# TENTATIVE LESSON PLAN: R1621041 ELECTRONIC DEVICES AND CIRCUITS

ranch : ECH Revision No :			o: 01 of 03
ools: Black b		Approv	ed By : HOD
lo. of Periods	TOPIC	Date	Mode of Delivery
	UNIT-I Introduction to Semiconduc	tor Physics	The second secon
1 Liectroni	the fundamentals and introduction about the Devices & Circuits by-Millman ic Devices & Circuits by-Salivahanan	e semiconductor I	ohysics
1 .	Introduction to Semiconductor Physics		
2	Insulators, Semi conductors and metals		
3	Mobility and conductivity		
4	Electronics and holes in intrinsic semiconductors		Lecture interspersed with discussions
5	Extrinsic semiconductors		
6	Drift	From:	
7	Diffusion	10-06-2019	
8	charge densities in semiconductors		
9	Hall effect	To:	
10	Continuity equation	29-06-2019	
11	Fermi level in intrinsic semiconductors		
12	Fermi level in extrinsic semiconductors		
13	Introduction to Semiconductor Physics		
14	Insulators, Semi conductors and metals		
:- Electronic	UNIT-II Junction Diode Character of various semiconductors Devices & Circuits by-Millman Devices & Circuits by-Salivahanan Open circuited P-N Junction	eristics	
16	Biased P-N Junction, P-N Junction diode		
17	V-I Characteristics		Lecture
18	Current components in P-N junction diode	From: 01-07-2019	interspersed with
19	Diode equation, SCR, UJT	To:	discussions
20	Temperature dependence on V-I Characteristics	20-07-2019	
3: To design - Electronic	UNIT-III Rectifiers and filter various application circuits using DIODE Devices & Circuits by-Millman	rs.	

21	onic Devices & Circuits by-Salivahanan  Basic Rectifier setup		T
22	Half wave Rectifier,		
23	Full Wave Rectifier		
24	Bridge Rectifier		
25	Harmonic components	From:	
26	Inductor Filter	22-07-2019	
27	Capacitor Filter	To:	Lecture
28	L-Section Filter, Multiple L-Section	03-08-2019	interspersed
29	П-Section Filter, Multiple П Section Filter		with
30	Basic Rectifier setup		discussions
	UNIT-IV Transistor Character tudy and understand the basic construction	istics	_
2:- Electr	onic Devices & Circuits by-Millman *onic Devices & Circuits by-Salivahanan		
31	Junction Transistor		
32	Current components	From: 12-08-2019 To: 30-08-2019	
33	Transistor equation		
34	Transistor act as an Amplifier		Lecture interspersed with
35	Characteristics of Transistor in C.B		
	Configuration	30-08-2019	
36	Characteristics of Transistor in C.E Configuration		with discussions
36 D5: To sturbance :- Electro	Characteristics of Transistor in C.E Configuration UNIT-V Transistor Biasing and Thermal udy different types stabilizing techniques of techniq	Stabilization	with discussions
36 D5: To st turbance:- Electro 37	Characteristics of Transistor in C.E Configuration UNIT-V Transistor Biasing and Thermal udy different types stabilizing techniques of t	Stabilization	with discussions
36 D5: To staturbance:- Electro 37 38	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal didy different types stabilizing techniques of the second s	Stabilization	with discussions
36 D5: To st turbance:- Electro 37	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal didy different types stabilizing techniques of the second s	Stabilization	with discussions
36 D5: To st turbance:- Electro 37 38	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal and different types stabilizing techniques of the second process	Stabilization	with discussions  the thermal
36 D5: To st turbance :- Electro 37  38 39 40 41	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal and the stabilizing techniques of th	Stabilization ransistor against	with discussions  the thermal  Lecture interspersed
36 D5: To st turbance:- Electro 37 38 39 40 41	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal and the stabilizing techniques of th	Stabilization ransistor against  From: 3-09-2019	with discussions  the thermal  Lecture interspersed with
36 D5: To st turbance :- Electro 37  38 39 40 41	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal and different types stabilizing techniques of the second se	Stabilization ransistor against	with discussions  the thermal  Lecture interspersed
36 D5: To staturbance:- Electro 37 38 39 40 41	Characteristics of Transistor in C.E Configuration  UNIT-V Transistor Biasing and Thermal and different types stabilizing techniques of the second process.  Inic Devices & Circuits by-Millman and the Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis Fixed bias Collector to base bias Self bias Need for Biasing, Operating Point, Load line Analysis Fixed bias, Self bias, Collector to base bias Fixed bias, Self bias, Collector to base bias	Stabilization ransistor against  From: 3-09-2019 To:	with discussions  the thermal  Lecture interspersed with

T1:- Electro	UNIT-VI Small Signal Low Frequency Transistors and Design of low frequency circuits onic Devices & Circuits by-Millman onic Devices & Circuits by-Salivahanan	or Amplifier Mo	del
46	Two port network, Hybrid model		
47	H-Parameters		Lecture
48	Analysis of CE Amplifier model using h- parameters	From: 18-09-2019 To: 5-10-2019	interspersed with discussions
49	Analysis of CB, CC Amplifier model using h- parameters		
50	Analysis of CE,CB,CC Amplifier using Approximate analysis		
51	Analysis of CS,CG Amplifier		
52	Conversion of H- parameters		

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# TENTATIVE LESSON PLAN: R1621041 ELECTRONIC DEVICES AND CIRCUITS

Branch: E		Page No	o: 01 of 03	
Revision No			ed By : HOD	
	k board, PPTs			
No. of Perio	10110	Date	Mode of Delivery	
11:- Electr	UNIT-I Introduction to Semiconduction to Semiconduction to Semiconduction about the semiconduction and semiconduction and semiconduction and semiconduction are semiconduction as semiconduction and semiconduction are semiconduction to Semiconduction to Semiconduction to Semiconduction and semiconduction to Semiconduction to Semiconduction to Semiconduction and semiconduction to Semiconduction to Semiconduction to Semiconduction to Semiconduction to Semiconduction and semiconduction to Semiconduction about the semiconduction and semiconduction about the semiconduction about the semiconduction about the semiconduction and semiconduction about the semiconduction abou	tor Physics e semiconductor p	ohysics	
1	Introduction to Semiconductor Physics			-
2	Insulators, Semi conductors and metals			
3	Mobility and conductivity			
4	Electronics and holes in intrinsic semiconductors			
5	Extrinsic semiconductors		Lecture interspersed with discussions	
6	Drift	From:		
7	Diffusion	10-06-2019		
8	charge densities in semiconductors			
9	Hall effect	To:		
10	Continuity equation	29-06-2019		
11	Fermi level in intrinsic semiconductors			
12	Fermi level in extrinsic semiconductors			
13	Introduction to Semiconductor Physics			
14	Insulators, Semi conductors and metals	1		
1:- Electro	UNIT-II Junction Diode Charact view of various semiconductors nic Devices & Circuits by-Millman onic Devices & Circuits by-Salivahanan  Open circuited P-N Junction	eristics		
16	Biased P-N Junction, P-N Junction diode		T	
17	V-I Characteristics	From:	Lecture	
18	Current components in P-N junction diode	01-07-2019	interspersed with	
19	Diode equation,SCR,UJT	To:	discussions	
20	Temperature dependence on V-I Characteristics	20-07-2019		
	UNIT-III Rectifiers and filter	re		F:
O2. T. J.	ign various application circuits using DIODE	18		Dic

	Basic Rectifier setup		
22	Half wave Rectifier,		
23	Full Wave Rectifier		
24	Bridge Rectifier		
25	Harmonic components	From: 22-07-2019 To:	
26	Inductor Filter		
27	Capacitor Filter		Lecture
28	L-Section Filter, Multiple L-Section	03-08-2019	interspersed
29	П-Section Filter, Multiple П Section Filter		
30	Basic Rectifier setup		discussions
l:- Electro	tudy and understand the basic construction and Devices & Circuits by-Millman bonic Devices & Circuits by-Salivahanan	and operation o	f the bipola
31	Junction Transistor		
32	Current components	From:	
33	Transistor equation		
34	Transistor equation  Transistor act as an Amplifier		1
	C1	Lecture	
35	Configuration	To: 30-08-2019	interspersed
	Characteristics of Transistor in C.E		
36	Configuration		discussions
:- Electro	nic Devices & Circuits by-Millman	Stabilization ransistor against	the thermal
l:- Electro 2:- Electro	udy different types stabilizing techniques of to s nic Devices & Circuits by-Millman nic Devices & Circuits by-Salivahanan	Stabilization ansistor against	the thermal
:- Electro	udy different types stabilizing techniques of to s nic Devices & Circuits by-Millman nic Devices & Circuits by-Salivahanan Need for Biasing, Operating Point, Load line	Stabilization ansistor against	the thermal
:- Electro 37	nic Devices & Circuits by-Millman  Need for Biasing, Operating Point, Load line Analysis	Stabilization ansistor against	the thermal
2:- Electro 37 38	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias	Stabilization ansistor against	the thermal
2:- Electro 37  38 39	udy different types stabilizing techniques of to some control of the control of t	Stabilization ansistor against	the thermal
37 38 39 40	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Collector to base bias  Self bias	ansistor against	
38 39 40 41	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Collector to base bias  Self bias  Need for Biasing, Operating Point, Load line Analysis	ransistor against	Lecture interspersed
37 38 39 40 41	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Collector to base bias  Self bias  Need for Biasing, Operating Point, Load line Analysis  Fixed bias, Collector to base bias  Fixed bias, Collector to base bias	ansistor against	Lecture interspersed with
38 39 40 41	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Collector to base bias  Self bias  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Self bias  Need for Biasing, Operating Point, Load line Analysis  Fixed bias, Collector to base bias  Stabilizations against variations in Vbe, Ic	From: 3-09-2019	Lecture interspersed
2:- Electro 37  38 39 40 41	nic Devices & Circuits by-Millman  nic Devices & Circuits by-Salivahanan  Need for Biasing, Operating Point, Load line Analysis  Fixed bias  Collector to base bias  Self bias  Need for Biasing, Operating Point, Load line Analysis  Fixed bias, Collector to base bias  Fixed bias, Collector to base bias	From: 3-09-2019 To:	Lecture interspersed with

T1:- Electron	NIT-VI Small Signal Low Frequency Transistonis and Design of low frequency circuits ic Devices & Circuits by-Millman in Devices & Circuits by-Salivahanan	or Amplifier Mo	odel
46	Two port network, Hybrid model		1
47	H-Parameters		Lecture
48	Analysis of CE Amplifier model using h- parameters	From: 18-09-2019 To: 5-10-2019	interspersed
49	Analysis of CB, CC Amplifier model using h- parameters		discussions
50	Analysis of CE,CB,CC Amplifier using Approximate analysis		
51	Analysis of CS,CG Amplifier		
52	Conversion of H- parameters		

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# TENTATIVE LESSON PLAN: R1621042 SWITCHING THEORY AND LOGIC DESIGN

Branch : ECE	SWITCHING THEORY AND LOGIC DESIGN C-A Date: 10/6/19	Page No	01 of 03
Revision No : (			By: HOD
Fools: Black b			
No. of Periods		Date	Mode of Delivery
Γ1:- Switching	UNIT-I REVIEW OF NUMBER SYSTEMS number system and codes in digital logic design g Theory and Logic Design by A. Anand Kumar g Theory and Logic Design by A.P. Godse, D.A.	. Study of basic	logic gates
1	Representation of numbers of different radix	7	
2	conversation from one radix to another radix		
3	r-1's compliments and r's compliments of signed members		
4	problem solving		
5	4 bit codes, Excess-3, 2421, 84-2-1		
6	9's compliment code	From:	
7 .	error detection & correction codes	To: 29-06-2019	Lecture intersperse with discussion
8	Basic logic operations -NOT, OR		
9	AND Universal building blocks, EX-OR, EX-NOR -Gates		
10	Standard SOP and POS Forms, Gray code		
11	error detection		
12	error correction codes (parity checking, even parity, odd parity, Hamming code)		
13	NAND-NAND and NOR-NOR realizations.		-
14	TUTORIAL		
function T1:- Switchin	g Theory and Logic Design by A. Anand Kumar g Theory and Logic Design by A.P. Godse, D.A.	for minimization	on of Boolean
15	Boolean theorems		
16	principle of complementation & duality, Demorgan theorems	From:	Lecture
17	minimization of logic functions	01-07-2019	with
18	minimization of switching functions using K-Map up to 6 variables	To: 20-07-2019	discussion
19	tabular minimization		
20	Problem solving (code converters using K-Map)		

Multip	y different types of combinational logic circuits like lexer's, demultiplexers, encoders and decoders.	e adders subtra	ctors,
1:- Switchin	g Theory and Logic Design by A. Anand Kumar	ndse	
	g Theory and Logic Design by A.P. Godse, D.A. Go Design of Half adder, full adder	Juse	
21	half subtractor, full subtractor	From: 22-07-2019 To:	
22	applications of full adders, 4-bit binary subtractor		•
23	adder-subtractor circuit, BCD adder circuit		
24	adder-subtractor circuit, BeD adder circuit		
25	Excess 3 adder circuit, look-a-head adder circuit		
26	Design of decoder, demultiplexer 7 segment decoder, higher order demultiplexing		Lecture
27	/ segment decoder, nigher order demonstratering	03-08-2019	interspersed
28	encoder, multiplexer, higher order multiplexing		with
29	realization of Boolean functions using decoders and multiplexers, priority encoder		discussions
30	4-bit digital comparator  UNIT-IV INTRODUCTION OF PL		1
T2:- Switch	ing Theory and Logic Design by A. Anand Kumar ing Theory and Logic Design by A.P. Godse, D.A. O PROM, PAL, PLA-Basics structures	Godse	
31	PROM, PAL, PLA-Basics structures	From: 12-08-2019	
32	realization of Boolean function with PLDs		47.0
33	programming tables of PLDs, merits &		Lecture
	demerits of PROM, PAL, PLA comparison	To:	intersperse
34	Realization of Boolean functions using	30-08-20190:	with
	PROM, PAL, PLA		discussions
35	Programming tables of PROM, PAL, PLA.		
36	TUTORIAL  UNIT-V SEQUENTIAL CIRCUIT	re I	
T1:- Switch	idy different types of sequential logic circuits like cing Theory and Logic Design by A. Anand Kumaring Theory and Logic Design by A.P. Godse, D.A.	ounters shift re	gisters
T2:- Switch	ing I medij mili s		
<b>T2:- Switch</b> 37	Classification of sequential circuits (synchronous and asynchronous)		
	Classification of sequential circuits (synchronous and asynchronous)  basic flip-flops		Lecture
37	Classification of sequential circuits (synchronous and asynchronous)  basic flip-flops  truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-	From:	intersperse with
37 38 39	Classification of sequential circuits (synchronous and asynchronous) basic flip-flops truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-flop, D flip-flop with reset and clear terminals).		intersperse with
37	Classification of sequential circuits (synchronous and asynchronous) basic flip-flops truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-flop, D flip-flop with reset and clear terminals). Conversion from one flip-flop to flip-flop Design of ripple counters, design of synchronous	From: 3-09-2019 To:	intersperse with
37 38 39 40 41	Classification of sequential circuits (synchronous and asynchronous)  basic flip-flops  truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters	From: 3-09-2019	intersperse with
37 38 39 40	Classification of sequential circuits (synchronous and asynchronous)  basic flip-flops  truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters  Johnson counter, ring counter  Design of registers - Buffer register, control buffer	From: 3-09-2019 To:	intersperse
37 38 39 40 41 42	Classification of sequential circuits (synchronous and asynchronous)  basic flip-flops  truth tables and excitation tables (nand RS latch, nor RS latch, RS flip-flop, JK flip-flop, T flip-flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters  Johnson counter, ring counter	From: 3-09-2019 To:	intersperse with

T1:- Switchi	UNIT-VI SEQUENTIAL CIRCUL dy different types of Finite State Machines like m ng Theory and Logic Design by A. Anand Kuma ng Theory and Logic Design by A.P. Godse, D.A.	nealy and moore i	machines.
46	Finite state machine		
47	Analysis of clocked sequential circuits	From	Lecture
48	state diagrams, state tables	From: 18-09-2019 To: 5-10-2019	interspersed
49	reduction of state tables and state assignment		with
50	Realization of circuits using various flip-flops		discussions
		3-10-2017	

Melay to Moore conversion and vice-versa.

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# TENTATIVE LESSON PLAN: R1621042 SWITCHING THEORY AND LOGIC DESIGN

Branch : ECE-	WITCHING THEORY AND LOGIC DESIGN B Date: 10/06/19	Page No:	01 of 03
Revision No : 00		Approved	By: HOD
Tools: Black bo			
No. of Periods	TOPIC	Date	Mode of Delivery
T1:- Switching	UNIT-I REVIEW OF NUMBER SYSTEMS number system and codes in digital logic design Theory and Logic Design by A. Anand Kumar Theory and Logic Design by A.P. Godse, D.A.	. Study of basic	logic gates
1	Representation of numbers of different radix		
2	conversation from one radix to another radix		
. 3	r-1's compliments and r's compliments of signed members		
4	problem solving		
5	4 bit codes, Excess-3, 2421, 84-2-1		
6	9's compliment code	From:	
7	error detection & correction codes	10-06-2019	Lecture
8	Basic logic operations -NOT, OR	To:	interspersed
9	AND Universal building blocks, EX-OR, EX-NOR -Gates	29-06-2019	with discussions
10	Standard SOP and POS Forms, Gray code		
11	error detection		
12	error correction codes (parity checking, even parity, odd parity, Hamming code)	,	
13	NAND-NAND and NOR-NOR realizations.		15 September
14	TUTORIAL		-
	UNIT-II MINIMIZATION TECHN	QUES	
CO2: To study	Boolean theorems K-Maps, tabulation method	for minimization	on of Boolean
function	IS		
	Theory and Logic Design by A. Anand Kumar		
T2:- Switching	Theory and Logic Design by A.P. Godse, D.A.	Godse	
15	Boolean theorems		
16	principle of complementation & duality, Demorgan theorems	From:	Lecture intersperse
17	minimization of logic functions	01-07-2019	with
18	minimization of switching functions using K-Map up to 6 variables	To: 20-07-2019	discussion
19	tabular minimization		
20	Problem solving (code converters using K-Map)		

T1:- Switch	udy different types of combinational logic circuits iplexer's, demultiplexers, encoders and decoders. ing Theory and Logic Design by A. Anand Kuman		ractors,
T2:- Switch	ing Theory and Logic Design by A.P. Godse, D.A.	Godse	
21	Design of Half adder, full adder		T
22	half subtractor, full subtractor	From: 22-07-2019	
23	applications of full adders, 4-bit binary subtractor		
24	adder-subtractor circuit, BCD adder circuit		
25	Excess 3 adder circuit, look-a-head adder circuit		
26	Design of decoder, demultiplexer		
27	7 segment decoder, higher order demultiplexing	To:	Lecture
28	encoder, multiplexer, higher order multiplexing	03-08-2019	interspersed
29	realization of Boolean functions using decoders		with
	and multiplexers, priority encoder		discussions
30	4-bit digital comparator		
	UNIT-IV INTRODUCTION OF P	LD's	
31	PROM, PAL, PLA-Basics structures	Goase	
32	realization of Boolean function with PLDs		
	programming tables of PLDs, merits &	From:	
33	demerits of PROM, PAL, PLA comparison	12-08-2019	
	Realization of Boolean functions using	To:	Lecture
34	PROM, PAL, PLA	30-08-2019	interspersed
35	Programming tables of PROM, PAL, PLA.		with
36	TUTORIAL		discussions
	UNIT-V SEQUENTIAL CIRCUIT	TO Y	
1:- Switchi	dy different types of sequential logic circuits like on the organization of the organi	counters shift re	gisters
31	Classification of sequential circuits (synchronous and asynchronous)		7.5
38	basic flip-flops		
39	truth tables and excitation tables (nand RS latch,		Lecture
37	nor RS latch, RS flip-flop, JK flip-flop, T flip-	From:	interspersed
	flon D flin-flon with reset and clear terminals)		with
40	flop, D flip-flop with reset and clear terminals).		with discussions
40	flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous	3-09-2019 To:	with discussions
	flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters	3-09-2019	
41	flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters  Johnson counter, ring counter  Design of registers - Buffer register, control buffer	3-09-2019 To:	
41	flop, D flip-flop with reset and clear terminals).  Conversion from one flip-flop to flip-flop  Design of ripple counters, design of synchronous counters  Johnson counter, ring counter	3-09-2019 To:	

### UNIT-VI SEQUENTIAL CIRCUITS II

CO6: To study different types of Finite State Machines like mealy and moore machines.

T1:- Switching Theory and Logic Design by A. Anand Kumar

T2:- Switching Theory and Logic Design by A.P. Godse, D.A. Godse

46	Finite state machine		
47	Analysis of clocked sequential circuits	From: 18-09-2019 To: 1-10-2019	Lecture interspersed
48	state diagrams, state tables		
49	reduction of state tables and state assignment		with
50	Realization of circuits using various flip-flops		discussions
51	Melay to Moore conversion and vice-versa.		
52	TUTORIAL		

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### TENTATIVE LESSON PLAN: R1621043 SIGNALS AND SYSTEMS

	Title: SIGNALS AND SYSTEMS		
Section	2 1101 111 012019	Page No: 1 to	4
	n No: 00 Prepared By: Dr. B. Vanajakshi	Approved By	: HOD
	Black board, PPTs		
S.No.	Topic	Date	Mode of Delivery
UNIT-I	INTRODUCTION		
CO1: Al	ble to learn about classifications of signals and systems and how	to perform basic opera	tions on signals
and syste	ms.		
TB1:Sign	nals and Systems by Narayan Iyer and K Satya Prasad Cen	ισασε Puh	
1	Definition of Signals and Systems	gage I ub.	Τ
1			
2	Classification of Signals		
	Classification for the		
3	Classification of systems		
	Operations on signals: time-shifting, time-scaling, amplitude-	-	
4	shifting, amplitude-scaling		
	samming, amplitude southing		
5	Problems on Signals and Systems		
3			
6	Complex exponential and sinusoidal signals		
	Singularity functions in the fact in the f	From: 11/06/19	Lecture
7	Singularity functions: impulse function, step function signum function and ramp function.	1100012	interspersed
	Tunction and ramp function.	To: 29/06/19	with
0	Analogy between vectors and signals		discussions
8			
9	orthogonal signal space		
10	Signal approximation using orthogonal functions		
	Mean square error		
11	Mean square error		
12	closed or complete set of orthogonal functions		
12			
13	Orthogonality in complex functions		
UNIT-II	FOURIER SERIES AND FOURIER TRANSFORM	I	
CO2: Ab	e to perform transformations on signals.		
	nals and Systems by Narayan Iyer and K Satya Prasad Cer	D. l.	
14	Fourier series representation of continuous time periodic	ngage Pub.	
17	signals		

15	properties of Fourier series	The second of th	
16	Dirichlet's conditions		
17	Trigonometric &Exponential Fourier series		
18	Complex Fourier spectrum		Lecture
19	Deriving Fourier transform from Fourier series	From: 01/07/19	interspersed with
20	Fourier transform of arbitrary signal	To: 20/07/19	discussions
21	Fourier transform of standard signals		
22	Fourier transform of periodic signals		
23	properties of Fourier transforms		
24	Fourier transforms- impulse and Signum functions		
25	Introduction to Hilbert Transform		
26	Tutorial	-	
UNIT-I CO3: A	Able to state sampling theorem and its applications.		1
UNIT-I CO3: A TB1: Si	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad	Cengage Pub.	1
UNIT-I CO3: A TB1: Si	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals	Cengage Pub.	
UNIT-I CO3: A TB1: Si 27	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling	Cengage Pub.	
UNIT-I CO3: A TB1: Si	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals	Cengage Pub.	
UNIT-I CO3: A TB1: Si 27	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling	Cengage Pub.  From: 22/07/18	Lecture
UNIT-I CO3: A TB1: Si 27 28	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling		interspersed with
UNIT-I CO3: A TB1: Si 27 28 29 30	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples	From: 22/07/18	interspersed
UNIT-I CO3: A TB1: Si 27 28 29 30 31	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing	From: 22/07/18	interspersed with
UNIT-I CO3: A FB1: Si 27 28 29 30 31	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling	From: 22/07/18	interspersed with
UNIT-I CO3: A TB1: Si 27 28 29 30 31 32 33 4 UNIT-I CO4: A	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems	From: 22/07/18  To: 03/08/18	interspersed with discussions
UNIT-I CO3: A TB1: Si 27 28 29 30 31 32 33 4 UNIT-I CO4: A convolution	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems  V ANALYSIS OF LINEAR SYSTEMS  ble to analyze the signal transmission through linear systems as	From: 22/07/18  To: 03/08/18  Ind how to apply correlation	interspersed with discussions

	Linear time invariant (LTI) system, Linear time variant (LTV) system  Concept of convolution in time and frequency domain		
:	Graphical representation of convolution		
	Transfer function of a LTI system		
36	Filter characteristics of linear systems		
	Distortion less transmission through a system		
	Signal bandwidth, system bandwidth		
	Ideal LPF, HPF and BPF characteristics		
	Causality & Poly-Wiener criterion for physical realization		Lecture
37	relationship between bandwidth and rise time	From: 12/08/19	interspersed with
	Cross-correlation and auto-correlation of functions	To: 31/08/18	discussions
	properties of correlation, Energy density spectrum		
i ka	Parseval's theorem, Power density spectrum		
38	Relation between auto correlation function and ESD		
	Relation between convolution and correlation		
39	Detection of periodic signals in the presence of noise by correlation		
	Extraction of signal from noise by filtering		
	Tutorial		
40	Problems		
CO5: At	LAPLACE TRANSFORMS  ble to Perform transformations on signals		
TB1: Sig	nals and Systems by Narayan Iyer and K Satya Prasad Cer Review of Laplace transforms	ngage Pub.	
42	Partial fraction expansion		
43	Inverse Laplace transform		

,

44	Concept of region of convergence (ROC) for LT		
45	constraints on ROC for various classes of signals	1	
46	Properties of L. T's	From: 02/09/18	Lecture interspersed
47	Relation between L. T's, and F.T. of a signal	To: 17/09/18	with discussions
48	Laplace transform of certain signals using waveform synthesis		•
49	Problems		
UNIT-V	I Z-TRANSFORMS		
CO6: Al	ole to Perform transformations on signals.		
TB1: Si	gnals and Systems by Narayan Iyer and K Satya Prasad Ce	ngage Pub.	
50	Fundamental difference between continuous-time& discrete-		
to seek week	time signals	and the second s	and the second s
51	discrete time signal representation using complex exponential		
	and sinusoidal components		
52	Periodicity of discrete time using complex exponential		
53	Concept of Z- Transform of a discrete sequence	T 40/00/45	Lecture
54	Distinction between Laplace, Fourier & Z Transform	From: 18/09/18	interspersed
55	Region of convergence in Z-Transform	To: 05/10/18	discussions
56	constraints on ROC for various classes of signals		
57	Inverse Z-transform		
58	properties of Z-transforms		
59	Tutorial		
	4 - BERT CONTROL - CONTRO		

TB1: Signal and Systems by Narayan Iyer and K Satya Prasad Cengage Pub.

