unit III		3rd	N/A
	4th	Class Test of Unit III		4th	N/A
12th	I/O Management Functions (Principles and Brief Concept)				
	1st	Dedicated Devices, Shared Devices,		1st	Write a shell program to find the average of three numbers
	2nd	I/O Devices, Storage Devices,		2nd	N/A
	3rd	Buffering, Spooling		3rd	N/A
13th	4th	Class Test of Unit IV		4th	N/A
	File Management (Principles and Brief Concept)				
14th	1st	Types of File System; Simple file system		1st	Write a shell program that will convert all the text of the file from lowercase to uppercase
	2nd	Basic file system, Logical file system		2nd	N/A

	3rd	Physical file system	3rd	N/A
	4th	Various Methods of Allocating Disk Space	4th	N/A
	Linux Operating System			
13th	1st	History of Linux and Unix, Linux Overview	1st	Practice the general purpose commands of Linux
	2nd	Structure of Linux, Linux releases, Open Linux, Linux System Requirements	2nd	N/A
	3rd	Linux Commands and Filters: mkdir, cd, rmdir	3rd	N/A
	4th	Linux Commands and Filters: pwd, ls, who, whoami, date, cat, chmod	4th	N/A
14th	1st	cp, mv, rm, pg, more, pr, tail	1st	Practice Shell Programming
	2nd	head, cut, paste, nl	2nd	N/A
	3rd	grep, wc, sort, kill, write, talk, mseg	3rd	N/A
	4th	wall, merge, mail, news	4th	N/A
15th	1st	Shell: concepts of command options	1st	Practice Shell Programming
	2nd	input, output, redirection, pipes	2nd	N/A
	3rd	redirecting and piping with standard errors	3rd	N/A
	4th	Shell scripts	4th	N/A
16th	1st	vi editing commands	1st	Practice Vi editor Programs
	2nd	Revision of Linux Commands	2nd	N/A
	3rd	Revision of Shell Script and vi editor	3rd	N/A
	4th	Class Test of Unit VII	4th	N/A