TB2: Signals and Systems - A.V. Oppenheim, A.S. Willsky and S. H. Nawab, PHI, 2nd Edn

TB3: Signals, Systems & Communications - B.P. Lathi, BS Publications, 2003.

Signature of the Faculty 02/11/19

Signature of HOD

### TENTATIVE LESSON PLAN: R1621043 SIGNALS AND SYSTEMS

Course '	Title: SIGNAL	S AND SYSTEMS		
Section:		Date: 11/6/2019	Page No: 1 to	4
Revision	No: 00	Prepared By: Dr. B. Vanajakshi	Approved By	: HOD
Tools: B	lack board, PP	Гѕ		
S.No.		Topic	Date	Mode of
				Delivery
UNIT-I				
and syste		classifications of signals and systems and how	to perform basic opera	itions on signals
TB1:Sign		s by Narayan Iyer and K Satya Prasad Cer	ngage Pub.	1
1	Definition of S	ignals and Systems		
2	Classification of	of Signals		
	GI 10 1			
3	Classification of	of systems		
	Operations on	signals: time-shifting, time-scaling, amplitude-		
4	shifting, amplit	rude-scaling		
5	Problems on Si	gnals and Systems		
	Complex expor	nential and sinusoidal signals		
6			7	Lecture
	Singularity functions: impulse function, step function signum	ctions: impulse function, step function signum	From: 11/06/19	interspersed
7	function and ra	mp function.	To: 29/06/19	with
	Analogy betwee	en vectors and signals	-	discussions
8	Analogy betwee	en vectors and signals		
9	orthogonal sign	nal space		
	Cional accession	16 7		
10	Signal approxi	nation using orthogonal functions		1
11	Mean square en	ror		
12	closed or comp	lete set of orthogonal functions		
12				
13 .	Orthogonality i	n complex functions		
UNIT-II		R SERIES AND FOURIER TRANSFORM		
CO2: Ab	le to perform tra	nsformations on signals.		
TB1: Sig	nals and Systen	as by Narayan Iyer and K Satya Prasad Co	engage Pub.	
14	Fourier series r	epresentation of continuous time periodic		
	signals			

15	properties of Fourier series		
16	Dirichlet's conditions		
17	Trigonometric &Exponential Fourier series		
18	Complex Fourier spectrum		Lecture
19	Deriving Fourier transform from Fourier series	From: 01/07/19	interspersed with
20	Fourier transform of arbitrary signal	To: 20/07/19	discussions
21	Fourier transform of standard signals		
22	Fourier transform of periodic signals		
23	properties of Fourier transforms		
24	Fourier transforms- impulse and Signum functions		
25	Introduction to Hilbert Transform	_	
26	Tutorial	-	
CO3: A	Able to state sampling theorem and its applications.	Congogo Pub	<u> </u>
CO3: A	self-temple a recommendation of the control or extension of the control of the co	Cengage Pub.	<u> </u>
CO3: A	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad	Cengage Pub.	
CO3: A TB1: Si 27	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals	Cengage Pub.	
CO3: A FB1: Si 27 28	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling		Lecture
CO3: A FB1: Si 27 28 29	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling	From: 22/07/19	interspersed with
CO3: A TB1: Si 27 28 29 30	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples		interspersed
CO3: A TB1: Si 27 28 29 30 31	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing	From: 22/07/19	interspersed with
CO3: A TB1: Si 27 28 29 30 31 32 33	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial	From: 22/07/19	interspersed with
CO3: A FB1: Si 27 28 29 30 31 32 33 4	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems	From: 22/07/19	interspersed with
CO3: A TB1: Si 27 28 29 30 31 32 33 4 UNIT-I	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems  V ANALYSIS OF LINEAR SYSTEMS	From: 22/07/19 To: 03/08/19	interspersed with discussions
27 28 29 30 31 32 33 4 UNIT-I	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems  V ANALYSIS OF LINEAR SYSTEMS  ble to analyze the signal transmission through linear systems an	From: 22/07/19 To: 03/08/19	interspersed with discussions
27 28 29 30 31 32 33 4 UNIT-I CO4: A	Able to state sampling theorem and its applications.  gnals and Systems by Narayan Iyer and K Satya Prasad  Graphical and analytical proof for Band Limited Signals  impulse sampling  Natural and Flat top Sampling  Reconstruction of signal from its samples  effect of under sampling —Aliasing  Introduction to Band Pass sampling  Tutorial  Problems  V ANALYSIS OF LINEAR SYSTEMS	From: 22/07/19 To: 03/08/19	interspersed with discussions

and the second			The second secon
	Linear time invariant (LTI) system, Linear time variant (LTV) system		
	Concept of convolution in time and frequency domain		
	Graphical representation of convolution		
	Transfer function of a LTI system		
36	Filter characteristics of linear systems		
	Distortion less transmission through a system		
	Signal bandwidth, system bandwidth		
	Ideal LPF, HPF and BPF characteristics	1	
	Causality & Poly-Wiener criterion for physical realization		Lecture
37	relationship between bandwidth and rise time	From: 12/08/19 To: 31/08/19	interspersed with
	Cross-correlation and auto-correlation of functions		discussions
	properties of correlation, Energy density spectrum		
	Parseval's theorem, Power density spectrum		
38	Relation between auto correlation function and ESD		
	Relation between convolution and correlation		
39	Detection of periodic signals in the presence of noise by correlation		
	Extraction of signal from noise by filtering		
	Tutorial		
40	Problems		
UNIT-V	LAPLACE TRANSFORMS	L	
	ble to Perform transformations on signals		
	gnals and Systems by Narayan Iyer and K Satya Prasad Ce	ngage Pub.	
41	Review of Laplace transforms		
42	Partial fraction expansion		
43	Inverse Laplace transform		

44	Concept of region of convergence (ROC) for LT		
45	constraints on ROC for various classes of signals		
46	Properties of L. T's	From: 02/09/19	Lecture interspersed
47	Relation between L. T's, and F.T. of a signal	To: 17/09/19	with discussions
48	Laplace transform of certain signals using waveform synthesis		
49	Problems		
UNIT-V		<u> </u>	
	ble to Perform transformations on signals.		
	gnals and Systems by Narayan Iyer and K Satya Prasad Ce Fundamental difference between continuous-time& discrete-	ngage Pub.	
50			
	time signals	and the second s	
51	discrete time signal representation using complex exponential and sinusoidal components		
52	Periodicity of discrete time using complex exponential		
53	Concept of Z- Transform of a discrete sequence	F 10/00/10	Lecture
54	Distinction between Laplace, Fourier & Z Transform	From: 18/09/19 To: 01/10/19	interspersed with
55	Region of convergence in Z-Transform		discussions
56	constraints on ROC for various classes of signals		
57	Inverse Z-transform	1	
58	properties of Z-transforms		
59	Tutorial		

TB1: Signal and Systems by Narayan Iyer and K Satya Prasad Cengage Pub.

TB2: Signals and Systems - A.V. Oppenheim, A.S. Willsky and S. H. Nawab, PHI, 2nd Edn

TB3: Signals, Systems & Communications - B.P. Lathi, BS Publications, 2003.

Signature of the Faculty 2/11/19

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Signature of HOD

## **TENTATIVE LESSON PLAN: R1621044**

Section:	Date:12-06-2019	Page No: 1 of 3  Approved by :HOD	
A Revision No:	Prepared by : P.RAVEENDRA		
ools : Bl	ack board, PPTs		
No.of periods	Topics	Date Mode of Delivery	
:01 : Ga B:: Netv B:: Netv	ntroduction to Electrical Circuits in the knowledge on basic network elements. work Analysis – ME Van Valkenburg, Prentice Hall of In work Analysis by K.Satya Prasad and S Sivanagaraju, C nalysis by Hayt and Kimmarle, TMH	ndia, 3rd Editio engage Learnir	on, 2000 ng. TB::Electr
		10.6.2019	
1	Network elements classification	11.6.2019	
2	Electric charge, current, energy and potential	11.6.2019	
3	Electric charge, current, energy and potential	12.6.2019	
4	Resistance parameter - series and parallel combination	14.6.2019	
5	Inductance parameter -series and parallel combination	15.6.2019	
6	Capacitance parameter-series and parallel combination	17.6.2019	
7	Energy sources: Ideal, Non-ideal		
8	Independent and dependent sources	18.6.2019	
9	Source transformation	18.6.2019	
10	Kirchoff's laws	19.6.2019	
11	Mesh analysis and Nodal analysis problem solving	21.6.2019	
12	Mesh analysis and Nodal analysis problem solving	22.6.2019	
	A.C Fundamentals and Network Topology		Lecture
13	Definitions of terms associated with periodic functions	24.6.2019	interspersed
14	Time period, Angular velocity and frequency	25.6.2019	with discussion
15	RMS value, Average value, Form factor and peak factor	25.6.2019	
16	RMS value, Average value, Form factor and peak factor	26.6.2019	
17	problem solving	28.6.2019	
18	problem solving	29.6.2019	
19	Phase angle, Phasor representation	01.7.2019	
20	Addition and subtraction of phasors	02.7.2019	
21	mathematical representation of sinusoidal quantities	02.7.2019	
22	explanation with relevant theory, problem solving	03.7.2019	
23	explanation with relevant theory, problem solving	05.7.2019	
24	Principal of Duality with examples	06.7.2019	
25	Definitions of branch, node, tree	08.7.2019	
_			
26	planar, non-planar graph, incidence matrix	09.7.2019	

UNIT-II:Steady State Analysis of A.C Circuits:

CO2: will analyze the RLC circuits behavior in detailed.

TB::Network Analysis – ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, CengageLearning TB::Electric

Circuit Analysis by Hayt and Kimmarle, TMH

Response to sinusoidal excitation	12/7/2019	
	16/07/2019	
series R-L, R-C, R-L-C circuits problem solving	17/7/2019	
series R-L, R-C, R-L-C circuits problem solving	17/7/2019	Lecture
series R-L, R-C, R-L-C circuits problem solving	18/7/2019	interspersed
Complex impedance&phasor notation for RL,RC,RLC	19/07/2019	with discussions
problem solving using mesh and nodal analysis	20/7/2019	with discussions
problem solving using mesh and nodal analysis	23/7/2019	
	24/07/2019	
	24/07/2019	
	Response to sinusoidal excitation impedance concept,phase angle series R-L, R-C, R-L-C circuits problem solving series R-L, R-C, R-L-C circuits problem solving series R-L, R-C, R-L-C circuits problem solving Complex impedance&phasor notation for RL,RC,RLC problem solving using mesh and nodal analysis problem solving using mesh and nodal analysis Star-Delta conversion,problem solving Star-Delta conversion,problem solving	impedance concept,phase angle  series R-L, R-C, R-L-C circuits problem solving  17/7/2019  series R-L, R-C, R-L-C circuits problem solving  Complex impedance&phasor notation for RL,RC,RLC  problem solving using mesh and nodal analysis  problem solving using mesh and nodal analysis  20/7/2019  Star-Delta conversion,problem solving  24/07/2019

**UNIT-III: Coupled Circuits** 

CO3: Analyze the performance of periodic waveforms.

TB:: Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning

TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

38	Self inductance, Mutual inductance	25/07/2019	
39	Coefficient of coupling, analysis of coupled circuits	25/07/2019	
40	Natural current, Dot rule of coupled circuits	26/07/2019	
41	Conductively coupled equivalent circuits	26/07/2019	
42	problem solving	27/07/2019	
43	Resonance: Introduction	27/07/2019	Lecture
44	Definition of Q, Series resonance	30/07/2019	interspersed
45	Bandwidth of series resonance, Parallel resonance	30/07/2019	with discussions
46	Condition for maximum impedance	31/07/2019	
47	current in anti resonance	31/07/2019	
48	Bandwidth of parallel resonance	1/8/2019	
49	general case- resistance present in both branches	2/8/2019	
50	anti resonance at all frequencies	3/8/2019	

#### **UNIT-IV:Network Theorems:**

CO4: To Understand the Network Theorems.

TB:: Network Analysis – ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000 TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric

Circuit Analysis by Hayt and Kimmarle, TMH

51	Thevinin's, Norton's	13/8/2019	
52	Milliman's, Reciprocity, Tellegens	14/8/2019	
53	Milliman's, Reciprocity, Tellegens	14/8/2019	
54	Compensation, Substitution	15/8/2019	
55	Superposition, Max Power Transfer	16/8/2019	
56	Superposition, Max Power Transfer	17/8/2019	
57	problem solving using dependent sources also	20/8/2019	V
58	problem solving using dependent sources also	21/8/2019	

Lecture interspersed with discussions

59	problem solving using dependent sources also	21/8/2019
	problem solving using dependent sources also	22/8/2019
	<u> </u>	

**UNIT-V:Two-port networks** 

CO5: gain the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h & g).

TB::Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB:: Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

Relationship of two port networks L-parameters, Y- parameters Transmission line parameters, h-parameters	23/8/2019 24/8/2019	
	27/8/2019	
nverse h- parameters		
nverse Transmission line parameters		
Relationship between parameter sets		Lecture
arallel connection of two port networks		interspersed
ascading of two port networks		with discussions
eries connection of two port networks		
roblem solving including dependent sources also		
roblem solving including dependent sources also		
	riverse ii- parameters inverse Transmission line parameters delationship between parameter sets arallel connection of two port networks fascading of two port networks eries connection of two port networks roblem solving including dependent sources also roblem solving including dependent sources also	riverse Transmission line parameters  28/8/2019  28/8/2019  29/8/2019

**UNIT-VI:Transients:** 

CO6: Analyze the filter design concepts in real world applications.

TB::Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

72	First order differential equations	7/9/2019	<u> </u>
73	Definition of time constants	10/9/2019	
74	R-L circuit, R-C circuit with DC excitation	11/9/2019	
75	R-L circuit, R-C circuit with DC excitation	12/9/2019	
76	Evaluating initial conditions procedure	13/9/2019	Lecture
77	second order differential equations	17/9/2019	interspersed
78	homogeneous, non- homogenous	18/9/2019	with discussions
79	problem solving using RLC elements with DC excitation	19/9/2019	
80	problem solving using RLC elements with AC excitation	20/9/2019	
81	Response as related to s-plane rotation of roots	24/9/2019	

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Signature of the HOD

	TENTATIVE LESSON PLAN: R	1021044	
Course Ti	tle: NETWORK ANALYSIS (R1621044)	<del></del>	
Section:B	Date:11-06-2019	Page No: 1 of	3
Revision No:	Prepared by : S.NAGESWARA RAO	Approved by	:НОД
Tools : Bl	ack board, PPTs		
No.of periods	Topics	Date	Mode of Delivery
	ntroduction to Electrical Circuits		
	in the knowledge on basic network elements.		
TR. Netv	vork Analysis – ME Van Valkenburg, Prentice Hall of I	ndia, 3rd Edition	1, 2000
TR. Netv	vork Analysis by K.Satya Prasad and S Sivanagaraju, C	engage Learning	g. TB::Electric
	nalysis by Hayt and Kimmarle, TMH		
1	Network elements classification	11/6/2019	
2	Electric charge, current, energy and potential	12/6/2019	
3	Electric charge, current, energy and potential	13/6/19	
4	Resistance parameter - series and parallel combination	14/6/19	
5	Inductance parameter -series and parallel combination	15/6/19	
6	Capacitance parameter-series and parallel combination	15/6/19	
7	Energy sources: Ideal, Non-ideal	17/6/19	
8	Independent and dependent sources	18/6/19	
9	Source transformation	19/6/19	
10	Kirchoff's laws	20/6/19	
11	Mesh analysis and Nodal analysis problem solving	21/6/19	
12	Mesh analysis and Nodal analysis problem solving	22/06/19	
	A.C Fundamentals and Network Topology		Lecture
13	Definitions of terms associated with periodic functions	22/6/2019	interspersed
14	Time period, Angular velocity and frequency	24/6/19	with discussion
15	RMS value, Average value, Form factor and peak factor	25/6/19	
16	RMS value, Average value, Form factor and peak factor	26/6/19	
17	problem solving	27/6/19	
18	problem solving	28/6/19	
19	Phase angle, Phasor representation	29/6/19	
20	Addition and subtraction of phasors	29/6/19	
21	mathematical representation of sinusoidal quantities	1/7/2019	
22	explanation with relevant theory, problem solving	2/7/2019	
23	explanation with relevant theory, problem solving	3/7/2019	
24	Principal of Duality with examples	4/7/2019	
25	Definitions of branch, node, tree	5/7/2019	
26	planar, non-planar graph, incidence matrix	6/7/2019	
27	basic tie set schedule, basic cut set schedule	6/7/2019	

UNIT-II:Steady State Analysis of A.C Circuits:

CO2: will analyze the RLC circuits behavior in detailed.

TB::Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, CengageLearning TB::Electric

Circuit Analysis by Hayt and Kimmarle, TMH

28	Response to sinusoidal excitation	8/7/2019	
29	impedance concept, phase angle	9/7/2019	
30	series R-L, R-C, R-L-C circuits problem solving	10/7/2019	
31	series R-L, R-C, R-L-C circuits problem solving	11/7/2019	Lecture
32	series R-L, R-C, R-L-C circuits problem solving	12/7/2019	interspersed
33	Complex impedance&phasor notation for RL,RC,RLC	13/07/2019	with discussions
34	problem solving using mesh and nodal analysis	13/07/2019	with discussions
35	problem solving using mesh and nodal analysis	15/07/2019	
36	Star-Delta conversion, problem solving	16/07/2019	
37	Star-Delta conversion, problem solving	17/7/2019	

#### **UNIT-III: Coupled Circuits**

CO3: Analyze the performance of periodic waveforms.

TB:: Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning

TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

Self inductance, Mutual inductance	18/7/2019	
Coefficient of coupling, analysis of coupled circuits	19/07/2019	
Natural current, Dot rule of coupled circuits	20/7/2019	
Conductively coupled equivalent circuits	20/7/2019	
problem solving	23/7/2019	
Resonance: Introduction	24/07/2019	Lecture
Definition of Q, Series resonance	25/07/2019	interspersed
Bandwidth of series resonance, Parallel resonance	26/07/2019	with discussions
Condition for maximum impedance	27/07/2019	
current in anti resonance	29/07/2019	
Bandwidth of parallel resonance	30/07/2019	
general case- resistance present in both branches	31/07/2019	
anti resonance at all frequencies	1/8/2019	
	Coefficient of coupling, analysis of coupled circuits  Natural current, Dot rule of coupled circuits  Conductively coupled equivalent circuits  problem solving  Resonance: Introduction  Definition of Q, Series resonance  Bandwidth of series resonance, Parallel resonance  Condition for maximum impedance  current in anti resonance  Bandwidth of parallel resonance  general case- resistance present in both branches	Coefficient of coupling, analysis of coupled circuits  Natural current, Dot rule of coupled circuits  Conductively coupled equivalent circuits  problem solving  Resonance: Introduction  Definition of Q, Series resonance  Bandwidth of series resonance, Parallel resonance  Condition for maximum impedance  current in anti resonance  Bandwidth of parallel resonance  Bandwidth of parallel resonance  Bandwidth of parallel resonance  Bandwidth of parallel resonance  30/07/2019  general case- resistance present in both branches  31/07/2019

#### **UNIT-IV: Network Theorems:**

CO4: To Understand the Network Theorems.

TB:: Network Analysis – ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000 TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

51	Thevinin's, Norton's	14/8/2019	
52	Milliman's, Reciprocity, Tellegens	16/8/2019	
53	Milliman's, Reciprocity, Tellegens	17/8/2019	
54	Compensation, Substitution	19/8/2019	Lecture
55	Superposition, Max Power Transfer	20/8/2019	interspersed
56	Superposition, Max Power Transfer	21/8/2019	with discussions
57	problem solving using dependent sources also	23/8/2019	with discussions
58	problem solving using dependent sources also	24/8/2019	

59 problem solving using dependent sources also	24/8/2019
60 problem solving using dependent sources also	26/8/2019

**UNIT-V:Two-port networks** 

CO5: gain the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h &

TB::Network Analysis – ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB:: Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

61	Relationship of two port networks	27/8/2019	
62	Z-parameters, Y- parameters	28/8/2019	
63	Transmission line parameters, h-parameters	29/8/2019	
64	Inverse h- parameters	30/8/2019	
65	Inverse Transmission line parameters	31/8/2019	Lecture
66	Relationship between parameter sets	2/9/2019	interspersed
67	Parallel connection of two port networks	4/9/2019	with discussions
68	Cascading of two port networks	5/9/2019	51107
69	series connection of two port networks	6/9/2019	
70	problem solving including dependent sources also	7/9/2019	
71	problem solving including dependent sources also	9/9/2019	

#### **UNIT-VI:Transients:**

CO6: Analyze the filter design concepts in real world applications.

TB::Network Analysis - ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000

TB::Network Analysis by K.Satya Prasad and S Sivanagaraju, Cengage Learning, TB::Electric Circuit Analysis by Hayt and Kimmarle, TMH

72	First order differential equations	10/9/2019	
73	Definition of time constants	11/9/2019	
74	R-L circuit, R-C circuit with DC excitation	12/9/2019	
75	R-L circuit, R-C circuit with DC excitation	14/9/2019	Lecture
76	Evaluating initial conditions procedure	17/9/2019	interspersed
77	second order differential equations	18/9/2019	with discussions
78	homogeneous, non- homogenous	19/9/2019	willi discussions
79	problem solving using RLC elements with DC excitation	20/9/2019	
80	problem solving using RLC elements with AC excitation	24/9/2019	
81	Response as related to s-plane rotation of roots	25/9/2019	

Signature of the Faculty

Signature of the HOD

# TENTATIVE LESSON PLAN: R1621045

Section : Sec	I Date: 10/06/2019		
Revision No: (		Α	ID HOD
Tools: Black b		Approv	ed By: HOD
S NO:	TOPIC	Date	Mode of
UNIT-I THI	E RANDOM VARIABLE		Delivery
	know the most important distributions and their charac		
TB1: PROBAB	ILITY AND STOCHASTIC PROCESSES, Y. MALLIKAR	ueristics.	
Golden E	ra Publications.	JUNA REDD	Υ,
1	Introduction	10/06/19	1
2			
3	Definition of a Random Variable	11/06/19	
	Conditions for Function to be a Random variable	12/06/19	
4	Discrete, Continuous & Mixed Random Variables	13/06/19	
5	Distribution and Density functions	14/06/19	Lecture
6	Properties	15/06/19	interspersed
7	Binomial, Poisson	17/06/19	with
8	Uniform, Gaussian	18/06/19	discussions
9	Exponential, Rayleigh	19/06/19	discussions
10	Conditional Distribution	20/06/19	
11	Tutorial	20/06/19	
12	Conditional Density	21/06/19	
13	Properties		
		22/06/19	
		22/06/19 ECTATION	S
UNIT-II OPE	RATION ON ONE RANDOM VARIABLE – EXP	ECTATION	S random
UNIT-II OPE		ECTATION	S random
UNIT-II OPE CO2: Able to un variable.	RATION ON ONE RANDOM VARIABLE – EXP. nderstand, analyze, and solve typical problems in oper	ECTATION ations on one	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI	RATION ON ONE RANDOM VARIABLE – EXP	ECTATION ations on one	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI	RATION ON ONE RANDOM VARIABLE – EXP. aderstand, analyze, and solve typical problems in operal CLITY AND STOCHASTIC PROCESSES, Y. MALLIK AR	ECTATION ations on one	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En	RATION ON ONE RANDOM VARIABLE – EXP. nderstand, analyze, and solve typical problems in operal LITY AND STOCHASTIC PROCESSES, Y. MALLIKAR as Publications.	ECTATION ations on one JUNA REDDY 25/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operal LITY AND STOCHASTIC PROCESSES, Y. MALLIKAR of Publications.  Introduction  Expected Value of a Random Variable	ECTATION ations on one	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En	RATION ON ONE RANDOM VARIABLE – EXP. nderstand, analyze, and solve typical problems in operal LITY AND STOCHASTIC PROCESSES, Y. MALLIKAR as Publications.	ECTATION ations on one JUNA REDD  25/6/19  26/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operation of a Random Variable  Function of a Random Variable	ECTATION ations on one JUNA REDD' 25/6/19 26/6/19 28/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16 17	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operation of a Random Variable  Moments about the Origin, Central Moments	ECTATION ations on one JUNA REDDY  25/6/19  26/6/19  28/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16 17 18	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operation of the control of the contro	ECTATION ations on one JUNA REDD' 25/6/19 26/6/19 28/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operation of a Random Variable  Moments about the Origin, Central Moments	ECTATION ations on one JUNA REDDY  25/6/19  26/6/19  28/6/19	random
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16 17 18	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operation of the control of the contro	ECTATION ations on one JUNA REDDY  25/6/19  26/6/19  28/6/19  29/6/19  01/07/19	Lecture interspersed
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16 17 18 19	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operations.  ILITY AND STOCHASTIC PROCESSES, Y. MALLIKAR as Publications.  Introduction  Expected Value of a Random Variable  Function of a Random Variable  Moments about the Origin, Central Moments  Variance and Skew  Chebychev's Inequality	ECTATION ations on one JUNA REDD'  25/6/19  26/6/19  28/6/19  29/6/19  01/07/19  03/07/19	Lecture interspersed with
UNIT-II OPE CO2: Able to un variable. TB1: PROBABI Golden En 14 15 16 17 18 19 20	RATION ON ONE RANDOM VARIABLE – EXP. Inderstand, analyze, and solve typical problems in operations.  ILITY AND STOCHASTIC PROCESSES, Y. MALLIKAR as Publications.  Introduction  Expected Value of a Random Variable  Function of a Random Variable  Moments about the Origin, Central Moments  Variance and Skew  Chebychev's Inequality  Tutorial	ECTATION ations on one JUNA REDDY  25/6/19  26/6/19  28/6/19  29/6/19  01/07/19  03/07/19	Lecture interspersed

24	Monotonic Transformations Random Variable	08/07/19	
25	Non monotonic Transformations of Continuous Random Variable	09/07/19	
UNIT-III	MULTIPLE RANDOM VARIABLES		
CO3: Able to	know the distribution and density functions of multiple	le random vari	ables and
operati	ons on multiple random variables.		
TB1: PROBA	ABILITY AND STOCHASTIC PROCESSES, Y.MALLIKA	RJUNA REDD	Υ,
Golder	Era Publications.		
26	Vector Random Variables	12/07/19	
27	JointDistribution Function	15/07/19	
28	Properties of Joint Distribution	16/07/19	
29	Marginal DistributionFunctions	17/07/19	
30	Conditional Distribution and Density	17/07/19	1
31	Statistical Independence	19/07/19	-
32	Sum of Two Random Variables	20/07/19	
33	Sum of Several Random Variables	22/07/19	Lecture
34	CentralLimit Theorem: Unequal Distribution,	22/07/19	interspersed
	Equal Distributions	22/07/19	with
35	relationship between bandwidth and rise time	23/07/19	discussions
36	Tutorial	27/07/19	
37	OPERATIONS ON MULTIPLE RANDOM	29/07/19	
	VARIABLES	25/07/15	
38	Joint Moments about the Origin	30/07/19	
39	Joint Central Moments	30/07/19	
40	Joint Characteristic Functions	31/07/19	
41	Jointly Gaussian Random Variables	01/08/19	
42	Two Random Variables case	02/08/19	
43	N Random Variables case	02/08/19	
44	Properties	02/08/19	
45	Transformations of Multiple RandomVariables	03/08/19	
46	Linear Transformations of Gaussian Random Variables	05/08/19	
JNIT-IV	RANDOM PROCESSES – TEMPORAL CHARAC	TEDICTICS	
and to the second second	ty to characterize stochastic processes with an emphasi	TERISTICS	1
processe	s.	s on stationary	random
	BILITY AND STOCHASTIC PROCESSES, Y. MALLIKAR	RIIINA REDDY	
Golden I	Era Publications.	CONA REDDI	,
47	The Random Process Concept	06/08/19	
48	Classification of Processes	07/08/19	
49	Deterministic and Non deterministic Processes	09/08/19	
50	Distribution and Density Functions	09/08/19	

51	Concept of Stationary and Statistical Independence	14/08/19	
52	First-Order Stationary Processes	16/08/19	
53	Second- Order and Wide-Sense Stationary	17/08/19	Lecture
54	Nth-order and Strict-Sense Stationarity	18/08/19	interspersed
55	Time Averages and Ergodicity	20/08/19	with discussions
56	Autocorrelation Function and its Properties	21/08/19	discussions
57	Cross-Correlation Function and its Properties	03/09/19	
58	Tutorial	04/09/19	-
59	Covariance Functions	06/09/19	
60	Gaussian Random Processes	09/09/19	
61	Poisson Random Process	12/09/19	
UNIT-V RA	NDOM PROCESS-SPECTRAL CHARACTERIST	TICS	
CO5: An abili	ty to characterize stochastic processes with an empha	sis on stationary	random
processe	es.		
TB1: PROBA	BILITY AND STOCHASTIC PROCESSES, Y. MALLIKA	RIINA REDDY	7

Golden Era Publications.

62	The Power Spectrum	13.09.2018	
63	Properties	14.09.2018	
64	Relationship between Power Spectrum and Autocorrelation Function	16.09.2018	Lecture interspersed
65	The Cross-Power Density Spectrum	17.09.2018	with
66	Properties	18.09.2018	discussions
67	Tutorial	20.09.2018	
68	Relationship between Cross-Power Spectrum and Cross-Correlation Function	21.09.2018	
		21.07.2010	

## UNIT-VI LINEAR SYSTEMS WITH RANDOM INPUTS

CO6: Able to know the response of linear system for random inputs and types of noise.

**TB1:** PROBABILITY AND STOCHASTIC PROCESSES, Y. MALLIKARJUNA REDDY, Golden Era Publications.

69	Random Signal Response of Linear Systems	23/09/19	
70	System Response	23/09/19	
71	Convolution	24/09/19	+
72	Mean and Mean-squared Value of System Response	24/09/19	Lecture interspersed with discussions
73	Autocorrelation Function of Response	25/09/19	
74	Cross-Correlation Functions of Input and Output	25/09/19	
75	Spectral Characteristics of System Response	27/09/19	
76	Power Density Spectrum of Response	27/09/19	
77	Cross-Power Density Spectra of Input and Output	28/09/19	
78	Band pass, Band-Limited and Narrowband Processes, Properties	28/10/19	

79	Modeling of Noise Sources	28/09/19
80	Resistive Noise Source, Arbitrary Noise Sources	28/09/19
31	Effective Noise Temperature	30/09/19
32	Average Noise Figure	30/09/19
33	Average Noise Figure of cascaded networks	01/10/19

**TB1:** PROBABILITY AND STOCHASTIC PROCESSES, Y. MALLIKARJUNA REDDY, Golden Era Publications.

**TB2:** PROBABILITY, RANDOM VARIABLES & RANDOM SIGNAL PRINCIPLES, PEYTONZ. PEEBLES, TMH, 4th Edition, 2001.

**TB3:** PROBABILITY, RANDOM VARIABLES AND STOCHASTIC PROCESSES, Athanasios Papoulis and S.Unnikrishna, PHI, 4th Edition, 2002

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Signature of HOD

## TENTATIVE LESSON PLAN: R1621045

Course Title: R.	ANDOM VARIABLES AND STOCHASTIC PRO	CESS	
Section : Sec II			
<b>Revision No</b> : 00		Approve	d By: HOD
Tools: Black bo	ard, PPTs		77.7.6
S NO:	TOPIC	Date	Mode of
	D. LYD CAN MADA DA D		Delivery
	RANDOM VARIABLE		
CO1: Able to kr	now the most important distributions and their charact	teristics.	
	LITY AND STOCHASTIC PROCESSES, Y.MALLIKAR.	JUNA REDDY	,
	a Publications.	17/06/19	
1	Introduction		
2	Definition of a Random Variable	17/06/19	
3	Conditions for Function to be a Random variable	19/06/19	
4	Discrete, Continuous & Mixed Random Variables	19/06/19	
5	Distribution and Density functions	20/06/19	Lecture
6	Properties	20/06/19	interspersed
7	Binomial, Poisson	22/06/19	with
8	Uniform,Gaussian	22/06/19	discussions
9	Exponential, Rayleigh	23/06/19	
10	Conditional Distribution	23/06/19	
11	Tutorial	25/06/19	
12	Conditional Density	25/06/19	
13	Properties	29/07/19	
CO2: Able to un variable. TB1: PROBAB	RATION ON ONE RANDOM VARIABLE – EXP inderstand, analyze, and solve typical problems in operal ILITY AND STOCHASTIC PROCESSES, Y. MALLIKAF or Publications.	rations on one	random
14	Introduction	29/07/19	
15	Expected Value of a Random Variable	01/07/19	
16	Function of a RandomVariable	01/07/19	
17	Moments about the Origin, Central Moments	03/07/19	
18	Variance and Skew	04/07/19	
19	Chebychev's Inequality	04/07/19	Lecture
20	Tutorial	06/07/19	interspersed with
21	Characteristic Function	06/07/19	discussions
22	Moment Generating Function	08/07/19	

24	Monotonic Transformations Random Variable	09/07/19	
25	Non monotonic Transformations of Continuous	11/07/19	
TINUTE TY	Random Variable	48.7	
UNIT-III	MULTIPLE RANDOM VARIABLES		
CO3: Able to	know the distribution and density functions of multipl	e random varia	ibles and
TRI. DROPA	ons on multiple random variables.	DHDIA DEDD	
Golden	BILITY AND STOCHASTIC PROCESSES, Y.MALLIKA Era Publications.	RJUNA REDD	Υ,
26	Vector Random Variables	13/07/19	
27	JointDistribution Function	14/07/19	
28	Properties of Joint Distribution	15/07/19	
29	Marginal DistributionFunctions	15/07/19	
30	Conditional Distribution and Density	17/07/19	
31	Statistical Independence	19/07/19	+
32	Sum of Two Random Variables	20/07/19	
33	Sum of Several Random Variables	21/07/19	Lecture
34	CentralLimit Theorem: Unequal Distribution,	21/0//15	interspersed
	Equal Distributions	22/07/19	with
35	relationship between bandwidth and rise time	23/07/19	discussions
36	Tutorial	26/07/19	
37	OPERATIONS ON MULTIPLE RANDOM VARIABLES	28/07/19	
38	Joint Momentsa bout the Origin	29/07/19	
39	Joint Central Moments	29/07/19	
40	Joint Characteristic Functions	30/07/19	
41	Jointly Gaussian Random Variables	01/08/19	
42	Two Random Variables case	02/08/19	
43	N Random Variables case	02/08/19	
44	Properties	02/08/19	
45	Transformations of Multiple RandomVariables	03/08/19	
46	Linear Transformations of Gaussian Random Variables	04/08/19	
UNIT-IV I	RANDOM PROCESSES – TEMPORAL CHARAC		
CO4. An abilit	ty to characterize stochastic processes with	TERISTICS	
processe	ty to characterize stochastic processes with an emphasis	is on stationary	random
	BILITY AND STOCHASTIC PROCESSES, Y. MALLIKAN	HINA DENDA	7
Golden H	Era Publications.	GONA REDD	,
47	The Random Process Concept	05/08/19	
48	Classification of Processes	05/08/19	
49	Deterministic and Non deterministic Processes	07/08/19	
50	Distribution and Density Functions	07/08/19	

51	Concept of Stationary and Statistical Independence	8/08/19	
52	First-Order Stationary Processes	8/08/19	
53	Second- Order and Wide-Sense Stationary	9/08/19	Lecture
54	Nth-order and Strict-Sense Stationarity	04908/19	interspersed with
55	Time Averages and Ergodicity	09/08/19	discussions
56	Autocorrelation Function and its Properties	11/08/19	
57	Cross-Correlation Function and its Properties	13/08/19	
58	Tutorial	14/08/19	7.= 1
59	Covariance Functions	16/08/19	
60	Gaussian Random Processes	17/08/19	
61	Poisson Random Process	18/08/19	

#### UNIT-V RANDOM PROCESS-SPECTRAL CHARACTERISTICS

CO5: An ability to characterize stochastic processes with an emphasis on stationary random processes.

TB1: PROBABILITY AND STOCHASTIC PROCESSES, Y.MALLIKARJUNA REDDY, Golden Era Publications.

62	The Power Spectrum	05.09.2018	
63	Properties	05.09.2018	
64	Relationship between Power Spectrum and		Lecture
	Autocorrelation Function	06.09.2018	interspersed
65	The Cross-Power Density Spectrum	08.09.2018	with
66	Properties	10.09.2018	discussions
67	Tutorial	11.09.2018	
68	Relationship between Cross-Power Spectrum and		
	Cross-Correlation Function	12.09.2018	

#### UNIT-VI LINEAR SYSTEMS WITH RANDOM INPUTS

CO6: Able to know the response of linear system for random inputs and types of noise.

TB1: PROBABILITY AND STOCHASTIC PROCESSES, Y.MALLIKARJUNA REDDY, Golden Era Publications.

69	Random Signal Response of Linear Systems	20/09/19	
70	System Response	20/09/19	
71	Convolution	22/09/19	
72	Mean and Mean-squared Value of System Response	22/09/19	Lecture interspersed
73	Autocorrelation Function of Response	23/09/19	
74	Cross-Correlation Functions of Input and Output	23/09/19	
75	Spectral Characteristics of System Response	25/09/19	
76	Power Density Spectrum of Response	25/09/19	
77	Cross-Power Density Spectra of Input and Output	26/09/19	with
78	Band pass, Band-Limited and Narrowband Processes, Properties	26/10/19	discussions

79	Modeling of Noise Sources	27/09/19
80	Resistive Noise Source, Arbitrary Noise Sources	28/09/19
81	Effective Noise Temperature	30/09/19
82	Average Noise Figure	30/09/19
83	Average Noise Figure of cascaded networks	01/10/19

**TB1:** PROBABILITY AND STOCHASTIC PROCESSES, Y. MALLIKARJUNA REDDY, Golden Era Publications.

**TB2:** PROBABILITY, RANDOM VARIABLES & RANDOM SIGNAL PRINCIPLES, PEYTONZ. PEEBLES, TMH, 4th Edition, 2001.

**TB3:** PROBABILITY, RANDOM VARIABLES AND STOCHASTIC PROCESSES, Athanasios Papoulis and S.Unnikrishna, PHI, 4th Edition, 2002

P.Rowersd Signature of Faculty S. Sri Gaum Signature of HOD

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

## TENTATIVE LESSON PLAN: R1621026 MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

Section. De	2.00	Page No: 01 of 03 Approved By: HOD	
Revision No			
Tools: Black			oj. HOD
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT -I	INTRODUCTION TO MANAGERIAL ECONOM	ICS	
COI: To a	equaint the student with basic knowledge of many	agarial accord	nics, manage
accision are	as, basic economics tools, concept of demand law of	domand alas	icity of dema
pes of clas	ficity measurements of elasticity and demand forecast	tina	
1 B: A.R. A	ya Sri, "Managerial Economics & Financial Analysis	" 2005 TMH	
1.	Introduction to Managerial Economics, Definitions, Characteristics of ME	14-06-2019	
2.	Nature and Scope of Managerial Economics	14-06-2019	
3.	Managerial Economics related to Other Areas	18-06-2019	
4.	Basic Economic Tools in ME	18-06-2019	T and
5.	Introduction to Demand – Meaning & Definition, Features of Demand	19-06-2019	Lecture intersperse
6.	Determinants of Demand	20-06-2019	with
7.	Law of Demand & Its exceptions, Demand Function	21-06-2019	discussions
8.	Introduction to Elasticity of Demand	24-06-2019	
9.	Types of Elasticity of Demand	25-06-2019	
10.	Types of price Elasticity of Demand	26-06-2019	
11.	Measurement of Price Elasticity of Demand	27-06-2019	
12.	Introduction: Demand Forecasting	30-06-2019	
13.	Importance of Demand Forecasting	01-06-2019	
14.	Demand Forecasting Methods	03-06-2019	
NIT –II	PRODUCTION & COST ANALYSIS		
02: TO a	equaint the student with basic knowledge of produ	ction, factors	of production
Proc	raction functions, least cost combinations of innu	ts, cost conce	nts breeker
Jose to at	old losses.		pis, breakey
B: A.R. Ary	va Sri, "Managerial Economics & Financial Analysis"	2005 TMII	
13.	Introduction to Production: Meaning & Definition, Production Function	06-07-2019	
16.	Factors of production, production function with one variable factor	06-07-2019	Lecture
17.	Law of Variable Properties	07.07.0010	interspersed
18.	Factors of production 1 1 2	07-07-2019 10-07-2019	with discussions
19.	Concept of Iso pages Iso	10.07.5	
20.	MRTS Least Cost Counting	10-07-2019	
20.	MICES, Least Cost Compination	14-07-2019	

#### INTRODUCTION TO FINANCIAL ACCOUNTING

CO5: TO know and understand about accounting process, types of accounts, principles of accounting, preparation of journal, ledger, trail balance and final accounts with

No. of Periods	TOPIC	DATE	Mode of Delivery
49.	Introduction to Accounting : Meaning & Definition, Classification of Accounts	25/08/2019	
50.	Accounting Process	30/08/2019	
51.	Principles of accounting(GAAP)	03/09/2019	
52.	Accounting cycle	03/09/2019	
53.	Preparation of Journal : Problems	04/09/2019	Lecture
54.	Preparation of Ledger : Problems	05/09/2019	interspersed with discussions
55.	Preparation of Trail Balance: Problems	05/09/2019	with discussions
56.	Final Accounts (Trading ,profit & loss A/C, Balance Sheet)	06/09/2019	
57.	Final Accounts with Adjustments	06/09/2019	
58.	Treatment of adjustments in preparation of final accounts.	06/09/2019	
59.	Introduction to Financial Statement Analysis: Importance, Objectives.	09/09/2019	
60.	Classification of Ratios : Liquidity Ratios	10/09/2019	Lecture
61.	Classification of Ratios: Activity Ratios	12/09/2019	interspersed with discussions
62.	Classification of Ratios : Solvency Ratios	12/09/2019	
63.	Classification of Ratios : Profitability Ratios	12/09/2019	
64.	Preparation of Changes in Working Capital	13/09/2019	
. 65.	Preparation of Funds Flow Statement	13/09/2019	
66.	Preparation of Cash Flow Statement	13/09/2019	a talling

### CAPITAL, CAPITAL BUDGETING DECISIONS

CO6: TO understand about Capital, types of capital, capital budgeting decisions, process of capital budgeting, methods or techniques of capital budgeting.

No. of Periods	TOPIC	DATE	Mode of Delivery
67.	Introduction to Capital Budgeting: Meaning, Definition, Need.	13/10/2019	Lecture interspersed with discussion
68.	Methods of Capital Budgeting: Pay Back Period (PBP),	14/10/2019	
69.	Calculation of Accounting Rate of Return (ARR)	15/10/2019	
70.	Calculation of Net Present Value (NPV)	16/10/2019	
71.	Calculation of Internal Rate of Return (IRR)	19/10/2019	
72.	Calculation of Profitability Index	23/10/2019	
73.	Merits and Demerits of Capital Budgeting Techniques.	25/10/2019	
74.	Previous QP problems solution	25/10/2019	

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Signature of the HOD

### TENTATIVE LESSON PLAN: R1621026 MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

Section: B	e: MANAGERIAL ECONOMICS & FINANCIAL AND Date: 14-06-2019	Page No: 01		
Revision No		Approved I		
Tools: Black l			•	
No. of	TOPIC	Date	Mode of	
Periods	TAYED O DAY CONTOUR DE LA CONT		Delivery	
UNIT –I	INTRODUCTION TO MANAGERIAL ECONOMI	ics		
OI: 10 a	equaint the student with basic knowledge of mana	igerial econon	nics, manage	
iecision are	eas, basic economics tools, concept of demand, law of	demand, elast	icity of dema	
	sticity measurements of elasticity and demand forecas			
B: A.R.Ar	ya sri, "Managerial Economics & Financial Analysis"	, 2005, TMH.		
1.	Introduction to Managerial Economics, Definitions,	14-06-2019		
2.	Characteristics of ME	17.06.2010		
3.	Nature and Scope of Managerial Economics	17-06-2019		
4.	Managerial Economics related to Other Areas  Basic Economic Tools in ME	18-06-2019		
5.		19-06-2019	Lecture	
٥.	Introduction to Demand – Meaning & Definition, Features of Demand	19-06-2019	intersperse	
6.	Determinants of Demand	20-06-2019	with	
7.	Law of Demand & Its exceptions, Demand Function	21-06-2019	discussion	
8.	Introduction to Elasticity of Demand	22-06-2019		
9.	Types of Elasticity of Demand	24-06-2019		
10.	Types of price Elasticity of Demand	25-06-2019		
11.	Measurement of Price Elasticity of Demand	26-06-2019		
12.	Introduction Demand Forecasting	27-06-2019		
13.	Importance of Demand Forecasting	01-07-2019		
14.	Demand Forecasting Methods	02-07-2019		
15.	Tutorial	03-07-2019		
NIT –II	PRODUCTION, PRODUCTION FUNCTION&COS	T ANAL VSIS		
O2: TO	acquaint the student with basic knowledge of production	uction, factors	of production	
arious pro	duction functions, least cost combinations of inpu	its, cost conce	ents breakes	
nalysis to a	void losses.	is, cost conce	pts, breaker	
B: A.R. Am	ya sri, "Managerial Economics & Financial Analysis".	2005 TMII		
	Introduction to Production : Meaning & Definition,		•	
16.	The state of the detection of the detection of the state	05/07/2019	Lecture interspersed	
16.	Production Function			
16.	Production Function	06/07/2019		
16.	Production Function  Factors of production, production function with one variable factor	06/07/2019	with	
16. 17. 18.	Production Function  Factors of production, production function with one		with	
16. 17.	Production Function  Factors of production, production function with one variable factor  Law of Variable Proportions	08/07/2019	with	
16. 17. 18. 19.	Production Function Factors of production, production function with one variable factor Law of Variable Proportions Factors of production, production function with two variable factors			
16. 17. 18.	Production Function Factors of production, production function with one variable factor Law of Variable Proportions Factors of production, production function with two	08/07/2019	with	

No. of Periods	TOPIC	DATE	Mode of Delivery	
22.	Cobb-Douglas Production Function	13/07/2019	Denvery	
23.	Economies of Scale& diseconomies of scale	14/07/2019		
24.	Returns to Scale & returns to factors	15/07/2019	-	
25.	Concept of cost & Various Cost Concepts	16/07/2019	Lecture	
26.	Introduction to Break Even Analysis	20/07/2019	interspersed with discussions	
27.	Determination of Break Even Point with Graph	23/07/2019	_ William discussions	
28.	Calculation of Break Even Point (BEP) algebraic method	25/07/2019		
29.	Tutorial	31/07/2019		
different mark	MARKETS AND COMPETITION, PRICING owledge about market, types of markets, competitions and various pricing methods.  Seri, "Managerial Economics & Financial Analysis",	on, price dete	S ermination under	
30.	Introduction to Markets: Meaning & Definition, Features	01/08/2019		
31.	Types of markets, market structure	03/08/2019		
32.	Price Determination under perfect competition	04/08/2019		
33.	Equilibrium point of firm and industry	05/08/2019		
34.	Price Determination under Monopoly	07/08/2019		
35.	Equilibrium point of firm and industry in monopoly	08/08/2019	Lecture	
36.	Price Determination under Monopolistic Competition	12/08/2019	interspersed	
37.	Price Determination under Oligopoly	14/08/2019	with discussions	
38.	Managerial Theories of the Firm	15/08/2019		
39.	Marries and Williamson theory of firm	16/08/2019		
40.	Pricing, pricing objectives.	17/08/2019		
41.	Various Methods of Pricing	19/08/2019		
CO4: TO unde stock companie TB: A.R.Arya s	FORMS OF BUSINESS ORGANIZATIONS AND Forstand about business, types of business like sole trans, business cycle.  Seri, "Managerial Economics & Financial Analysis", 2	der ship, par	YCLE tnership, joint	
42.	Introduction to Business: Definition, Features	20/08/2019		
43.	Sole Proprietorship : Features, Merits, Demerits	21/08/2019		
44.	Partnership: Features, Merits, Demerits, kinds of partners	22/08/2019	Lagtura	
45.	Joint Stock Company: Features, Merits, Demerits	23/08/2019	Lecture interspersed	
46.	Public limited and private limited companies, features	23/08/2019	with discussions	
47.	Public Enterprises : Features, Merits, Demerits	24/08/2019		
48.	Phases of Business Cycles	26/08/2019		

#### INTRODUCTION TO FINANCIAL ACCOUNTING UNIT-V

CO5: TO know and understand about accounting process, types of accounts, principles of accounting, preparation of journal, ledger, trail balance and final accounts with

No. of Periods	TOPIC	DATE	Mode of Delivery
49.	Introduction to Accounting: Meaning & Definition, Classification of Accounts	27/08/2019	
50.	Accounting Process	31/08/2019	
51.	Principles of accounting(GAAP)	02/09/2019	
52.	Accounting cycle	03/09/2019	
53.	Preparation of Journal: Problems	04/09/2019	Lecture
54.	Preparation of Ledger : Problems	05/09/2019	interspersed with discussions
55.	Preparation of Trail Balance: Problems	06/09/2019	
56.	Final Accounts (Trading ,profit & loss A/C, Balance Sheet)	07/09/2019	
57.	Final Accounts with Adjustments	09/09/2019	
58.	Treatment of adjustments in preparation of final accounts.	10/09/2019	
59.	Introduction to Financial Statement Analysis: Importance, Objectives.	11/09/2019	
60.	Classification of Ratios : Liquidity Ratios	12/09/2019	Lecture
61.	Classification of Ratios : Activity Ratios	13/09/2019	interspersed
62.	Classification of Ratios : Solvency Ratios	14/09/2019	with discussions
63.	Classification of Ratios :Profitability Ratios	16/09/2019	
64.	Preparation of Changes in Working Capital	21/09/2019	
65.	Preparation of Funds Flow Statement	23/09/2019	
66.	Preparation of Cash Flow Statement	28/09/2019	

UNIT – VI CAPITAL, CAPITAL BUDGETING DECISIONS

CO6: TO understand about Capital, types of capital, capital budgeting decisions, process of capital budgeting, methods or techniques of capital budgeting.

TB: A.R.Arya sri, "Managerial Economics & Financial Analysis", 2005, TMH

No. of Periods	TOPIC	DATE	Mode of Delivery
67.	Introduction to Capital Budgeting: Meaning, Definition, Need.	01/10/2019	
68.	Methods of Capital Budgeting: Pay Back Period (PBP),	05/10/2019	
69.	Calculation of Accounting Rate of Return (ARR)	07/10/2019	Lecture
70.	Calculation of Net Present Value (NPV)	09/10/2019	interspersed
71.	Calculation of Internal Rate of Return (IRR)	11/10/2019	with discussion
72.	Calculation of Profitability Index	14/10/2019	
73.	Merits and Demerits of Capital Budgeting Techniques.	21/10/2019	
74.	Previous QP problems solution	25/10/2019	
Signature of th	e Faculty	S Syl Go nature of the l	HOD

Srinug V.V

PRINCIPAL SRK Institute of Technology ENIKEPADU. VIJAYAWADA-521 108

### **TENTAIVE LESSON PLAN: R1631041**

Course Title: COMPUTER ARCHITECTURE & ORGANIZATION (R1631041)

Section			<b>Page No:</b> 01 of 03
	on No : 00   Prepared By : B.S.S.TEJESH		Approved By : HOD
	Black board, PPTs, Moodle	T 5.	77. 45.4
No. of Periods		Date	Mode of Delivery
UNIT -		S	
	Student can understand the architecture of modern		
	Computer Organization, CARL HAMASCHER		ι.
1	Functional unit	11,13.6.19	
2	Basic operational concepts	14,15.6.19	
3	Bus structures	18,19.6.19	
4	System software 20.6.19		
5	Performance	21.6.19	
6	The history of the computer development	22,22,23.6.1	9 Lecture interspersed with discussions
	-2 MACHINE INSTRUCTION AND PROGRA	The state of the s	
CO2: S	Student can analyze the performance of a compute	r using perform	ance equation
TB :: C	Computer Organization, CARL HAMASCHER	5 <sup>TH</sup> EDITION	Ι.
7	Instruction and instruction sequencing	29.6.19	
8	Register transfer notation	29.6.19	
9	Assembly language notation	2,20.7.19	
10	Basic instruction types	3,4,21.7.19	
11	Addressing Modes	5,23.7.19	
12	The role of stacks and queues in computer programming equation	6,25.7.19	Lecture interspersed with discussions
13	Component of instructions	6.7.19	
14	Logic instructions	26.7.19	
1.5			

	TYPES OF INSTRUCTIONS tudent can understand the different instruction computer Organization, CARL HAMASCH		
16	Arithmetic and logic instructions	10,11,27.7.19	
17	Branch instructions	12,13,27.7.19	Lecture interspersed with
18	Addressing modes	13,28.7.19	discussions
19	Input/Output operations and tutorials	16.30.7.19	

9.7.19

15

Shift and rotate instructions, revision

	TENTATIVE LESSON P	LAN: R163	1041		
Course	Title: COMPUTER ARCHITECTURE AND O	ORGANIZATIO	N (R1631041)		
Section			ge No: 02 of 03		
	on No: 00   Prepared By: B.S.S.TEJESH	A	oproved By : HOD		
No. of	Black board, PPTs TOPIC	Data	M. J CD. P.		
Periods	TOPIC	Date	Mode of Delivery		
CO4: St	IV INPUT/OUTPUT ORGANIZATION udent can understand the effective address of an operation, CARL HAMASCHER 5		sing modes.		
20	Accessing I/O devices	31.7.19			
21	Interrupt hardware and tutorials	1,14.8.19			
22	Enabling and disabling interrupts	3,4,16.8.19	-		
23	Handling multiple devices	17.8.19	Lecture interspersed with		
24	Direct memory access	21.8.19	discussions		
25					
26	Asynchronous bus	25,28.8.19			
27	Interface circuits	29.8.19	-		
28	Standard I/O interface	4,5.9.19	-		
29	Peripheral component interconnect (PCI) bus	7,9.9.19	-		
CO5 : S TB TB :	tudent can understand how computer stores positive: Computer Organization, CARL HAMASCHE Basic memory circuits	R 5TH EDITION	umbers V.		
32	Memory system consideration	11.9.19			
33	Wiemory system consideration		-		
33	Pand only mamory (DOM)	12.9.19			
	Read only memory (ROM)	14.9.19			
34	PROM, EPROM, EEPROM, Flash memory	14.9.19 14,15.9.19			
34	PROM, EPROM, EEPROM, Flash memory Cache memories	14.9.19 14,15.9.19 17.9.19			
34 35 36	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving	14.9.19 14,15.9.19 17.9.19 18.9.19	Lecture interspersed with discussions		
34 35 36 37	PROM, EPROM, EEPROM, Flash memory  Cache memories  Interleaving  Mapping functions	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19			
34 35 36	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19			
34 35 36 37 38 39	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19 20.9.18	discussions		
34 35 36 37 38 39 UNIT – CO6: U	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PRO Inderstand of how a computer performs arithmetic of	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19 20.9.18  • GRAMMED Upperations of pos	NIT		
34 35 36 37 38 39 UNIT – CO6: U	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PRO	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 20.9.18  CRAMMED Upperations of post TH EDITION	discussions		
34 35 36 37 38 39 UNIT – CO6 : U	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PROINTED TO THE PROCESSING UNIT AND MICRO PROPRIED TO THE PROPRIED TO THE PROCESSING UNIT AND MICRO PROPRIED TO THE PRO	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 20.9.18 CRAMMED Upperations of post TH EDITION 21.9.19	discussions		
34 35 36 37 38 39 UNIT – CO6: U TB:: Co	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PROINTERS arithmetic computer Organization, CARL HAMASCHER 5 Fundamental concepts Register transfers	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19 20.9.18 CGRAMMED Upperations of post TH EDITION 21.9.19 22.9.19	discussions		
34 35 36 37 38 39 UNIT – CO6: U TB:: Co 40 41	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PROINTED TO THE PROCESSING UNIT AND MICRO PROPRIED TO THE PROPRIED	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19 20.9.18  CRAMMED Uperations of post HEDITION 21.9.19 22.9.19 24.9.19	discussions  NIT  itive and negative numbers		
34 35 36 37 38 39 UNIT - CO6: U IB:: Co 40 41 42	PROM, EPROM, EEPROM, Flash memory Cache memories Interleaving Mapping functions Magnetic hard disks Optical disks VI PROCESSING UNIT AND MICRO PRO Inderstand of how a computer performs arithmetic of imputer Organization, CARL HAMASCHER 5 Fundamental concepts Register transfers Performing an arithmetic or logic operation	14.9.19 14,15.9.19 17.9.19 18.9.19 17.9.19 19.9.19 20.9.18 CGRAMMED Upperations of post TH EDITION 21.9.19 22.9.19	discussions		

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		TENTATIVE LESSON F	LAN: R16	31041
Course	Title: CO	MPUTER ARCHITECTURE AND	ORGANIZAT	TION (R1631041)
Section	: A	Date: 10/6/19		Page No: 03 of 03
Revisio	n No:00	Prepared By : B.S.S.TEJESH		Approved By : HOD
Tools: B	Black boar	d, PPTs		
No. of		TOPIC	Date	Mode of Delivery
Periods				
46	Microinstructions		29.9.19	
47	Micro program sequencing		1.10.19	
48	Wide bran	nch addressing	1.10.19	
49	Microinst	ructions with next address field	3.10.19	

Signature of the Faculty

S\_Sri Gown's Signature of the HOD

### **TENTAIVE LESSON PLAN: R1631041**

Prepared By: S.NEERAJA  ck board, PPTs, Moodle  TOPIC  BASIC STRUCTURE OF COMPUTER ent can understand the architecture of moderr puter Organization, CARL HAMASCHER unctional unit casic operational concepts sus structures ystem software erformance  The history of the computer development	Date RS n computers.	Mode of Delivery
TOPIC  BASIC STRUCTURE OF COMPUTER ent can understand the architecture of modern puter Organization, CARL HAMASCHER unctional unit assic operational concepts sus structures ystem software erformance	11,13.6.19 14,15.6.19 18,19.6.19 20.6.19	Mode of Delivery
ent can understand the architecture of modern puter Organization, CARL HAMASCHER unctional unit easic operational concepts eus structures ystem software erformance	11,13.6.19 14,15.6.19 18,19.6.19 20.6.19	
puter Organization, CARL HAMASCHER unctional unit asic operational concepts sus structures ystem software erformance	11,13.6.19 14,15.6.19 18,19.6.19 20.6.19	
sasic operational concepts sus structures ystem software erformance	14,15.6.19 18,19.6.19 20.6.19	
sus structures ystem software erformance	18,19.6.19 20.6.19	
ystem software erformance	20.6.19	
erformance		
	21.6.19	
The history of the computer development		
	22,22,23.6.19	Lecture interspersed with discussions
puter Organization, CARL HAMASCHER		e equation
nstruction and instruction sequencing	29.6.19	
Register transfer notation	29.6.19	
Assembly language notation	2,20.7.19	
Basic instruction types	3,4,21.7.19	
Addressing Modes	5,23.7.19	
The role of stacks and queues in computer  6 25 7 10  Lecture in		Lecture interspersed with discussions
rogramming equation		With discussions
	6.7.19	with discussions
rogramming equation		with discussions
	puter Organization, CARL HAMASCHEI Instruction and instruction sequencing Register transfer notation Assembly language notation Basic instruction types Addressing Modes	Register transfer notation 29.6.19 Assembly language notation 2,20.7.19 Basic instruction types 3,4,21.7.19 Addressing Modes 5,23.7.19

10,11,27.7.19

12,13,27.7.19

13,28.7.19

16.30.7.19

Lecture interspersed with discussions

Arithmetic and logic instructions

Input/Output operations and tutorials

Branch instructions

Addressing modes

16

17

18

19

Course	TENTATIVE LESSON P Title: COMPUTER ARCHITECTURE AND C				
Section			nge No : 02 of 03		
	on No: 00 Prepared By: S.NEERAJA	Aj	pproved By : HOD		
No. of Periods	Black board, PPTs TOPIC	Date	Mode of Delivery		
	IV INPUT/OUTPUT ORGANIZATION udent can understand the effective address of an open puter Organization, CARL HAMASCHER 5		sing modes.		
20	Accessing I/O devices	31.7.19			
21	Interrupt hardware and tutorials	1,14.8.19			
22	Enabling and disabling interrupts	3,4,16.8.19			
23	Handling multiple devices	17.8.19	Lecture interspersed with		
24	Direct memory access	discussions			
25	Buses: Synchronous bus	23,25.8.19	-		
26	Asynchronous bus	25,28.8.19			
27	Interface circuits	29.8.19	_		
28	Standard I/O interface	4,5.9.19	†		
29	Peripheral component interconnect (PCI) bus	7,9.9.19			
CO5 : S TB TB :	THE MEMORY SYSTEM tudent can understand how computer stores positive: Computer Organization, CARL HAMASCHE	ER 5 <sup>TH</sup> EDITIO	umbers <b>N.</b>		
32	Basic memory circuits	11.9.19			
33	Memory system consideration	12.9.19			
34	Read only memory (ROM)	14.9.19			
	PROM, EPROM, EEPROM, Flash memory	14,15.9.19			
35	Cache memories	17.9.19	Lecture interspersed with		
36	Interleaving	18.9.19	discussions		
37	Mapping functions	17.9.19			
	Magnetic hard disks	19.9.19			
39	Optical disks	20.9.18			
UNIT –	VI PROCESSING UNIT AND MICRO PRO inderstand of how a computer performs arithmetic				
TB :: Co	omputer Organization, CARL HAMASCHER 5	S <sup>TH</sup> EDITION	suive and negative numbers		
40	Fundamental concepts	21.9.19			
41	Register transfers	22.9.19			
42	Performing an arithmetic or logic operation	24.9.19			
43	Fetching a word from memory	26.9.19	Lecture interspersed with		
	Fetching a word from memory  Execution of complete instruction	26.9.19 27.9.19	Lecture interspersed with discussions		

		TENTATIVE LESSON P	LAN: R163	31041
Course	Title: CO	MPUTER ARCHITECTURE AND	ORGANIZATI	ON (R1631041)
Section	: B	Date: 10/6/19		<b>Page No:</b> 03 of 03
Revisio	n No:00	Prepared By: S.NEERAJA		Approved By : HOD
Tools: B	lack boar	d, PPTs		
No. of		TOPIC	Date	Mode of Delivery
Periods				
46	Microinst	ructions	29.9.19	
47	Micro program sequencing		1.10.19	
48	Wide bran	nch addressing	1.10.19	
49	Microinst	ructions with next address field	3.10.19	

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	LINEAR IC APPLICATIONS	Page No: 01 o	f 03
ection: III E	CE-A Date :10-06-2019	Approved By	HOD
Revision No:	00 Prepared By: V. SRILAKSHMI	Approved by	HOD
No. of	ard, PPTs, TOPIC	Date	Mode of Delivery
Periods	Introduction To Operational Amplifier		
Operational	nt will be able to analyze different issues related to th Amplifier	vakwad, PHI.	
	ntegrated Circuits, D. Roy Choudary, Sahil B jain, N	10-06-19	
1.	Introduction		
2.	Differential Amplifier- DC analysis of a differential amplifier	11-06-19	
3.	AC analysis of Dual input -Balanced output differential amplifier	12-06-19	
4.	Properties of other differential amplifier configuration (Dual Input-Unbalanced Output).	13-06-19	Lecture
5.	Properties of other differential amplifier configuration (Dual Input-Unbalanced Output).	14-06-19	interspersed with
6.	Properties of other differential amplifier configuration (Single Ended Input -Balanced	15-06-19	discussions
7.	Output).  Properties of other differential amplifier (Single Ended Input- Unbalanced Output).	17-06-19	
8.	DC Coupling	19-06-19	
9.	Cascade Differential Amplifier Stages	20-06-19	
10.	Level translator	22-06-19 24-06-19	
11.	Tutorial	24-00-19	<u> </u>
TI. OD AR	OP-AMP lent can understand how to use op amp in real time a MPS and Linear Integrated Circuits, Ramakanth A G Integrated Circuits, D. Roy Choudary, Sahil B jain,	ayakwad, PHI. New Age Interna	ational.
12.	Characteristics of OP-Amps	26-06-19	
13.	Integrated circuits-Types, Classification	29-06-19	
14.	Package Types and Temperature ranges, Power supplies	01-07-19	Lecture
15.	Op-amp Block Diagram	02-07-19	intersperse with
16.	DC characteristics	03-07-19	discussions
17.	AC characteristics	04-07-19	discussions
18.	741 op-amp & its features	05-07-19	
19.	Op-Amp parameters & Measurement	06-07-19	
1	Input & Out put Off set voltages	08-07-19	
20.	•	09-07-19	
20.	Input & Out put Off set currents		
21.	Input & Out put Off set currents slew rate, CMRR	10-07-19	
	Input & Out put Off set currents slew rate, CMRR PSRR, Drift	10-07-19 11-07-19	

25.	Tutorial	12-07-19	
UNIT - III CO 3: Abilit	LINEAR and NON-LINEAR APPLICATIONS OF C ty to use OP Amp as summer, Subtractor, Integrator of the PS and Linear Integrated Circuits, Ramakanth A Ga Integrated Circuits, D. Roy Choudary, Sahil B jain, N	and so. vakwad, PHI.	itional
26.	Inverting amplifier	19-07-19	
27.	Non-Inverting amplifier.	20-07-19	
28.	Integrator	24-07-19	
29.	Differentiator	25-07-19	
30.	Difference amplifier	25-07-19	
31.	Instrumentation amplifier	26-07-19	Lecture
32.	AC amplifier	27-07-19	interspersed
33.	V to I converters.	29-07-19	with
	I to V converters, Buffers	30-07-19	discussions
34.	Non- Linear function generation	01-08-19	uiscussions
35.	Comparators, Precision rectifiers	02-08-19	
36.	Multivibrators, Triangular wave generator	03-08-19	
37. 38.	Log Amplifiers, Anti log Amplifiers	16-08-19	

No. of Periods	TOPIC	DATE	Mode of Delivery
UNIT - IV AC	TIVE FILTERS, ANALOG MULTIPLIERS AND	MODULATOR	S
CO 4. Ability to	o use OP Amp as filters		
	egrated Circuits, D. Roy Choudary, Sahil B jain, New Introduction	17-08-19	72
39.	Butter worth filters – 1st order LPF, HPF	19-08-19	
40.	Butter worth filters – 1st order LFF, HFF  Butter worth filters – 2 <sup>nd</sup> order LPF, HPF	20-08-19	
41.		21-08-19	T
42.	Band pass filter	22-08-19	Lecture
43.	Band reject filter	24-08-19	interspersed with
44.	All pass filter, Four Quadrant multiplier	24-00-17	discussions
45.	Introduction to 555 timer	26-08-19	
T1: OP-AMPS	and Linear Integrated Circuits, Ramakanth A Gaya	kwad, PHI.	
46.	functional diagram	27-08-19	
47.	Monostable operations and applications	27-08-19	
48.	Monostable applications	28-08-19	
49.	Astable operations and applications	31-08-19	Lecture
50.	Astable applications	03-09-19	interspersed
51.	Schmitt Trigger	07-09-19	with
52.	PLL - introduction, block schematic	09-09-19	discussions
53.	PLL -principles and description of individual blocks	16-09-19	
54.	Tutorial	17-09-19	
55.	IC-565 PLL	18-09-19	
	1C-303 FLL		
56.	Applications of PLL – frequency multiplication	19-09-19	

58.	Lock range	21-09-19	
59.	Capture range	21-09-19	
60.	AM modulation	23-09-19	
61.	FM & FSK demodulators	23-09-19	
62.	Applications of VCO (566)	24-09-19	
лт и	NOTAL TO ANALOG AND ANALOG		

UNIT - VI DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS CO 6: Able to use OP Amp to as analog to digital and digital to analog converter. T2: Linear Integrated Circuits, D. Roy Choudary, Sahil B jain, New Age International.

63.	Introduction, Basic DAC techniques	25-09-19	
64.	Weighted resistor DAC,	26-09-19	
65.	R-2R ladder DAC	27-09-19	
66.	Inverted R-2R DAC	28-09-19	Lecture interspersed
67.	IC 1408 DAC	28-09-19	with
68.	Parallel Comparator type ADC	28-09-19	discussions
69.	Counter type ADC	30-09-19	
70.	Successive approximation ADC	01-10-19	
71.	Dual slope ADC	03-10-19	

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## **TENTATIVE LESSON PLAN: R1631042**

Section: III	e: LINEAR IC APPLICATIONS ECE-B Date :11-06-2019	Page No :	01 of 03
Revision No			By: HOD
Tools : Black		Approved	By . HOD
No. of Periods	TOPIC	Date	Mode of Delivery
UNIT -I	Introduction To Operational Amplifier	1	1
CO 1: Stude	ent will be able to analyze different issues related to t	he differentie	l Amplifiana and
Operational	Amplifier	ne unici chua	Ampuners and
	PS and Linear Integrated Circuits, Ramakanth A G	avakwad PH	
T2: Linear	Integrated Circuits, D. Roy Choudary, Sahil B jain, N	New Age Inter	national
1.	Introduction	11-06-19	national.
2.	Block diagram of Typical Op-Amp With Various	11-06-19	
	Stages	11 00 17	
3.	BJT Differential Amplifier With REDC Analysis	12-06-19	
4.	BJT differential amplifier with constant current	12-06-19	
	source	12-00-17	,
5.	dual input balanced output- DC & AC Analysis	13-06-19	
6.	Tutorial	15-06-19	Lecture
7.	dual input balanced output- DC & AC Analysis	17-06-19	interspersed with
8.	dual input unbalanced output- DC & AC Analysis	18-06-19	discussions
9.	dual input unbalanced output- DC & AC Analysis	18-06-19	
10.	single input balanced output- DC & AC Analysis	19-06-19	
11.	single input balanced output- DC & AC Analysis	.19-06-19	
12.	single input unbalanced output- DC & AC Analysis	20-06-19	
13.	Tutorial	22-06-19	
14.	Current repeater circuits	22-06-19	
15.	Level translator	25-06-19	
16.	Cascade differential amplifier	26-06-19	
17.	FET differential amplifier		
18.	Tutorial	27-06-19	
JNIT -II	OP-AMP	29-00-19	
	ent can understand how to use op amp in real time ap		
1: OP-AM	PS and Linear Integrated Circuits, Ramakanth A Ga	pucations.	
72: Linear I	ntegrated Circuits, D. Roy Choudary, Sahil B jain, N	lyakwau, PHI	•
19.	Integrated circuits-Types, Classification	01-07-19	national.
20.	Package Types and Temperature ranges, Power		
	supplies	02-07-19	
21.	DC and AC characteristics	02 07 10	
22.	741 op-amp & its features	03-07-19	
23.	Input & Out put Off set voltages & currents		Lecture
24.	Input & Out put Off set voltages & currents	04-07-19	
	techniques	06-07-19	interspersed with
25.	Input & Out put Off set currents compensating	00.07.10	discussions
	techniques	08-07-19	uiscussions
26.	slew rate,	00.05.15	
27.	Problems	09-07-19	
		10-07-19	
	CMRR		
28. 29.	CMRR, PSRR,	10-07-19 11-07-19	

	Frequency Compensation techniques	23-07-19	
32.	Tutorial	23-07-19	
UNIT - III	LINEAR and NON-LINEAR APPLICATION	IS OF OP-AMPS	
	ty to use OP Amp as summer, Subtractor, Inter		
	(PS and Linear Integrated Circuits, Ramakant		
T2: Linear	Integrated Circuits, D. Roy Choudary, Sahil B		ational
33.	Inverting amplifier	24-07-19	
34.	Non-Inverting amplifier.	24-07-19	
35.	Integrator	25-07-19	
36.	Differentiator	27-07-19	
37.	Difference amplifier	29-07-19	T
38.	Instrumentation amplifier	30-07-19	Lecture interspersed with discussions
39.	AC amplifier	31-07-19	
40.	V to I converters.	01-08-19	
41.	I to V converters, Buffers	03-08-19	discussions
42.	Non- Linear function generation	13-08-19	
43.	Comparators, Precision rectifiers	13-08-19	
44.	Multivibrators	14-08-19	
45.	Triangular wave generator	14-08-19	
46.	Log Amplifiers, Anti log Amplifiers	17-08-19	

No. of Periods	TOPIC	DATE	Mode of
		TORYN I MOT	Delivery
	TIVE FILTERS, ANALOG MULTIPLIERS AND M	MODULATOR	KS .
	o use OP Amp as filters	Ago Internati	onal
47.	egrated Circuits, D. Roy Choudary, Sahil B jain, New Introduction	19-08-19	liai.
48.	Butter worth filters – 1st order LPF	19-08-19	
49.		20-08-19	
	Butter worth filters – 1st order HPF	21-08-19	Lecture
50.	Butter worth filters – 2 <sup>nd</sup> order LPF		interspersed
51.	Butter worth filters – 2 <sup>nd</sup> order HPF	22-08-19	with
52.	Band pass filter	24-08-19	discussions
53.	Band reject filter, All pass filter	31-08-19	
54.	Four Quadrant multiplier, Balanced modulator IC1496	03-09-19	
55.	Sample & Hold circuits, Tutorial	03-09-19	
T1: OP-AMPS	use OP Amp to generate different waveforms and as and Linear Integrated Circuits, Ramakanth A Gaya	PLL, Timer. kwad, PHI. 07-09-19	
56.	Introduction to 555 timer		
57.	functional diagram	09-09-19	
58.	Monostable operations and applications	11-09-19	
59.	Astable operations and applications	11-09-19	1
	1 11		
60.	Schmitt Trigger	16-09-19	
60.		16-09-19 17-09-19	
	Schmitt Trigger		
61.	Schmitt Trigger PLL - introduction, block schematic	17-09-19	Lecture

	Applications of PLL – frequency multiplication, frequency translation	19-09-19	interspersed with
65.	AM, FM & FSK demodulators	20-09-19	discussions
66.	Applications of VCO (566)	21-09-19	

UNIT – VI DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS CO 6: Able to use OP Amp to as analog to digital and digital to analog converter. T2: Linear Integrated Circuits, D. Roy Choudary, Sahil B jain, New Age International.

67.	Introduction, Basic DAC techniques	22-09-19	
68.	Weighted resistor DAC,	23-09-19	
69.	R-2R ladder DAC	24-09-19	
70.	Inverted R-2R DAC	25-09-19	Lecture
71.	Parallel Comparator type ADC	25-09-19	interspersed
72.	Counter type ADC	25-09-19	with
73.	Successive approximation ADC	25-09-19	discussions
74.	Dual slope ADC	26-09-19	
75.	Specifications AD 574(12 bit ADC)	27-09-19	l'
76.	Tutorial	28-09-19	

Signature of the Faculty

Signature of the HOD

PRINCIPAL SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA

### N. P1631043

Interfacing or of CMOS both in static and dynamic content and Emitter coupled logic. Interfacing or and Emitter coupled logic. Interfacing Indies Interfacing Inte	Delivery  and dynamic conditions and  Pearson Education Asia, 3 <sup>rd</sup> 11,12/6/19 19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 28/6/19 28/6/19 01/7/19  thesis approaches	A Date: 11/6/2019  ON Prepared By: N.MAYURI  Date  TOPIC  Date  Mode of Delivery  Digital Logic Families and Interfacing Incess the electrical behavior of CMOS both in static and dynamic conditions and Arransistor-transistor logic and Emitter coupled logic. Design — Principles & Practices — John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Introduction to logic families  CMOS logic  CMOS logic  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  uces the Modeling of VHDL, it's simulation and synthesis approaches al Design — Principles & Practices — John.F. Wakerly, PHI/Pearson Education Asia, 3rd	Revision No : 00   Prepared By : N.MAYURI   Approved By : HOD
Interfacing or of CMOS both in static and dynamic content and Emitter coupled logic. Ices — John.F. Wakerly, PHI/Pearson Educate  milies  11,12/6/19  19/6/19  dynamic electrical behavior 20/6/19  24/6/19  25/6/19  ic, 27/6/19  ic, 27/6/19  ic and interfacing 27/6/19  ic and interfacing, 28/6/19  DL, it's simulation and synthesis approach Practices — John.F. Wakerly, PHI/Pearson and Education PHI. 3 <sup>rd</sup> Edition	Date Mode of Delivery  and dynamic conditions and dearson Education Asia, 3 <sup>rd</sup> 11,12/6/19 19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 28/6/19 28/6/19 01/7/19  thesis approaches	board, power-point presentation  TOPIC  Date  Mode of Delivery  Digital Logic Families and Interfacing aces the electrical behavior of CMOS both in static and dynamic conditions and dynamictor-transistor logic and Emitter coupled logic.  Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Introduction to logic families  CMOS logic  CMOS logic  CMOS logic families  11,12/6/19  CMOS logic families  24/6/19  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  uces the Modeling of VHDL, it's simulation and synthesis approaches al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3005	Tools: Black board, power-point presentation  fo. of Periods  TOPIC  Date  Mode of Delivery  NIT -   Digital Logic Families and Interfacing  O1: Introduces the electrical behavior of CMOS both in static and dynamic conditions and lso the diode/transistor-transistor logic and Emitter coupled logic.  B: Digital Design - Principles & Practices - John.F. Wakerly, PHI/Pearson Education Asia, 3 <sup>rd</sup> didition, 2005  1.   Introduction to logic families   11,12/6/19   2.   CMOS logic   19/6/19   3.   CMOS steady state and dynamic electrical behavior   20/6/19   4.   CMOS logic families   24/6/19   5.   TUTORIAL   25/6/19   6.   Bipolar logic,   26/6/19   7.   transistor-transistor logic,   27/6/19   9.   low voltage CMOS logic and interfacing   27/6/19   9.   low voltage CMOS logic and interfacing,   28/6/19   10.   Emitter coupled logic.   01/7/19    UNIT -II VHDL Modeling  CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches  TB :: 1. Digital Design - Principles & Practices - John.F. Wakerly, PHI/Pearson Education Asia 3 <sup>rd</sup> Edition, 2005  2. VHDL Primer - J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition  3. VHDL: Analysis and Modeling of Digital Systems - Zainalabedin Navabi, Mc Graw Hill, 1993  11.   Design flow   02/7/19   12.   program structure, , levels of abstraction   03/7/19   13.   Elements of VHDL: Data types   04/7/19   14.   TUTORIAL   06/7/19   15.   Data objects, operators and identifiers   08/7/19   16.   Packages, Libraries and Bindings   10/7/19   17.   Subprograms   11/7/19   VHDL Programming using structural and data   11/7/19
Interfacing or of CMOS both in static and dynamic content and Emitter coupled logic. Interfacing or and Emitter coupled logic. Interfacing	Delivery  nd dynamic conditions and  earson Education Asia, 3 <sup>rd</sup> 11,12/6/19 19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 28/6/19 28/6/19 01/7/19  thesis approaches	Delivery Digital Logic Families and Interfacing Inces the electrical behavior of CMOS both in static and dynamic conditions and Atransistor-transistor logic and Emitter coupled logic. Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Introduction to logic families  CMOS logic  CMOS logic  CMOS steady state and dynamic electrical behavior  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  Success the Modeling of VHDL, it's simulation and synthesis approaches al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Lecture  interspersed  with discussions  VHDL Modeling  Success the Modeling of VHDL, it's simulation and synthesis approaches al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Lecture  interspersed  with discussions	NIT - I Digital Logic Families and Interfacing
Interfacing or of CMOS both in static and dynamic content and Emitter coupled logic. Interfacing or and Emitter coupled logic. Interfacing	Delivery  nd dynamic conditions and  earson Education Asia, 3 <sup>rd</sup> 11,12/6/19 19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 28/6/19 28/6/19 01/7/19  thesis approaches	Delivery Digital Logic Families and Interfacing Interest the electrical behavior of CMOS both in static and dynamic conditions and observed transistor-transistor logic and Emitter coupled logic. Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3rd  Introduction to logic families  CMOS logic  CMOS logic  CMOS steady state and dynamic electrical behavior  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  Success the Modeling of VHDL, it's simulation and synthesis approaches al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,  O05	NIT - I Digital Logic Families and Interfacing
or of CMOS both in static and dynamic content and Emitter coupled logic.  Idea – John.F. Wakerly, PHI/Pearson Educate  milies  11,12/6/19  19/6/19  dynamic electrical behavior  20/6/19  24/6/19  25/6/19  ic,  27/6/19  TL interfacing  ic and interfacing,  28/6/19  DL, it's simulation and synthesis approach Practices – John.F. Wakerly, PHI/Pearson and Education/PHI, 3rd Edition	rearson Education Asia, 3 <sup>rd</sup> 11,12/6/19 19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 28/6/19 28/6/19 01/7/19  thesis approaches	Introduction to logic families  CMOS logic  CMOS logic  CMOS logic families  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  WHDL Modeling  CWOS logic and interfacing and experience of the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia,  The Realest Pearson Education/PHL 3rd Edition	So the diode/transistor-transistor logic and Emitter coupled logic.
19/6/19     dynamic electrical behavior   20/6/19     24/6/19     25/6/19     26/6/19     ic,   27/6/19     TL interfacing   27/6/19     ic and interfacing,   28/6/19     O1/7/19     DL, it's simulation and synthesis approach     Practices - John.F. Wakerly, PHI/Pearson     Date of the property of t	19/6/19 20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 27/6/19 28/6/19 01/7/19 thesis approaches	CMOS logic  CMOS steady state and dynamic electrical behavior  CMOS logic families  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,  19/6/19  20/6/19  Lecture  interspersed  with discussions  101/7/19  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,	1. Introduction to logic families 2. CMOS logic 3. CMOS steady state and dynamic electrical behavior 4. CMOS logic families 5. TUTORIAL 6. Bipolar logic, 7. transistor-transistor logic, 8. TTL families, CMOS/TTL interfacing 9. low voltage CMOS logic and interfacing, 10. Emitter coupled logic.  UNIT -II VHDL Modeling CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches TB :: 1. Digital Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia 3 <sup>rd</sup> Edition, 2005 2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition 3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993 11. Design flow 12. program structure, , levels of abstraction 13. Elements of VHDL: Data types 14. TUTORIAL 15. Data objects, operators and identifiers 16. Packages, Libraries and Bindings 11/7/19 12. Subprograms 11/7/19 13. Subprograms 11/7/19 14. Subprograms 11/7/19 15. Subprograms 11/7/19 16. VHDL Programming using structural and data 11/7/19
19/6/19   20/6/19   24/6/19   24/6/19   25/6/19   26/6/19   26/6/19   26/6/19   26/6/19   27/6/19   27/6/19   28/6	20/6/19 24/6/19 25/6/19 26/6/19 27/6/19 27/6/19 28/6/19 01/7/19 thesis approaches	CMOS logic  CMOS steady state and dynamic electrical behavior  CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,  1005  L Phasker Pearson Education/PHL 3 <sup>rd</sup> Edition	2. CMOS logic  3. CMOS steady state and dynamic electrical behavior  4. CMOS logic families  5. TUTORIAL  6. Bipolar logic,  7. transistor-transistor logic,  8. TTL families, CMOS/TTL interfacing  9. low voltage CMOS logic and interfacing,  10. Emitter coupled logic.  UNIT -II VHDL Modeling  CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches  TB :: 1. Digital Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia  3rd Edition, 2005  2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3rd Edition  3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993  11. Design flow  11. Design flow  12. program structure, , levels of abstraction  13. Elements of VHDL: Data types  14. TUTORIAL  15. Data objects, operators and identifiers  16. Packages, Libraries and Bindings  17. Subprograms  18. VHDL Programming using structural and data  19/6/19  10. Lecture interspersed with discussion  20/7/19  12. Lecture interspersed with discussion  10/7/19  13. Elements of VHDL: Data types  14. TUTORIAL  15. Data objects, operators and identifiers  16. Packages, Libraries and Bindings  10/7/19  12. VHDL Programming using structural and data  11/7/19
24/6/19 25/6/19 26/6/19 ic, 27/6/19 TL interfacing 27/6/19 ic and interfacing, 28/6/19 DL, it's simulation and synthesis approaches a practices – John.F. Wakerly, PHI/Pearson and Education/PHI, 3 <sup>rd</sup> Edition	24/6/19 25/6/19 26/6/19 27/6/19 27/6/19 28/6/19 01/7/19  Lecture interspersed with discussions with discussions with discussions and the six approaches	CMOS steady state and dynamic electrical behavior 20/6/19 CMOS logic families 24/6/19 TUTORIAL 25/6/19 Bipolar logic, 26/6/19 transistor-transistor logic, 27/6/19 TTL families, CMOS/TTL interfacing 27/6/19 low voltage CMOS logic and interfacing, 28/6/19 Emitter coupled logic. 01/7/19  VHDL Modeling luces the Modeling of VHDL, it's simulation and synthesis approaches cal Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 005  L Physiker Pearson Education/PHL 3 <sup>rd</sup> Edition	3. CMOS steady state and dynamic electrical behavior 20/6/19 4. CMOS logic families 24/6/19 5. TUTORIAL 25/6/19 6. Bipolar logic, 26/6/19 7. transistor-transistor logic, 27/6/19 9. low voltage CMOS /TTL interfacing 27/6/19 10. Emitter coupled logic. 01/7/19  UNIT -II VHDL Modeling CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches TB :: 1. Digital Design - Principles & Practices - John.F.Wakerly, PHI/Pearson Education Asia 3 <sup>rd</sup> Edition, 2005 2. VHDL Primer - J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition 3. VHDL: Analysis and Modeling of Digital Systems - Zainalabedin Navabi, Mc Graw Hill, 1993 11. Design flow 02/7/19 12. program structure, , levels of abstraction 03/7/19 13. Elements of VHDL: Data types 04/7/19 14. TUTORIAL 06/7/19 15. Data objects, operators and identifiers 08/7/19 16. Packages, Libraries and Bindings 10/7/19 17. Subprograms 11/7/19 18. VHDL Programming using structural and data 11/7/19
24/6/19 25/6/19 26/6/19 ic, 27/6/19 TL interfacing 27/6/19 ic and interfacing, 28/6/19 O1/7/19  DL, it's simulation and synthesis approaches approaches a Foundation and Synthesis approaches a Foundation a Fo	25/6/19 Lecture 26/6/19 interspersed with discussions 27/6/19 28/6/19 01/7/19  thesis approaches	CMOS logic families  TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,  005  L Physikar Pearson Education/PHL 3 <sup>rd</sup> Edition	4. CMOS logic families  5. TUTORIAL  6. Bipolar logic,  7. transistor-transistor logic,  8. TTL families, CMOS/TTL interfacing  9. low voltage CMOS logic and interfacing,  10. Emitter coupled logic.  UNIT -II VHDL Modeling  CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches  TB :: 1. Digital Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia  3rd Edition, 2005  2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3rd Edition  3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993  11. Design flow  12. program structure, , levels of abstraction  13. Elements of VHDL: Data types  14. TUTORIAL  15. Data objects, operators and identifiers  16. Packages, Libraries and Bindings  17. Subprograms  18. VHDL Programming using structural and data  11/7/19
26/6/19 ic, 27/6/19 TL interfacing 27/6/19 ic and interfacing, 28/6/19 olivery	26/6/19 interspersed with discussions 27/6/19 28/6/19 01/7/19 thesis approaches	TUTORIAL  Bipolar logic,  transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia,  005  L Physikar Pearson Education/PHL 3rd Edition	5. TUTORIAL 6. Bipolar logic, 7. transistor-transistor logic, 8. TTL families, CMOS/TTL interfacing 9. low voltage CMOS logic and interfacing, 10. Emitter coupled logic.  UNIT –II VHDL Modeling CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches TB :: 1. Digital Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia 3rd Edition, 2005 2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3rd Edition 3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993 11. Design flow 12. program structure, , levels of abstraction 13. Elements of VHDL: Data types 14. TUTORIAL 15. Data objects, operators and identifiers 16. Packages, Libraries and Bindings 10/7/19 19. VHDL Programming using structural and data 11/7/19
TL interfacing 27/6/19 ic and interfacing, 28/6/19 ic and interfacing, 01/7/19  DL, it's simulation and synthesis approaches a Foundation and Synthesis and Synthesis and Synthesis and	27/6/19 with discussions 27/6/19 28/6/19 01/7/19 thesis approaches	Bipolar logic, transistor-transistor logic, TTL families, CMOS/TTL interfacing low voltage CMOS logic and interfacing, Emitter coupled logic.  VHDL Modeling luces the Modeling of VHDL, it's simulation and synthesis approaches al Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia,  1 Physikar Pearson Education/PHI, 3rd Edition	6. Bipolar logic, 7. transistor-transistor logic, 8. TTL families, CMOS/TTL interfacing 9. low voltage CMOS logic and interfacing, 10. Emitter coupled logic.  UNIT –II VHDL Modeling CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches TB :: 1. Digital Design – Principles & Practices – John.F.Wakerly, PHI/Pearson Education Asia 3rd Edition, 2005 2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3rd Edition 3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993 11. Design flow 12. program structure, , levels of abstraction 13. Elements of VHDL: Data types 14. TUTORIAL 15. Data objects, operators and identifiers 16. Packages, Libraries and Bindings 10/7/19 17. Subprograms 18. VHDL Programming using structural and data 11/7/19
TL interfacing 27/6/19 ic and interfacing, 28/6/19 01/7/19  DL, it's simulation and synthesis approach Practices – John.F. Wakerly, PHI/Pearson Practices – John.F. Wakerly, PHI/Pearson	27/6/19 28/6/19 01/7/19 thesis approaches	transistor-transistor logic,  TTL families, CMOS/TTL interfacing  low voltage CMOS logic and interfacing,  Emitter coupled logic.  VHDL Modeling  luces the Modeling of VHDL, it's simulation and synthesis approaches  al Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia,  005  L Physikar Pearson Education/PHL 3 <sup>rd</sup> Edition	7. transistor-transistor logic,  8. TTL families, CMOS/TTL interfacing  9. low voltage CMOS logic and interfacing,  10. Emitter coupled logic.  UNIT –II VHDL Modeling  CO2:: Introduces the Modeling of VHDL, it's simulation and synthesis approaches  TB :: 1. Digital Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia  3. d Edition, 2005  2. VHDL Primer – J. Bhasker, Pearson Education/PHI, 3rd Edition  3. VHDL: Analysis and Modeling of Digital Systems – Zainalabedin Navabi, Mc Graw Hill, 1993  11. Design flow  12. program structure, , levels of abstraction  13. Elements of VHDL: Data types  14. TUTORIAL  15. Data objects, operators and identifiers  16. Packages, Libraries and Bindings  17. Subprograms  18. VHDL Programming using structural and data  19. VHDL Programming using structural and data
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No. of Periods	TOPIC	Date	Mode of Delivery
23.	null statement, loop statement, exit statement	18/7/19	
24.	Tutorial	20/7/19	
25.	next statement ,assertion statement	22/7/19	Lecture
26.	more on signal assignment statement, Inertial Delay Model, Transport Delay Model,	23/7/19	interspersed with discussions
27.	Creating Signal Waveforms,	24,25/7/19	
28.	Signal Drivers	27/7/19	
29.	Other Sequential Statements, Multiple Processes	29,30/7/19	
30.	Tutorial	31/7/19	
31.	Logic synthesis, inside alogic synthesis	01/8/19	
32.	Sequential logic design with examples	03/8/19	

UNIT -I V Combinational Logic Design

CO4:: Introduces the internal circuits for different combinational ICs and programming of the ICs using VHDL.

TB:: 1. Digital Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3<sup>rd</sup> Edition, 2005

2. Digital IC Applications - A.P.Godse, Technical Publications

33.	Combinational Logic Design: Binary Adder-	13/8/19	
	Subtractor		
34.	Ripple Adder, Look Ahead Carry Generator	14/8/19	
35.	Alu, Decoders,	17/8/19	
36.	Encoders	19/8/19	Lecture
37.	Tutorial	20/8/19	interspersed
38.	Multiplexers And Demultiplexers	21/8/19	with discussions
39.	Parity Circuits, Comparators	22/8/19	
40.	Barrel Shifter, Simple Floating-Point Encoder,	24/8/19	
41.	Dual Priority Encoder	26/8/19	
42.	Design Considerations Of The Above	27/8/19	
	Combinational Logic Circuits With Relevant		
	Digital Ics, Modeling Of Above Ics Using VHDL		

UNIT -V Sequential Logic Design

CO5:: Introduces the internal circuits of different sequential ICs and programming of the ICs using VHDL.

TB:: Digital Design - Principles & Practices - John.F.Wakerly, PHI/Pearson Education Asia, 3<sup>rd</sup> Edition, 2005

43.	Sequential Logic Design: SSI Latches And Flip	28/8/19	
	Flops		
44.	Ring Counter	30/8/19	
45.	Johnson Counter	03/9/19	
46.	Design Of Modulus N Synchronous Counters	07/9/19	Lecture
47.	Shift Registers	09/9/19	interspersed
48.	Universal Shift Registers	16/9/19	with discussions
49.	Tutorial	17/9/19	
50.	Design Considerations Of The Above sequential		
12	Logic Circuits	18/9/19	catenieni .

No. of Periods	TOPIC	Date	Mode of Delivery
UNIT - VI Sy CO6:: Introduc using VHDL.	nchronous and asynchronous Sequential circuits ees the internal circuits of different sequential ICs	and program	nming of the ICs
TB:: Digital D  3 <sup>rd</sup> Edition, 200	esign – Principles & Practices – John.F. Wakerly,	PHI/Pearson	Education Asia,
51.	State Diagram	19/9/19	
52.	State Table, State Assignment	21/9/19	
53.	Choice Of Flip Flops And Derivation Of Next State And Output Expressions	21/9/19	
54.	Timing Diagram, Assignment Problem: One Hot Encoding.	23/9/19	Lecture
55.	Mealy And Moore Type FSM For Serial Adder	23/9/19	interspersed
56.	Tutorial	24/9/19	with discussions
57.	VHDL Code For The Serial Adder.	25/9/19	
58.	Analysis Of Asynchronous Circuits, State Reduction	25/9/19	
59.	State Assignment	26/9/19	
60.	A Complete Design Example: The Vending Machine Controller	26/9/19	

Signature of the Faculty

S-Syj Goun Signature of the HOD

# TENTATIVE LESSON PLAN: R1631043

Section : SecE	Date: 11/6/19	Page No:	01 of 03
Revision No : 0		Approved	By : HOD
revision 100.0	<u> </u>		
Tools: Black be	oard, power-point presentation		77.7.0
No. of Periods	TOPIC	Date	Mode of Delivery
CO1 :: Introdu	igital Logic Families and Interfacing ces the electrical behavior of CMOS both in static a ransistor-transistor logic and Emitter coupled logic esign – Principles & Practices – John.F.Wakerly, Pl	•	
1.	Introduction to logic families	11-6-18	
2.	CMOS logic	12-6-18	
3.	CMOS steady state electrical behavior	13-6-18	
4.	TUTORIAL	15-6-18	
5.	CMOS dynamic electrical behavior CMOS logic families	23-6-18	Lecture
6.	Bipolar logic	23 -6-18	interspersed
7.	transistor-transistor logic,	25 -6-18	with discussion
8.	TTL families, CMOS/TTL interfacing	26 -6-18	
9.	low voltage CMOS logic and interfacing,	27-6-18	
10.	Emitter coupled logic.	28-6-18	
11.	TUTORIAL	29-6-18	
3 <sup>rd</sup> Edition, 200 2. VHDL Prim	Design - Principles & Practices - John.F. Wakerly	,	
	er – J. Bhasker, Pearson Education/PHI, 3rd Edition	n	
3. VHDL: Ana	er – J. Bhasker, Pearson Education/PHI, 3rd Edition	n n Navabi, Mo	
3. VHDL: Ana 12.	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Editio lysis and Modeling of Digital Systems– Zainalabedi	n n Navabi, Mo 02/7/19	
3. VHDL: Ana	er – J. Bhasker, Pearson Education/PHI, 3rd Edition	02/7/19 03/7/19	
3. VHDL: Ana 12.	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi Design flow	02/7/19 03/7/19 04/7/19	c Graw Hill, 1993
3. VHDL: Ana 12. 13.	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Editionlysis and Modeling of Digital Systems – Zainalabedi Design flow program structure,	02/7/19 03/7/19 04/7/19 05/7/19	c Graw Hill, 1993
3. VHDL: Ana 12. 13. 14.	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi Design flow program structure, levels of abstraction	02/7/19 03/7/19 04/7/19 05/7/19 06/7/19	c Graw Hill, 1993  Lecture interspersed
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3. VHDL: Ana 12. 13. 14. 15. 16. 17. 18. 19. 20.	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi  Design flow program structure, levels of abstraction  Elements of VHDL  TUTORIAL Data types Data objects  operators and identifiers Packages, Libraries and Bindings  Subprograms  VHDL Programming using structural and data flow modeling.	02/7/19 03/7/19 03/7/19 04/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19	c Graw Hill, 1993  Lecture interspersed
3. VHDL: Ana 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. UNIT - III D	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi Design flow program structure, levels of abstraction Elements of VHDL TUTORIAL Data types Data objects operators and identifiers Packages, Libraries and Bindings Subprograms VHDL Programming using structural and data flow modeling. igital Design Using HDL	02/7/19 03/7/19 03/7/19 04/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19 12/7/19	Lecture interspersed with discussion
3. VHDL: Ana 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. UNIT - III D CO3:: Introdu TB :: 1. Digita	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi  Design flow program structure, levels of abstraction  Elements of VHDL  TUTORIAL Data types Data objects  operators and identifiers Packages, Libraries and Bindings  Subprograms  VHDL Programming using structural and data flow modeling.  igital Design Using HDL tees the programming concepts of Hardware Description l Design – Principles & Practices – John.F.Wakerly	02/7/19 03/7/19 03/7/19 04/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19 12/7/19	Lecture interspersed with discussion
3. VHDL: Ana 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. UNIT - III D CO3:: Introdu TB :: 1. Digita 3 <sup>rd</sup> Edition, 20	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi  Design flow program structure, levels of abstraction  Elements of VHDL  TUTORIAL Data types Data objects  operators and identifiers Packages, Libraries and Bindings  Subprograms  VHDL Programming using structural and data flow modeling.  igital Design Using HDL lees the programming concepts of Hardware Descril Design – Principles & Practices – John.F. Wakerly 05	02/7/19 03/7/19 04/7/19 05/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19 12/7/19 15/7/19	Lecture interspersed with discussion
3. VHDL: Ana  12.  13.  14.  15.  16.  17.  18.  19.  20.  21.  UNIT - III D CO3:: Introdu TB :: 1. Digita 3 <sup>rd</sup> Edition, 20 2. VHDL Prim	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi Design flow program structure, levels of abstraction Elements of VHDL TUTORIAL Data types Data objects operators and identifiers Packages, Libraries and Bindings Subprograms VHDL Programming using structural and data flow modeling. igital Design Using HDL ices the programming concepts of Hardware Description l Design – Principles & Practices – John.F. Wakerly 05 ler – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition	n Navabi, Mo 02/7/19 03/7/19 04/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19 12/7/19 15/7/19	Lecture interspersed with discussion
3. VHDL: Ana 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. UNIT - III D CO3:: Introdu TB :: 1. Digita 3 <sup>rd</sup> Edition, 20	er – J. Bhasker, Pearson Education/PHI, 3 <sup>rd</sup> Edition lysis and Modeling of Digital Systems – Zainalabedi  Design flow program structure, levels of abstraction  Elements of VHDL  TUTORIAL Data types Data objects  operators and identifiers Packages, Libraries and Bindings  Subprograms  VHDL Programming using structural and data flow modeling.  igital Design Using HDL lees the programming concepts of Hardware Descril Design – Principles & Practices – John.F. Wakerly 05	02/7/19 03/7/19 04/7/19 05/7/19 05/7/19 06/7/19 08/7/19 10/7/19 11/7/19 12/7/19 15/7/19	Lecture interspersed with discussion

No. of Periods	TOPIC	Date	Mode of Delivery
23.	Process statement	17/7/19	
24.	variable assignment statement,	18/7/19	
25.	signal assignment statement, wait statement	19/7/19	and the second s
26.	if statement, case statement	. 20/7/19	
27.	null statement, loop statement, exit statement	22/7/19	
28.	Tutorial	23/7/19	Lastuma
29.	next statement ,assertion statement	24/7/19	Lecture interspersed
30.	more on signal assignment statement	25/7/19	with discussions
31.	Inertial Delay Model	26/7/19	
32.	Transport Delay Model	27/7/19	
33.	Creating Signal Waveforms, Signal Drivers	29/7/19	
34.	Other Sequential Statements, Multiple Processes	30/7/19	
35.	Tutorial	31/7/19	
36.	Logic Synthesis	01/8/19	
37.	Inside a logic Synthesizer.	02,3/8/19	

UNIT -I V Combinational Logic Design

CO4:: Introduces the internal circuits for different combinational ICs and programming of the ICs using VHDL.

TB:: 1. Digital Design – Principles & Practices – John.F. Wakerly, PHI/Pearson Education Asia, 3<sup>rd</sup> Edition, 2005

2. Digital IC Applications - A.P.Godse, Technical Publications

38.	Combinational Logic Design: Binary Adder-	13/8/19	
	Subtractor		
39.	Ripple Adder, Look Ahead Carry Generator	14/8/19	
40.	Alu, Decoders,	16/8/19	
41.	Encoders	17/8/19	Lecture
42.	Tutorial	19/8/19	interspersed
43.	Multiplexers And Demultiplexers	20/8/19	with discussions
44.	Parity Circuits, Comparators	21/8/19	
45.	Tutorial	22/8/19	
46.	Barrel Shifter, Simple Floating-Point Encoder,	24/8/19	
47.	Dual Priority Encoder	26/8/19	
48.	Design Considerations Of The Above Combinational Logic Circuits With Relevant	03,6/9/19	
	Digital Ics		

UNIT -V Sequential Logic Design

CO6:: Introduces the internal circuits of different sequential ICs and programming of the ICs using VHDL.

TB:: Digital Design - Principles & Practices - John.F. Wakerly, PHI/Pearson Education Asia, 3<sup>rd</sup> Edition, 2005

49.	Sequential Logic Design: SSI Latches And Flip	07/9/19	
	Flops		
50.	Ring Counter	07/9/19	
51.	Johnson Counter	11/9/19	Lecture
52.	Design Of Modulus N Synchronous Counters	16/9/19	interspersed
53.	Shift Registers	17,18/9/19	with discussions
54.	Flip flop conversions	18/9/19	lassianment staten
55.	Universal Shift Registers	19/9/19	

No. of Periods	TOPIC	Date	Mode of Delivery
56.	Design Considerations Of The Above Combinational Logic Circuits With Relevant	20/9/19	
	Digital Ics	entertainment of place and application	er and the second contract of

UNIT - VI Synchronous and asynchronous Sequential circuits

CO6:: Introduces the internal circuits of different sequential ICs and programming of the ICs using VHDL.

TB:: Digital Design - Principles & Practices - John.F. Wakerly, PHI/Pearson Education Asia,

3rd Edition, 2005

3 Edition, 20	703	20/0/10	
57.	State Diagram	20/9/19	
58.	State Table, State Assignment	21/9/19	
59.	Choice Of Flip Flops And Derivation Of Next State And Output Expressions	21/9/19	
60.	Timing Diagram.	23/9/19	T cotumo
61.	Assignment Problem: One Hot Encoding.	23/9/19	Lecture interspersed
62.	Mealy And Moore Type FSM For Serial Adder	24/9/19	with discussions
63.	VHDL Code For The Serial Adder.	25/9/19	
64.	Analysis Of Asynchronous Circuits, State Reduction	26/9/19	
65.	State Assignment	27/9/19	
66.	A Complete Design Example: The Vending Machine Controller	28/9/19	

Signature of the Faculty

Signature of the HOD

### **TENTATIVE LESSON PLAN: R1631044**

Course Title: DIGITAL COMUNICATIONS (R1631044)	
Section: Sec A Date: 10-6-2019	Page No: 01 of 03
Revision No: 00   Prepared By: P Ratna Bhaskar	Approved By : HOD

No. of Periods	TOPIC	Date	Mode of
			Delivery

UNIT -I Pulse Digital Modulation

CO1:: Understand the working of Pulse Digital Modulation systems such as PCM, DPCM and DM.

TB:: 1. Communication Systems - Simon Haykin, John Wiley, 3/e.

2. Digital communications - Simon Haykin, John Wiley, 2005

1.	Elements of digital communication systems	12-6-19	
2.	Advantages of digital communication systems	17-6-19	
3.	Elements of PCM: Sampling	17-6-19	
4.	Quantization and coding	18-6-19	
5.	Quantization error	19-6-19	
6.	Companding in PCM systems	20-6-19	Lecture interspersed
7.	Differential PCM	21-6-19	
8.	Delta Modulation and its drawbacks	22-6-19	with discussions
9.	Adaptive Delta Modulation	22-6-19	
10.	Adaptive Delta Modulation	24-6-19	
11.	Comparison of PCM and DM systems	25-6-19	
12.	Noise in PCM and DM systems	26-6-19	

UNIT -II Digital Modulation Techniques

CO2:: Learn various digital passband modulations techniques such as ASK, FSK, PSK, QPSK,DPSK and M-ary modulation techniques.

TB:: 1. Communication Systems - Simon Haykin, John Wiley, 3/e.

2. Digital communications - Simon Haykin, John Wiley, 2005.

3. Communication Systems-Analog & Digital - Singh & Sapre, TMH, 2004.

13.	Introduction	27-6-19	
14.	Introduction	28-6-19	
15.	ASK	1-7-19	
16.	FSK	1-7-19	
17.	PSK	2-7-19	
18.	DPSK	3-7-19	Lecture
19.	DEPSK	4-7-19	interspersed
20.	QPSK	5-7-19	with discussions
21.	M-ary PSK	8-7-19	
22.	M-ary ASK	9-7-19	
23.	M-ary FSK	10-7-19	
24.	Similarity of BFSK and BPSK	11-7-19	
UNIT - III	Data Transmission		

25.	munications - Simon Haykin, John Wiley, 2005  Baseband signal receiver	15-7-19	
26.	Probability of error	16-7-19	
27.	The optimum filter	17,18-7-19	1
28.	Matched filter	19,22-7-19	-
29.	Matched filter	22,23-7-19	
30.	Probability of error using Matched filter	24-7-19	Lecture
31.	Coherent reception	25,29-7-19	interspersed with discussions
32.	Non-coherent detection of FSK	30-7-19	- With diseassions
33.	Calculation of error probability of ASK	31-7-19	
34.	Calculation of error probability of BPSK	1-8-19	
35.	Calculation of error probability of BFSK	2-8-19	-
36.	Calculation of error probability of QPSK	3-8-19	-
UNIT –I V	Information Theory		
<b>ΓB</b> :: 1. Comr	nunication Systems - Simon Haykin, John Wiley,  Discrete messages		
TB :: 1. Com	Discrete messages  Concept of amount of information and its	3/e.	
<b>ΓB</b> :: 1. Comr 37. 38.	Discrete messages  Concept of amount of information and its properties	3/e. 13-8-19 13-8-19	Lecture
37. 38. 39.	Discrete messages  Concept of amount of information and its properties  Average Information	3/e.  13-8-19  13-8-19  14-8-19	Lecture interspersed
37. 38. 39. 40.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties	3/e.  13-8-19  13-8-19  14-8-19  14-8-19	Lecture interspersed with discussions
37. 38. 39. 40. 41.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19	interspersed
37. 38. 39. 40. 41. 42.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties	3/e.  13-8-19  13-8-19  14-8-19  16-8-19  19-8-19	interspersed
37. 38. 39. 40. 41. 42. 43.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19	interspersed
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Com	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,	3/e.  13-8-19  13-8-19  14-8-19  16-8-19  19-8-19  19-8-19  3/e.	interspersed with discussion
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Compadd.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,  Introduction, Advantages	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  3/e.  20-8-19	interspersed with discussion
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Commutation	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,  Introduction, Advantages  Shannon's Theorem	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  3/e.  20-8-19  21-8-19	interspersed with discussion
37. 38.  39. 40. 41. 42. 43.  UNIT -V S CO5:: Learn perform the e TB :: 1. Community 44. 45. 46.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,  Introduction, Advantages  Shannon's Theorem  Shannon-Fano Coding	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  21-8-19  21-8-19  22-8-19	interspersed with discussion
37. 38.  39. 40. 41. 42. 43.  UNIT -V S CO5:: Learn perform the e TB :: 1. Com 44. 45. 46. 47.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,  Introduction, Advantages  Shannon's Theorem  Shannon-Fano Coding  Huffman Coding	3/e.  13-8-19  13-8-19  14-8-19  16-8-19  19-8-19  19-8-19  21-8-19  22-8-19  26-8-19	interspersed with discussion hoisy channel and Lecture interspersed
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Com 44. 45. 46. 47. 48.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley, Introduction, Advantages Shannon's Theorem Shannon-Fano Coding Huffman Coding Efficiency calculations	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  21-8-19  22-8-19  26-8-19  27-8-19	interspersed with discussion hoisy channel and
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Command 1. Comm	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley,  Introduction, Advantages  Shannon's Theorem  Shannon-Fano Coding  Huffman Coding  Efficiency calculations  Channel capacity of discrete and analog channels	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  21-8-19  22-8-19  26-8-19  27-8-19  28-8-19	interspersed with discussion hoisy channel and Lecture interspersed
37. 38. 39. 40. 41. 42. 43. UNIT -V S CO5:: Learn perform the e TB :: 1. Com 44. 45. 46. 47. 48.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley, Introduction, Advantages Shannon's Theorem Shannon-Fano Coding Huffman Coding Efficiency calculations	3/e.  13-8-19  13-8-19  14-8-19  14-8-19  16-8-19  19-8-19  19-8-19  21-8-19  22-8-19  26-8-19  27-8-19	interspersed with discussion hoisy channel and Lecture interspersed

53.	Matrix description of linear block codes	9-9-19	Lecture
54.	Error detection and correction capabilities of LBC	9-9-19	interspersed with discussions
55.	Hamming codes	16-9-19	With discussions
56.	Hamming codes	17-9-19	
57.	Binary cyclic codes	18-9-19	
58.	Binary cyclic codes	19-9-19	
59.	Algebraic structure	20-9-19	
60.	Encoding	20-9-19	
61.	Syndrome Calculation	21-9-19	
62.	BCH codes	24-9-19	
63.	Introduction to Convolution Codes	25-9-19	
64.	Encoding of convolution codes	26-9-19	
65.	Time-domain approach	26-9-19	
66.	Time-domain approach	27-9-19	
67.	Transform-domain approach	27-9-19	
68.	Graphical approach: State diagram	28-9-19	
69.	Graphical approach: State diagram	30-9-19	
70.	Tree and Trellis decoding using Viterbi Algorithm	30-9-19	
71.	Tree and Trellis decoding using Viterbi Algorithm	1-10-19	

Signature of the Faculty

S Syi Goun Signature of the HOD

### **TENTATIVE LESSON PLAN: R1631044**

Course Title: DIC	GITAL COMUNICATIONS (R1631044)	
Section : Sec B	Date: 10-6-19	Page No: 01 of 03
Revision No: 00	Prepared By : P Ratna Bhaskar	Approved By: HOD

100IS: Black Doard			
No. of Periods	TOPIC	Date	Mode of Delivery

UNIT -I Pulse Digital Modulation

CO1:: Understand the working of Pulse Digital Modulation systems such as PCM, DPCM and DM.

TB:: 1. Communication Systems - Simon Haykin, John Wiley, 3/e.

2. Digital communications - Simon Haykin, John Wiley, 2005

1.	Elements of digital communication systems	12-6-19	
2.	Advantages of digital communication systems	17-6-19	
3.	Elements of PCM: Sampling	18-6-19	
4.	Quantization and coding	19-6-19	
5.	Quantization error	20-6-19	
6.	Companding in PCM systems	20-6-19	Lecture
7.	Differential PCM	21-6-19	interspersed
8.	Delta Modulation and its drawbacks	22-6-19	with discussions
9.	Adaptive Delta Modulation	24-6-19	
10.	Adaptive Delta Modulation	25-6-19	
11.	Comparison of PCM and DM systems	26-6-19	
12.	Noise in PCM and DM systems	26-6-19	

UNIT -II Digital Modulation Techniques

CO2:: Learn various digital passband modulations techniques such as ASK, FSK, PSK, QPSK,DPSK and M-ary modulation techniques.

TB:: 1. Communication Systems - Simon Haykin, John Wiley, 3/e.

2. Digital communications - Simon Haykin, John Wiley, 2005.

3. Communication Systems-Analog & Digital - Singh & Sapre, TMH, 2004.

13.	Introduction	27-6-19	
14.	Introduction	28-6-19	
15.	ASK	1-7-19	
16.	FSK	2-7-19	
17.	PSK	3-7-19	
18.	DPSK	4-7-19	Lecture
19.	DEPSK	4-7-19	interspersed with discussions
20.	QPSK	5-7-19	with discussions
21.	M-ary PSK	8-7-19	
22.	M-ary ASK	9-7-19	
23.	M-ary FSK	11-7-19	
24.	Similarity of BFSK and BPSK	11-7-19	
UNIT - III	Data Transmission		

	e the performance of various Digital Modulation	systems in terms	or probability of
rror.	nunication Systems - Simon Haykin, John Wiley,	3/e.	
. Digital com	munications - Simon Haykin, John Wiley, 2005	5/6.	
25.	Baseband signal receiver	15-7-19	
26.	Probability of error	16-7-19	
27.	The optimum filter	17,18-7-19	
28.	Matched filter	19,22-7-19	
29.	Matched filter	23,24-7-19	
30.	Probability of error using Matched filter	24-7-19	Lecture interspersed
31.	Coherent reception	25,29-7-19	with discussion
32.	Non-coherent detection of FSK	30-7-19	
33.	Calculation of error probability of ASK	31-7-19	
34.	Calculation of error probability of BPSK	1-8-19	
35.	Calculation of error probability of BFSK	3-8-19	
36.	Calculation of error probability of QPSK	3-8-19	1
CO4:: Under FB :: 1. Com	Information Theory stand the concepts of Information Theory and th munication Systems - Simon Haykin, John Wiley  Discrete messages		coding.
ГВ :: 1. Сот	stand the concepts of Information Theory and the munication Systems - Simon Haykin, John Wiley  Discrete messages  Concept of amount of information and its	, 3/e.	coding.
CO4:: Under FB :: 1. Com 37. 38.	biscrete messages  Concept of amount of information and its properties	13-8-19 14-8-19	
CO4:: Under ΓΒ :: 1. Com 37. 38. 39.	bistand the concepts of Information Theory and the munication Systems - Simon Haykin, John Wiley  Discrete messages  Concept of amount of information and its properties  Average Information	13-8-19 14-8-19 14-8-19	Lecture
CO4:: Under ΓΒ :: 1. Com 37. 38. 39. 40.	bistand the concepts of Information Theory and the munication Systems - Simon Haykin, John Wiley  Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties	13-8-19 14-8-19 14-8-19 16-8-19	Lecture interspersed
CO4:: Under ΓΒ :: 1. Com 37. 38. 39. 40. 41.	bistand the concepts of Information Theory and the munication Systems - Simon Haykin, John Wiley  Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19	Lecture interspersed
CO4:: Under ΓΒ :: 1. Com 37. 38. 39. 40. 41. 42.	biscrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19	Lecture interspersed
CO4:: Under ΓΒ :: 1. Com 37. 38. 39. 40. 41. 42. 43.	biscrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19	Lecture interspersed
37. 38. 39. 40. 41. 42. 43.	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19	Lecture interspersed with discussion
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT -V  CO5:: Learn	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Source Coding  the theorems governing the transmission of information of information of information and its properties	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19	Lecture interspersed with discussion
37. 38.  39. 40. 41. 42. 43. UNIT –V CO5:: Learn perform the control of the cont	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding  the theorems governing the transmission of informations.	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 ormation over a position over	Lecture interspersed with discussion
37. 38.  39. 40. 41. 42. 43. UNIT –V CO5:: Learn perform the control of the cont	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Source Coding  the theorems governing the transmission of information of information of information and its properties	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 ormation over a position over	Lecture interspersed with discussion
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT -V  CO5:: Learn perform the of TB :: 1. Com	Discrete messages  Concept of amount of information and its properties  Average Information  Entropy and its properties  Information rate  Mutual Information and its properties  Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 ormation over a series of the series o	Lecture interspersed with discussion
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT –V  CO5:: Learn perform the of TB :: 1. Com  44.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties  Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley Introduction, Advantages	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 ormation over a series of the series o	Lecture interspersed with discussion
37. 38.  39. 40. 41. 42. 43. UNIT –V CO5:: Learn perform the of TB :: 1. Com 44. 45.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley Introduction, Advantages Shannon's Theorem	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 20-8-19 21-8-19	Lecture interspersed with discussion noisy channel and Lecture
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT -V  CO5:: Learn perform the GTB :: 1. Com  44.  45.  46.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley Introduction, Advantages Shannon's Theorem Shannon-Fano Coding	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 21-8-19 21-8-19 22-8-19	Lecture interspersed with discussion  noisy channel an  Lecture interspersed
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT -V  CO5:: Learn perform the of TB :: 1. Com  44.  45.  46.  47.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley Introduction, Advantages Shannon's Theorem Shannon-Fano Coding Huffman Coding Efficiency calculations Channel capacity of discrete and analog channels	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 21-8-19 22-8-19 26-8-19	Lecture interspersed with discussion noisy channel an
CO4:: Under TB :: 1. Com  37.  38.  39.  40.  41.  42.  43.  UNIT –V  CO5:: Learn perform the CTB :: 1. Com  44.  45.  46.  47.  48.	Discrete messages Concept of amount of information and its properties Average Information Entropy and its properties Information rate Mutual Information and its properties Mutual Information and its properties Mutual Information and its properties Source Coding the theorems governing the transmission of information Systems - Simon Haykin, John Wiley Introduction, Advantages Shannon's Theorem Shannon-Fano Coding Huffman Coding Efficiency calculations	13-8-19 14-8-19 14-8-19 16-8-19 19-8-19 20-8-19 21-8-19 22-8-19 26-8-19 27-8-19	Lecture interspersed with discussion  noisy channel an  Lecture interspersed

52.

Introduction to Linear Block Codes

6-9-19

53.	Matrix description of linear block codes	9-9-19	Lecture
54.	Error detection and correction capabilities of LBC	16-9-19	interspersed with discussions
55.	Hamming codes	17-9-19	with discussions
56.	Hamming codes	18-9-19	
57.	Binary cyclic codes	19-9-19	
58.	Binary cyclic codes	19-9-19	
59.	Algebraic structure	20-9-19	
60.	Encoding	21-9-19	
61.	Syndrome Calculation	24-9-19	
62.	BCH codes	25-9-19	
63.	Introduction to Convolution Codes	25-9-19	1
64.	Encoding of convolution codes	26-9-19	
65.	Time-domain approach	27-9-19	
66.	Time-domain approach	28-9-19	
67.	Transform-domain approach	30-9-19	
68.	Graphical approach: State diagram	30-9-19	
69.	Graphical approach: State diagram	30-9-19	
70.	Tree and Trellis decoding using Viterbi Algorithm	1-10-19	
71.	Tree and Trellis decoding using Viterbi Algorithm	1-10-19	

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### TENTATIVELESSON PLAN: R1631045 ANTENNAS AND WAVE PROPAGATION

	NTENNAS AND WAVE PROPAGATION		Page No:	$0.0 \cdot 0.0$	1	
Section : Sec 1			Approved		10-00-00	
Revision No : 0 Tools: Black be			Approved	Dy . 11	OD	
No. of Periods	TOPIC		Date		de of very	
	NA FUNDAMENTALS					
CO1: Identify	basic antenna parameters					
TR·"Antennas	and Wave Propagation", K.D. Prasad, S	atva ]	Prakashan,	Tech	India	
	lew Delhi, 2001.					
1	Radiation Mechanism – single wire, 2 wire, dipoles	1	10-06-19			
2	Current Distribution on a thin wire antenna	1	11-06-19			
3	Antenna Parameters - Radiation Patterns	1	13-06-19			
4	Patterns in Principal Planes, Main Lobe and Side Lobes	1	14-06-19			
5	Beam widths, Polarization	1	15-06-19	Leo	cture	
6	Beam Area, Radiation Intensity	1	17-06-19		persec	
7	Beam Efficiency, Directivity	1	18-06-19	100000000000000000000000000000000000000	rith	
8	Gain and Resolution	1	19-06-19	discu	ssions	
9	Antenna Apertures, Aperture Efficiency	2	20-06-19			
10	Effective Height	2	21-06-19			
11	Tutorial	1	22-06-19			
	LINEAR WIRE ANTENNAS					
CO2: Design a	and analyze wire antennas and loop antennas	&Qua	antify the fie	elds ra	diate	
by various typ						
ΓB: "Antennas	and Wave Propagation", K.D. Prasad, S	atya	Prakashan,	Tech	India	
	New Delhi, 2001.					
12	Retarded Potentials	1	24-06-19			
13	Radiation from Small Electric Dipole	1	25-06-19			
14	Quarter wave Monopole and Half wave Dipole	1	26-06-19			
15	Current Distributions, Evaluation of Field Components		27-06-19			
16	Power Radiated, Radiation Resistance, Beam widths, Directivity		28-06-19			
17	Effective Area and Effective Height		28-06-19			

No. of Periods	TOPIC	Date	Mode of Delivery
18	Natural current distributions	29-06-19	
19	fields and patterns of Thin Linear Center-fed Antennas of different lengths	02-07-19	
20	Radiation Resistance at a point which is not current maximum	03-07-19	Lecture interspersed
21	Antenna Theorems – Applicability and Proofs for equivalence of directional characteristics	04-07-19	with discussions
22	Loop Antennas: Small Loops - Field Components.	05-07-19	
23	Comparison of far fields of small loop and short dipole	06-07-19	
24	Concept of short magnetic dipole, D and Rr relations for small loops	08-07-19	
25	Tutorial	09-07-19	

#### **UNIT-III ANTENNA ARRAYS**

CO3: Design and analyze antenna arrays

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi. 2001.

Publications	, New Deini, 2001.		
26	2 element arrays – different cases	11-07-19	
27	Principle of Pattern Multiplication	12-07-19	
28	N element Uniform Linear Arrays – Broadside, End- fire Arrays	15-07-19	
29	EFA with Increased Directivity	16-07-19	
30	Derivation of their characteristics and comparison	17-07-19	Lecture
31	Concept of Scanning Arrays. Directivity Relations (no derivations).	18-07-19	interspersed with
32	Binomial Arrays	19-07-19	discussions
33	Effects of Uniform and Non-uniform Amplitude Distributions, Design Relations	22-07-19	
34	Arrays with Parasitic Elements, Yagi-Uda Arrays	24-07-19	
35	Folded Dipoles and their characteristics.	26-07-19	
36	Tutorial	26-07-19	

#### UNIT-IV NON-RESONANT RADIATORS

CO4: Design and analyze long wire antennas, microstrip antennas and helical antennas

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.

37	Introduction, Traveling wave radiators—basic concepts	27-07-19	
38	Long wire antennas – field strength calculations and patterns	29-08-19	
39	Microstrip Antennas-Introduction, Features, Advantages and Limitations	31-08-19	

No. of Periods	TOPIC	Date	Mode of Delivery
40	Rectangular Patch Antennas —Geometry and Parameters, Impact of different parameters on characteristics	01-08-19	Lecture interspersed with discussions
41	Helical Antennas – Significance, Geometry, basic properties	02-08-19	
42	Design considerations for monofilar helical antennas in Axial Mode and Normal Modes (Qualitative Treatment).	14-08-19	
43	Tutorial	16-08-19	

### UNIT-V VHF, UHF AND MICROWAVE ANTENNAS

CO5: Design and analyzereflector antennas, lens antennas, horn antennas and Analyze antenna measurements to assess antenna's performance

TTB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India

Publications, New Delhi, 2001.

i ublications, i	New Delli, 2001.		
44	Reflector Antennas: Flat Sheet and Corner Reflectors	17-08-19	
45	Paraboloidal Reflectors – Geometry, characteristics, types of feeds	18-08-19	
46	F/D Ratio, Spill Over, Back Lobes, Aperture Blocking	19-08-19	
47	Off-set Feeds, Cassegrain Feeds	20-08-19	
48	Horn Antennas – Types, Optimum Horns	21-08-19	Lecture
49	Design Characteristics of Pyramidal Horns	22-08-19	interspersed
50	Lens Antennas – Geometry, Features	23-08-19	with
51	Dielectric Lenses and Zoning, Applications	23-08-19	discussions
52	Antenna Measurements – Patterns Required, Set Up, Distance Criterion	24-08-19	
53	Directivity and Gain Measurements (Comparison, Absolute and 3-Antenna Methods).	25-08-19	
54	Tutorial	26-08-19	

#### UNIT-VI WAVE PROPAGATION

CO6: Identify the characteristics of radio wave propagation.

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India

Publications, New Delhi, 2001.

55	Concepts of Propagation – frequency range	27-08-19	
56	Types of propagation	30-08-19	
57	Ground Wave Propagation–Characteristics, Parameters	31-08-19	
58	Wave Tilt, Flat and Spherical Earth Considerations	05-09-19	
59	Formation of Ionospheric Layers and their Characteristics	06-09-19	

No. of Periods	TOPIC	Date	Mode of Delivery
60	Mechanism of Reflection and Refraction	14-09-19	
61	Critical Frequency, MUF, Skip Distance	15-09-19	
62	Calculations for flat and spherical earth cases	16-09-19	
63	Optimum Frequency, LUHF, Virtual Height	17-09-19	
64	Ionosphere Abnormalities	18-09-19	Lecture interspersed
65	Ionosphere Absorption	19-09-19	with
66	Fundamental Equation for Free Space Propagation	21-09-19	discussions
67	Basic Transmission Loss Calculations, Space Wave Propagation	22-09-19	
68	LOS and Radio Horizon	23-09-19	
69	Tropospheric Wave Propagation – Radius of Curvature of path	24-09-19	
70	Effective Earth's Radius, Effect of Earth's Curvature	25-09-19	
71	Field Strength Calculations, M-curves	26-09-19	
72	Duct Propagation, Tropospheric Scattering	27-09-19	
73	Tutorial	28-09-19	

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### TENTATIVELESSON PLAN: R1631045 ANTENNAS AND WAVE PROPAGATION

Course Title: A	NTENNAS AND WAVE PROPAGATION			
Section : Sec I			Page No:	
<b>Revision No:</b> 0			Approved	By: HOD
Tools: Black bo	oard, PPTs		D .	N/- J £
No. of	TOPIC		Date	Mode of Delivery
Periods	NA EVINIDAMENICAL C			Denvery
	NA FUNDAMENTALS			
	basic antenna parameters		D	Took India
	and Wave Propagation", K.D. Prasad, Safew Delhi, 2001.	atya	rrakasnan,	Tech India
	Radiation Mechanism – single wire, 2 wire,	1	10-06-19	
1	dipoles			
2	Current Distribution on a thin wire antenna		11-06-19	
3	Antenna Parameters - Radiation Patterns		12-06-19	
4	Patterns in Principal Planes, Main Lobe and Side Lobes		14-06-19	
5	Beam widths, Polarization		15-06-19	Lecture
6	Beam Area, Radiation Intensity		17-06-19	interspersed
7	Beam Efficiency, Directivity		18-06-19	with
8	Gain and Resolution		19-06-19	discussions
9	Antenna Apertures, Aperture Efficiency	:	20-06-19	
10	Effective Height		21-06-19	
11	Tutorial	:	22-06-19	
	LINEAR WIRE ANTENNAS			
CO2: Design a	and analyze wire antennas and loop antennas	&Qua	antify the fi	elds radiated
by various type				
TR: "Antennas	and Wave Propagation", K.D. Prasad, S	atva	Prakashan,	Tech India
	New Delhi, 2001.	•		
12	Retarded Potentials		24-06-19	
13	Radiation from Small Electric Dipole		25-06-19	Lecture interspersed with
14	Quarter wave Monopole and Half wave Dipole		26-06-19	
15	Current Distributions, Evaluation of Field Components		27-06-19	
16	Power Radiated, Radiation Resistance, Beam widths, Directivity		28-06-19	discussions
17	Effective Area and Effective Height		28-06-19	

No. of Periods	TOPIC	Date	Mode of Delivery
18	Natural current distributions	29-06-19	
19	fields and patterns of Thin Linear Center-fed Antennas of different lengths	02-07-19	
20	Radiation Resistance at a point which is not current maximum	03-07-19	
21	Antenna Theorems – Applicability and Proofs for equivalence of directional characteristics	04-07-19	
22	Loop Antennas: Small Loops - Field Components.	05-07-19	
23	Comparison of far fields of small loop and short dipole	06-07-19	
24	Concept of short magnetic dipole, D and Rr relations for small loops	08-07-19	
25	Tutorial	09-07-19	

#### **UNIT-III ANTENNA ARRAYS**

CO3: Design and analyze antenna arrays

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.

1 ubilcations	, New Deini, 2001.	11.07.10	
26	2 element arrays – different cases	11-07-19	
27	Principle of Pattern Multiplication	12-07-19	
28	N element Uniform Linear Arrays – Broadside, End- fire Arrays	15-07-19	
29	EFA with Increased Directivity	16-07-19	
30	Derivation of their characteristics and comparison	17-07-19	Lecture
31	Concept of Scanning Arrays. Directivity Relations (no derivations). Related Problems	18-07-19	interspersed with
32	Binomial Arrays	19-07-19	discussions
33	Effects of Uniform and Non-uniform Amplitude Distributions, Design Relations	22-07-19	
34	Arrays with Parasitic Elements, Yagi-Uda Arrays	24-07-19	
35	Folded Dipoles and their characteristics.	26-07-19	
36	Tutorial	26-07-19	

#### UNIT-IV NON-RESONANT RADIATORS

CO4: Design and analyze long wire antennas, microstrip antennas and helical antennas

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.

37	Introduction, Traveling wave radiators—basic concepts	27-07-19
38	Long wire antennas – field strength calculations and patterns	29-08-19
39	Microstrip Antennas-Introduction, Features, Advantages and Limitations	31-08-19

No. of Periods	TOPIC	Date	Mode of Delivery
40	Rectangular Patch Antennas –Geometry and Parameters, Impact of different parameters on characteristics	01-08-19	Lecture
41	Helical Antennas – Significance, Geometry, basic properties	02-08-19	interspersed with discussions
42	Design considerations for monofilar helical antennas in Axial Mode and Normal Modes (Qualitative Treatment).	14-08-19	
43	Tutorial	14-08-19	

UNIT-V VHF, UHF AND MICROWAVE ANTENNAS

CO5: Design and analyze reflector antennas, lens antennas, horn antennas and Analyze antenna measurements to assess antenna's performance

TTB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India

Publications, New Delhi, 2001.

	Reflector Antennas: Flat Sheet and Corner	16-08-19	
44	Reflectors		
45	Paraboloidal Reflectors - Geometry,	17-08-19	
43	characteristics, types of feeds		
46	F/D Ratio, Spill Over, Back Lobes, Aperture	18-08-19	
40	Blocking		
47	Off-set Feeds, Cassegrain Feeds	19-08-19	
48	Horn Antennas – Types, Optimum Horns	20-08-19	Lecture
The second second	Design Characteristics of Pyramidal Horns	21-08-19	interspersed
49		22 00 10	_
50	Lens Antennas – Geometry, Features	22-08-19	with discussions
51	Dielectric Lenses and Zoning, Applications	23-08-19	discussions
	Antenna Measurements – Patterns Required, Set	24-08-19	
52	Up, Distance Criterion		
52	Directivity and Gain Measurements (Comparison,	26-08-19	
53	Absolute and 3-Antenna Methods).		
54	Tutorial	26-08-19	

### UNIT-VI WAVE PROPAGATION

CO6: Identify the characteristics of radio wave propagation.

TB: "Antennas and Wave Propagation", K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.

55	Concepts of Propagation – frequency range	27-08-19
56	Types of propagation	30-08-19
57	Ground Wave Propagation-Characteristics, Parameters	31-08-19
58	Wave Tilt, Flat and Spherical Earth Considerations	05-09-19
59	Formation of Ionospheric Layers and their Characteristics	06-09-19

No. of Periods	ТОРІС	Date	Mode of Delivery
60	Mechanism of Reflection and Refraction	14-09-19	
61	Critical Frequency, MUF, Skip Distance	15-09-19	
62	Calculations for flat and spherical earth cases	16-09-19	
63	Optimum Frequency, LUHF, Virtual Height	17-09-19	
64	Ionospheric Abnormalities	18-09-19	
65	Ionospheric Absorption	19-09-19	Lecture
66	Fundamental Equation for Free Space Propagation	21-09-19	interspersed with
67	Basic Transmission Loss Calculations, Space Wave Propagation	22-09-19	discussions
68	LOS and Radio Horizon	23-09-19	
69	Tropospheric Wave Propagation – Radius of Curvature of path	24-09-19	
70	Effective Earth's Radius, Effect of Earth's Curvature	25-09-19	
71	Field Strength Calculations, M-curves	26-09-19	
72	Duct Propagation, Tropospheric Scattering	27-09-19	
73	Tutorial	28-09-19	

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### TENTATIVE LESSON PLAN RADAR SYSTEMS: R1641041

Course Title: RA	DAR SYSTEMS			
Section : Sec I	Date:10/6/2019	Page N	o: 01 of 03	
Revision No: 00	Prepared By: N.V.K Maha Lakshmi	THE RESERVE OF THE PROPERTY OF THE PARTY OF	ved By : HOD	
Tools: Black boa	rd, PPTs			
No. of				
110.01	TOPIC	D-4-	Mode of	

No. of Periods	TOPIC	Date	Mode of Delivery
CO1: Deriv	BASICS OF RADAR we the radar range equation and to solve some analy uction to Radar Systems – Merrill I. Skolnik, TMI	rtical problems. I Special India	
1	Introduction	10/6/19	Т —
2	Maximum Unambiguous Range, simple Radar range Equation	11/6/19	
3	Radar Block Diagram and Operation	12/6/19	7
4	Radar Frequencies and Applications	13/6/19	
5	Prediction of Range Performance	15/6/19	
6	Minimum Detectable Signal, Receiver Noise	17/6/19	Lecture interspersed with discussions
7	Radar Equation: Modified Radar Range Equation	18/6/19	
8	SNR, probability of detection	19/6/19	
9	probability of False Alarm, Integration of Radar Pulses	20/6/19	
10	Radar Cross Section of Targets (simple targets - sphere, cone-sphere)	22/6/19	
11	Creeping Wave, Transmitter Power	24/6/19	
12	PRF and Range Ambiguities	25/6/19	
13	System Losses (qualitative treatment)	26/6/19	
14	Illustrative Problems	27/6/19	

FMCW radars

TB: Introduction to Radar Systems - Merrill I. Skolnik, TMH Special Indian Edition, 2nd Ed., 2007.

15	Doppler Effect .	29/6/19
16	CW Radar – Block Diagram	1/7/19
17	Isolation between Transmitter and Receiver	2/7/19
18	Non-zero IF Receiver	3/7/19
19	Receiver Bandwidth Requirements, Applications of CW radar	4/7,6/7/19

FM-CW Radar: Range and Doppler Measurement Block Diagram and Characteristics FM-CW altimeter Multiple Frequency CW Radar Illustrative Problems MTI AND PULSE DOPPLER RADAR tand the working of different types of radars are radars ion to Radar Systems – Merrill I. Skolnik, TMH Spe	8/7,9/7/19 10/7,11//7/19 13/7/19 15/7/19 16/7,17/7/19 and its application	Lecture interspersed with discussions
FM-CW altimeter Multiple Frequency CW Radar Illustrative Problems MTI AND PULSE DOPPLER RADAR tand the working of different types of radars a	13/7/19 15/7/19 16/7,17/7/19	interspersed with
Multiple Frequency CW Radar Illustrative Problems MTI AND PULSE DOPPLER RADAR tand the working of different types of radars a	13/7/19 15/7/19 16/7,17/7/19	with
Illustrative Problems MTI AND PULSE DOPPLER RADAR tand the working of different types of radars a	16/7,17/7/19	discussions
Illustrative Problems MTI AND PULSE DOPPLER RADAR tand the working of different types of radars a	16/7,17/7/19	
tand the working of different types of radars a	REPRESENTATION OF THE PROPERTY	
Introduction, Principle		
MTI Radar with - Power Amplifier Transmitter and Power Oscillator Transmitter	20/7,22/7/19	
Delay Line Cancellers – Filter Characteristics	23/7/19	Lecture
Blind Speeds, Double Cancellation	The second of th	interspersed
N th Cancellation Staggered PRFs	25/7/19	with
Range Gated Doppler Filters, MTI Radar	27/7,29/7/19	Discussions
Limitations to MTI Performance	30/7.31/7/19	
Illustrative Problems	3/8/19	
FRACKING RADAR and the concept of tracking and different tracki	ing techniques	
tand the concept of tracking and different tracking to Radar Systems – Merrill I. Skolnik, TM.  Tracking with Radar, Sequential Lobing	H Special Indian 13/8,14/8/19	Edition, 2nd
tand the concept of tracking and different tracking to Radar Systems – Merrill I. Skolnik, TM  Tracking with Radar, Sequential Lobing Conical Scan, Mono pulse Tracking Radar  Amplitude Comparison Mono pulse (one- and two- coordinates)	H Special Indian	Edition, 2nd
rand the concept of tracking and different tracking to Radar Systems – Merrill I. Skolnik, TM  Tracking with Radar, Sequential Lobing  Conical Scan, Mono pulse Tracking Radar  Amplitude Comparison Mono pulse (one- and two- coordinates)  Phase Comparison Mono pulse	H Special Indian  13/8,14/8/19 17/8,19/8/19 20/8,21/8/19	Lecture
tand the concept of tracking and different tracking to Radar Systems – Merrill I. Skolnik, TM  Tracking with Radar, Sequential Lobing Conical Scan, Mono pulse Tracking Radar  Amplitude Comparison Mono pulse (one- and two- coordinates)	H Special Indian  13/8,14/8/19 17/8,19/8/19	
	and Power Oscillator Transmitter  Delay Line Cancellers – Filter Characteristics  Blind Speeds, Double Cancellation  N th Cancellation Staggered PRFs  Range Gated Doppler Filters, MTI Radar  Parameters  Limitations to MTI Performance  MTI versus Pulse Doppler Radar  Illustrative Problems	and Power Oscillator Transmitter  Delay Line Cancellers – Filter Characteristics  Blind Speeds, Double Cancellation  N th Cancellation Staggered PRFs  Range Gated Doppler Filters, MTI Radar Parameters  Limitations to MTI Performance  MTI versus Pulse Doppler Radar  20/7,22/7/19  23/7/19  27/7,29/7/19  30/7,31/7/19

No. of Periods	TOPIC	Date	Mode of Delivery
44	Noise Figure and Noise Temperature	16/9,17/9/19	Denvery
45 UNIT-VI	Illustrative Problems	18/9/19	
CO6: Unde TB: Introd Ed., 2007	RADAR RECEIVERS erstand the various components of radar receiver a uction to Radar Systems – Merrill I. Skolnik, TM	and its performan IH Special Indian	ce. Edition, 2nd
46	Displays – types	19/9/19	1
47	Duplexers – Branch type and Balanced type	21/9,23/9/19	Lecture
48	Circulators as Duplexers	24/9/19	interspersed
49	Introduction to Phased Array Antennas – Basic Concepts	25/9/19	with
50	Radiation Pattern, Beam Steering and Beam Width changes	26/9,28/9/19	_ disoussions
51	Series versus parallel feeds	30/9,1/10//19	
50			
52	Applications, Advantages and Limitations	3/10,4/10/19	

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### TENTATIVE LESSON PLAN RADAR SYSTEMS: R1641041

Course Title: RADA	AR SYSTEMS	
Section : Sec II	Date :10/6/2019	Page No: 01 of 03
Revision No: 00	Prepared By: N.V.K Maha Lakshmi	Approved By: HOD

Tools: Black board, PPTs

18

19

Non-zero IF Receiver

of CW radar

Receiver Bandwidth Requirements, Applications

No. of Periods	TOPIC	Date	Mode of Delivery
CO1: Deriv	ASICS OF RADAR the the radar range equation and to solve some analy section to Radar Systems – Merrill I. Skolnik, TMH		
1	Introduction	10/6/19	
2	Maximum Unambiguous Range, simple Radar range Equation	11/6/19	
3	Radar Block Diagram and Operation	11/6/19	
4	Radar Frequencies and Applications	14/6/19	
5	Prediction of Range Performance	15/6/19	
6	Minimum Detectable Signal, Receiver Noise	17/6/19	Lecture
7	Radar Equation: Modified Radar Range Equation	18/6/19	intersperse with
8	SNR, probability of detection	18/6/19	discussion
9	probability of False Alarm, Integration of Radar Pulses	21/6/19	
10	Radar Cross Section of Targets (simple targets - sphere, cone-sphere)	22/6/19	
11	Creeping Wave, Transmitter Power	24/6/19	and the second
12	PRF and Range Ambiguities	25/6/19	
13	System Losses (qualitative treatment)	25/6/19	**
14	Illustrative Problems	28/6/19	
CO2: Unde FMCW rad	CW AND FREQUENCY MODULATED RADAR rstand the working of different types of radars a ars ars action to Radar Systems – Merrill I. Skolnik, TME		
15	Doppler Effect .	29/6/19	
16	CW Radar – Block Diagram	1/7/19	
17	Isolation between Transmitter and Receiver	2/7/19	
10	Non zone IE Deseiver	0/5/10	

2/7/19

5/7,6/7/19

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1   1   1   16/2	13/7/19 15/7/19 /7,16/7/19 s application dian Edition, 19/7/19 /7,22/7/19 23/7/19	with discussions	
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n 2 2 TI Radar 27/	23/7/19	Lecture	
Ti Radar 27/		interspersed	
Ti Radar 27/	26/7/19	with	
30/	/7,29/7/19	Discussions	
	/7,30/7/19		
	to the second state of the second sec		
	3/8/19	Arrest Control	
	ecial Indian /8,13/8/19	Edition, 2nd	
	/8,17/8/19		
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ng Radar 16/	/8,20/8/19	Lecture	
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	ifferent tracking tee Skolnik, TMH Spe	30/7,30/7/19 2/8/19 3/8/19 ifferent tracking techniques. Skolnik, TMH Special Indian ing 13/8,13/8/19	

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No. of Periods	TOPIC	Date	Mode of Delivery	
44	Noise Figure and Noise Temperature	16/9,17/9/19		
45	Illustrative Problems	17/9/19		
UNIT-VI CO6: Unde TB: Introd Ed., 2007	RADAR RECEIVERS rstand the various components of radar receiver a uction to Radar Systems – Merrill I. Skolnik, TM	and its performan IH Special Indian	ce. Edition, 2nd	
46	Displays – types	20/9/19		
47	Duplexers – Branch type and Balanced type	21/9,23/9/19	Lecture	
48	Circulators as Duplexers	24/9/19	interspersed	
49	Introduction to Phased Array Antennas – Basic Concepts	24/9/19	with discussions	
50	Radiation Pattern, Beam Steering and Beam Width changes	27/9,28/9/19		
51	Series versus parallel feeds	30/9,1/10//19		
52	Applications, Advantages and Limitations	1/10,4/10/19	1	
53	Radomes	5/10/19	1	

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221

SIGNATURE OF HOD

Periods   UNIT -1 INTRODUCTION AND IMAGE TRANSFORMS	Sion No : 00   Prepared By : A.V.P.Sarvari   Approved By : HOD			ITAL IMAGE PROCESSING (R164104	2)			
Tools: Black board, PPTs, Moodle  No. of Periods  UNIT -I INTRODUCTION AND IMAGE TRANSFORMS  CO1: Student can perform different transforms on images useful for image procapplications.  TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3rd edition, prentice Hall,  INTRODUCTION  INTRODUCTION  INTRODUCTION  Components of an image processing 11.6.2019  Leading and acquisition  Image sensing and acquisition 13.6.2019  Image sampling and quantization 15.6.2019  An introduction to the mathematical tools used in digital image processing 18.6.2019  IMAGE TRANSFORMS  Need for image transforms 19.6.2019  Discrete Fourier transform of one variable 20.6.2019  Extension to functions of two variables 22.6.2019  Importance of phase 25.6.2019  Importance of phase 25.6.2019  Importance of phase 27.6.2019  Importance of phase 27.6.2019  Hadamard transform 27.6.2019  Hadamard transform 3.7.2019  Select transform 3.7.2019  Select transform 3.7.2019	: Black board, PPTs, Moodle  TOPIC  Date  Mode of Delivery  T-I INTRODUCTION AND IMAGE TRANSFORMS  : Student can perform different transforms on images useful for image processin ications.  R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall, 2008  INTRODUCTION  INTRODUCTION  Components of an image processing 11.6.2019  Components of an image processing system 12.6.2019  Image sensing and acquisition 13.6.2019  Image sampling and quantization 15.6.2019  Some basic relationships between pixels 17.6.2019  An introduction to the mathematical tools used in digital image processing  IMAGE TRANSFORMS  Need for image transforms 19.6.2019  Extension to functions of two variables 22.6.2019  Extension to functions of two variables 22.6.2019  Importance of phase 25.6.2019  Discrete cosine transform 27.6.2019  Hadamard transform 27.6.2019  Hadamard transform 37.2019  Hadamard transform 37.2019  SVD and KL transforms or hotelling transform 6.7.2019  Radon transform 8.7.2019  Composition of Hiffer at the first of the firs	n						
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12.       Importance of phase       25.6.2019         13.       Discrete cosine transform       27.6.2019         14.       Walsh transform       1.7.2019         15.       Hadamard transform       2.7.2019         16.       Haar transform       3.7.2019	Importance of phase 25.6.2019 Discrete cosine transform 27.6.2019 Walsh transform 1.7.2019 Hadamard transform 2.7.2019 Haar transform 3.7.2019 Slant transforms 4.7.2019 SVD and KL transforms or hotelling transform 6.7.2019 Radon transform 8.7.2019		Some pr	operties of the 2-D DFT		STUDIE	with discussions	
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14.       Walsh transform       1.7.2019         15.       Hadamard transform       2.7.2019         16.       Haar transform       3.7.2019	Walsh transform 1.7.2019 Hadamard transform 2.7.2019 Haar transform 3.7.2019 Slant transforms 4.7.2019 SVD and KL transforms or hotelling transform Radon transform 8.7.2019							
15.       Hadamard transform       2.7.2019         16.       Haar transform       3.7.2019	Hadamard transform 2.7.2019 Haar transform 3.7.2019 Slant transforms 4.7.2019 SVD and KL transforms or hotelling transform 6.7.2019 Radon transform 8.7.2019	14.	Walsh tr	ransform				
16. Haar transform 3.7.2019	. Haar transform 3.7.2019 . Slant transforms 4.7.2019 . SVD and KL transforms or hotelling transform 6.7.2019 . Radon transform 8.7.2019	15.	Hadama	rd transform				
17 Clant transforms	Slant transforms 4.7.2019  SVD and KL transforms or hotelling transform 6.7.2019  Radon transform 8.7.2019	16.	Haar tra	nsform				
	SVD and KL transforms or hotelling transform  Radon transform  8.7.2019  8.7.2019	17.	Slant tra	nsforms				
10 CVD and VI 4 C 1 . 11'	Radon transform 8.7.2019		SVD and	d KL transforms or hotelling transform				
10 Podon two reference	Companies of life.		_03.15.03					
Comparision of life			Compari	ision of different image transforms				
21. <b>Tutorial</b> 10.7.2019	5.7.201)							
	10.7.7.717	A CONTACTOR OF THE PARTY OF THE			ATIAL FILT	FFDI	NC FILTEDING	
NIT II INTENCTOR ANGEORES ANGEORES	H INTENCTON TO ANGRODA ( TO COME )	1111 – 1. V THE 1	EBEUTIE	DILY TRANSFORMATIONS AND SPA NCV DOMAIN	ATIAL FILT	<b>TERI</b>	NG, FILTERING	
JNIT – II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERIN N THE FREQUENCY DOMAIN	- II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERING				ing on imag	e and	can implement all	
N THE FREQUENCY DOMAIN	F – II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERING HE FREQUENCY DOMAIN	moothin	g and sha	rpening operations on images.				
IN THE FREQUENCY DOMAIN CO2: Able to perform spatial and frequency domain filtering on image and can implemen	F – II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERING HE FREQUENCY DOMAIN  Able to perform spatial and frequency domain filtering on image and can implement all	ГВ: R. C.	Gonzale	z and R. E. Woods, Digital Image Proce	essing, 3 <sup>rd</sup> ed	ition.	prentice Hall. 2008	
IN THE FREQUENCY DOMAIN CO2: Able to perform spatial and frequency domain filtering on image and can implemen smoothing and sharpening operations on images.	F – II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERING HE FREQUENCY DOMAIN  Able to perform spatial and frequency domain filtering on image and can implement all thing and sharpening operations on images.	22.	Backgro	und		The second secon		
IN THE FREQUENCY DOMAIN CO2: Able to perform spatial and frequency domain filtering on image and can implement smoothing and sharpening operations on images.  Fig. R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall,	T – II INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING, FILTERING HE FREQUENCY DOMAIN  Able to perform spatial and frequency domain filtering on image and can implement all thing and sharpening operations on images.  R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall, 2008		Some ba	sic intensity transformation functions		No. of the last		
IN THE FREQUENCY DOMAIN CO2: Able to perform spatial and frequency domain filtering on image and can implement smoothing and sharpening operations on images.  TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall,  22. Background 11.7.2019	HE FREQUENCY DOMAIN Able to perform spatial and frequency domain filtering on image and can implement all thing and sharpening operations on images.  R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall, 2008  Background  11.7.2019	23.			10.7.201.	/		
CO2: Able to perform spatial and frequency domain filtering on image and can implement smoothing and sharpening operations on images.  CB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall,  22. Background  23. Some basic intensity transformation functions  11.7.2019  24. Histogram processing  16.7.2019  Lecture interspections	HE FREQUENCY DOMAIN Able to perform spatial and frequency domain filtering on image and can implement all thing and sharpening operations on images.  R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall, 2008 Background Background 11.7.2019 Some basic intensity transformation functions Histogram processing 16.7.2019 Lecture interspersed			m processing	16.7.2010		Lecture interspersed	
IN THE FREQUENCY DOMAIN CO2: Able to perform spatial and frequency domain filtering on image and can implement smoothing and sharpening operations on images.  FB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall,  22. Background 23. Some basic intensity transformation functions 11.7.2019  Histogram processing 16.7.2019 Lecture intersp	HE FREQUENCY DOMAIN Able to perform spatial and frequency domain filtering on image and can implement all thing and sharpening operations on images.  R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3 <sup>rd</sup> edition, prentice Hall, 2008.  Background 11.7.2019 Some basic intensity transformation functions 15.7.2019 Histogram processing 16.7.2019  Lecture interspersed with discussions	24.	Histogra			9	Lecture interspersed with discussions	

Course Title: DIC	GITAL IMAGE PROCESSING (R1641042	2)
Section : A	Date: 6.11.2019	Page No: 02 of 04
<b>Revision No</b> : 00	Prepared By : A.V.P.Sarvari	Approved By: HOD

No. of Periods	TOPIC	Date	Mode of Delivery
27	Sharpening spatial filters	20.7.2010	
27.	Combining spatial enhancement methods	20.7.2019	
28.	Preliminary concepts	22.7.2019	
29.	The basic of filtering in the frequency domain	23.7.2019	Lecture interspersed
30.	Image smoothing using frequency domain filters	24.7.2019	with discussions
31.	Image sharpening using frequency domain filters	25.7.2019	
32.	Selective filtering	27.7.2019	
33.	Tutorial	29.7.2019	

### UNIT -III IMAGE RESTORATION AND RECONSTRUCTION

CO3: Student can perform image restoration operations/techniques on images.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

34.	A model of the image degradation/restoration process	30.7.2019	
35.	Noise models	31.7.2019	
36.	Restoration in the presence of noise only spatial filtering	1.8.2019	
37.	Periodic noise reduction by frequency domain filtering	3.8.2019	
38.	Linear, position invariant degradations	13.8.2019	
39.	Estimation the degradation function		Lecture interspersed
40.	Inverse filtering	14.8.2019	with discussions
41.	Minimum mean square error (mean) filtering	17.8.2019	
42.	Constrained least squares filtering	19.8.2019	
43.	Geometric mean filtering		
44.	Image reconstruction from projections	20.8.2019	
45.	Tutorial	21.8.2019	

# UNIT – IV WAVELETS AND MULTI-RESOLUTION PROCESSING, IMAGE COMPRESSION

CO5: Student can understand wavelet based image processing and image compression using Wavelets.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

46.	Fundamentals		
47.	Basic compression methods: Huffman coding	22.8.2019	
48.	Golomb coding	24.8.2019	
49.	Arithmetic coding	26.8.2019	Lecture interspersed
50.	LZW coding	27.8.2019	with discussions
51.	Run length coding	28.8.2019	
52.	Symbol based coding	29.8.2019	

Course Title: DIC	GITAL IMAGE PROCESSING (R1641042	2)
Section : A	Date: 6.11.2019	Page No: 03 of 04
Revision No: 00	Prepared By : A.V.P.Sarvari	Approved By : HOD
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No. of Periods	TOPIC	Date	Mode of Delivery
53.	Bit plane coding	31.8.2019	
54.	Block transform coding	3.9.2019	
55.	Predictive coding		
56.	Image pyramids	4.9.2019	
57.	Sub band coding		Lecture interspersed
58.	Multi resolution expressions	5.9.2019	with discussions
59.	Wavelet transforms in one dimensions	7.9.2019	
60.	Wavelet transforms in two dimensions		
61.	Wavelet coding	9.9.2019	
62.	Tutorial	10.9.2019	

UNIT - V MORPHOLOGICAL IMAGE PROCESSING, IMAGE SEGMENTATION CO6: Student can perform all morphological operations on images and can be able to do image segmentation also.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

63.	Fundamentals		
64.	Point, line, edge detection	oint, line, edge detection 11.9.2019	
65.	Thresholding	12.9.2019	
66.	Region based segmentation	16.9.2019	
67.	Preliminaries	17.9.2019	
68.	Erosion and dilation	18.9.2019	
69.	Opening and closing		Lecture interspersed with discussions
70.	Basic morphological algorithms for boundary extraction	19.9.2019	with discussions
71.	Thinning		
72.	Grey scale morphology	20.9.2019	
73.	Segmentation using morphological watersheds	21.9.2019	
74.	Tutorial	24.9.2019	

### UNIT - VI COLOR IMAGE PROCESSING

CO4: Able to operate effectively on color images and different color conversions on images and can code images to achieve good compression.

# TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

75.	Color fundamentals		
76.	Color models	25.9.2019	Lecture intercongrand
77.	Pseudo color image processing	26.9.2019	Lecture interspersed with discussions
78.	Basic of full color image processing	28.9.2019	

Course Title: DIC	GITAL IMAGE PROCESSING (R1641042)	
Section : A	Date: 6.11.2019	Page No: 04 of 04
<b>Revision No</b> : 00	Prepared By : A.V.P.Sarvari	Approved By : HOD

Tools:	Black	board,	<b>PPTs</b>
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No. of Periods	TOPIC	Date	Mode of Delivery
79.	Color transformations		
80.	Smoothing and sharpening	30.9.2019	
81.	Image segmentation based on color	1.10.2019	
82.	Noise in color images		Lecture interspersed
83.	Color image compression	2.10.2019	with discussions
84.	Tutorial	3.10.2019	

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Signature of the HOD

SRK Institute of Technology ENIKEPADU, VIJAYAWADA-521 108

Section :	D	ITAL IMAGE PROCESSING (R1641042 Date: 6.11.2019		No · O1 of O4
Levicion			age No: 01 of 04 pproved By: HOD	
		Prepared By : A.V.P.Sarvari PPTs, Moodle	Appr	oved by : HOD
No. of Periods		TOPIC	Date	Mode of Delivery
UNIT -I	INT	RODUCTION AND IMAGE TRA	NSFORMS	
CO1: Stu	udent ca	an perform different transforms on i	mages useful	for image processin
applicatio	ons.			
ГВ: R. C.		ez and R. E. Woods, Digital Image Proce	ssing, 3 <sup>rd</sup> editio	n, prentice Hall, 2008
1.	INTRO	DUCTION	10.6.2019	
2.	Fundan	nental steps in digital image processing	11.6.2019	
3.	Compo	nents of an image processing system	12.6.2019	
4.	Image s	sensing and acquisition	13.6.2019	1
5.	Image s	campling and quantization	14.6.2016	
6.	Some b	asic relationships between pixels	15.6.2019	
7.		oduction to the mathematical tools used al image processing	17.6.2019	
	IMAG	E TRANSFORMS		
8.	Need fo	or image transforms	18.6.2019	
9.	Discrete	e Fourier transform of one variable	19.6.2019	1
10.	Extensi	on to functions of two variables	20.6.2019	Lecture intersperse
11.	Some p	roperties of the 2-D DFT	21.6.2019	with discussions
12.	Importa	ince of phase	22.6.2019	
13.	Discrete	e cosine transform	24.6.2019	
14.	Walsh t	ransform	25.6.2019	
, 15.	Hadama	ard transform	27.6.2019	
16.	Haar tra	nsform	28.6.2019	1
17.	Slant tr	ansforms	1.7.2019	
18.	SVD ar	nd KL transforms or hotelling transform	2.7.2019	
19.	Radon	transform	3.7.2019	1
20.	Compa	rision of different image transforms	4.7.2019	1
21.	Tutoria	al ISITY TRANSFORMATIONS AND SPA	5.7.2019	

Course Title: DIC	GITAL IMAGE PROCESSING (R164104	2)
Section : B	Date : 6.11.2019	Page No: 02 of 04
Revision No: 00	Prepared By : A.V.P.Sarvari	Approved By : HOD

Tools	:	Black	board.	PPTs

No. of Periods	TOPIC Date		Mode of Delivery
27	Sharpening spatial filters	12.7.2019	
27.	Combining spatial enhancement methods	12.7.2019	
28.	Preliminary concepts	15.7.2019	
29.	The basic of filtering in the frequency domain	16.7.2019	Lecture interspersed
30.	Image smoothing using frequency domain filters	17.7.2019	with discussions
31.	Image sharpening using frequency domain filters	18.7.2019	
32.	Selective filtering	19.7.2019	
33.	Tutorial	20.7.2019	

### UNIT -III IMAGE RESTORATION AND RECONSTRUCTION

CO3: Student can perform image restoration operations/techniques on images.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3rd edition, prentice Hall, 2008.

34.	A model of the image degradation/restoration process	22.7.2019	
35.	Noise models	23.7.2019	
36.	Restoration in the presence of noise only spatial filtering	24.7.2019	
37.	Periodic noise reduction by frequency domain filtering	25.7.2019	
38.	Linear, position invariant degradations	26.7.2019	
39.	Estimation the degradation function	27.7.2019	Lecture interspersed with discussions
40.	Inverse filtering	29.7.2019	with discussions
41.	Minimum mean square error (mean) filtering	30.7.2019	
42.	Constrained least squares filtering	31.7.2019	
43.	Geometric mean filtering	1.8.2019	
44.	Image reconstruction from projections	2.8.2019	
45.	Tutorial	3.8.2019	

# UNIT – IV WAVELETS AND MULTI-RESOLUTION PROCESSING, IMAGE COMPRESSION

CO5: Student can understand wavelet based image processing and image compression using Wavelets.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3rd edition, prentice Hall, 2008.

46.	Fundamentals		1
		13.8.2019	
47.	Basic compression methods: Huffman coding	14.8.2019	
48.	Golomb coding	16.8.2019	
49.	Arithmetic coding	17.8.2019	Lecture interspersed
50.	LZW coding	19.8.2019	with discussions
51.	Run length coding	20.8.2019	
52.	Symbol based coding	21.8.2019	

Course Title: DIC	SITAL IMAGE PROCESSING (R164104)	2)
Section: B	Date: 6.11.2019	Page No: 03 of 04
<b>Revision No:</b> 00	Prepared By : A.V.P.Sarvari	Approved By : HOD

Tools: Black board, PPTs					
No. of Periods	TOPIC	Date	Mode of Delivery		
53.	Bit plane coding	22.8.2019			
54.	Block transform coding	24.8.2019			
55.	Predictive coding	26.8.2019			
56.	Image pyramids	27.8.2019			
57.	Sub band coding	28.8.2019	Lecture interspersed		
58.	Multi resolution expressions	29.8.2019	with discussions		
59.	Wavelet transforms in one dimensions	30.8.2019			
60.	Wavelet transforms in two dimensions	31.8.2019			
61.	Wavelet coding	3 0 2010			

UNIT - V MORPHOLOGICAL IMAGE PROCESSING, IMAGE SEGMENTATION CO6: Student can perform all morphological operations on images and can be able to do image segmentation also.

4.9.2019

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

63.	Fundamentals	5.9.2019	
64.	Point, line, edge detection	6.9.2019	
65.	Thresholding	7.9.2019	
66.	Region based segmentation	9.9.2019	
67.	Preliminaries	10.9.2019	
68.	Erosion and dilation	11.9.2019	
69.	Opening and closing	12.9.2019	Lecture interspersed with discussions
70.	Basic morphological algorithms for boundary extraction	13.9.2019	with discussions
71.	Thinning	16.9.2019	
72.	Grey scale morphology	17.9.2019	
73.	Segmentation using morphological watersheds	18.9.2019	
74.	Tutorial	19.9.2019	

#### UNIT - VI COLOR IMAGE PROCESSING

Tutorial

62.

CO4: Able to operate effectively on color images and different color conversions on images and can code images to achieve good compression.

TB: R. C. Gonzalez and R. E. Woods, Digital Image Processing, 3<sup>rd</sup> edition, prentice Hall, 2008.

75.	Color fundamentals	20.9.2019	
76.	Color models	21.9.2019	Lecture interspersed with discussions
77.	Pseudo color image processing	24.9.2019	
78.	Basic of full color image processing	25.9.2019	

Course Title: DIC	GITAL IMAGE PROCESSING (R1641042)	
Section: B	Date: 6.11.2019	Page No: 04 of 04
Revision No: 00	Prepared By : A.V.P.Sarvari	Approved By : HOD

No. of Periods	TOPIC	Date	Mode of Delivery
79.	Color transformations	26.9.2019	
80.	Smoothing and sharpening	27.9.2019	
81.	Image segmentation based on color	28.9.2019	
82.	Noise in color images	30.9.2019	Lecture interspersed
83.	Color image compression	1.10.2019	with discussions
84.	Tutorial	3.10.2019	
		1 0	

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### **TENTATIVE LESSON PLAN: R1641043**

Course Title: COMPUTER NETWORKS (R1641043)			
Section : Sec A	Date: 10/6/19	Page No: 01 of 03	
<b>Revision No: 00</b>	Prepared By : G.SURYA PRAKASH	Approved By : HOD	

Tools: Black board, power-point presentation

No. of Periods	TOPIC	Date	Mode of Delivery
	TRODUCTION	for commun	ication notwo

CO1:: Understand various network topologies required for communication, network architecture and some example networks.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

2. Data Communications and Networking – Behrouz A. Forouzan. Third Edition TMH.

1	Introduction	11-06-19	
2	OSI	26-06-19	
3	TCP/IP	26-06-19	
4	Other Network Models	01-07-19	
5	Examples of Networks: Novell Networks	01-07-19	Lecture
6	Arpanet, Internet	24-06-19	interspersed
8	Network Topologies	24-06-19	with discussions
9	WAN, LAN, MAN	03-07-19	
10	Tutorial-Classification of Networks	01-07-19	

#### UNIT-II PHYSICAL LAYER

CO1:: Understand the physical layer processes such as switching and encoding and the behavior of various transmission media,.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

3. Data Communications and Networks - Achyut.S. Godbole, TMH.

11	Transmission media, Copper	03-07-19	
12	Twisted Pair Wireless	03-07-19	
13	Switching and Encoding	04-07-19	Lecture
14	Asynchronous Communications	05-07-19	interspersed
15	Data Link layer Introduction, Error Detection & Correction, CRC	10-07-19	with discussions
16	ATM-Tutorial	07-07-19	

#### UNIT - III DATA LINK LAYER

CO3:: Understand the general principles behind addressing, reliable transmission and other MAC protocols and basics of Ethernet.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

2. Data Communications and Networking - Behrouz A. Forouzan, Third Edition TMH.

17	Introduction, Design Issues	11-07-19	
18	Framing	12-07-19	Lecture
19	Elementary Protocol-stop and wait	12-07-19	interspersed with discussions
20	Sliding Window	20-07-19	
UNIT –IV	MEDIUM ACCESS CONTROL SUBLAYE	P	

### UNIT -IV MEDIUM ACCESS CONTROL SUBLAYER

CO4:: Understand the general principles behind addressing, routing, reliable transmission and other MAC protocols with specific examples.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

	, ii Ii Compater			· ·	TO TOUT THE ATT
_	Data Communications and	Materialing Pohrouz	A Foroi	izan Third	Edition I VIH.
7	Data Communications and	Networking - Deniouz	W. T.OLO	LLang I mil w	Dairion Triance

21	MAC Sub Layer: ALOHA	20-08-19	
22	Carrier Sense Multiple Access	21-18-19	
23	Ethernet-Classic Ethernet Physical Layer-Classic Ethernet MAC Sub layer Protocol-Ethernet Performance	interspers	Lecture interspersed
24	Wireless Lans-The 802.11 Architecture and Protocol Stack- The 802.11 Physical Layer	28-08-19	with discussions
25	The 802.11 MAC Sub layer Protocol-The 805.11 Frame Structure-Services - Tutorial	30-08-19	

### UNIT -V NETWORK LAYER

CO5:: Analyze various routing algorithms, congestion prevention policies and obtain an overview of the Internet.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

2. Data Com	munications and Networking - Denitouz A. Fotouzan,		i illii.
26	Virtual Circuit & Datagram Subnets	10-09-19	
27	Routing algorithms - Shortest Path Routing	11-09-19	
28	Flooding, Hierarchical routing	12-09-19	
29	Broad cast, Multi cast, Distance Vector routing	12-09-19	
30	Dynamic Routing - Broadcast routing	13-09-19	Lecture
31	Rotary for mobility	13-09-19	interspersed
32	Congestion Control Algorithms – General Principles of Congestion prevention policies.	17-09-19	with discussions
33	The Network layer in the internet	19-09-19	
34	The Network layer in the ATM Networks-Tutorial	19-09-19	
35	Tutorial	20-09-19	

### UNIT -VI TRANSPORT LAYER & APPLICATION LAYER

CO6:: Understand the transport layer services and study the TCP and UDP protocols.

Have an informed view of common Internet applications and protocols.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.
2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

36	Transport Services	21-09-19	
37	Connection management	24-09-19	Lecture
38	TCP and UDP protocols	25-09-19	interspersed
39	TCP Congestion Control, Timer Management	25-09-19	with discussions Lecture interspersed
40	Domain name system	26-09-19	
41	Electronic Mail	27-09-19	
42	The World Web	27-09-19	with discussions
43	Multi Media.	28-09-19	
44	Tutorial	28-09-19	

G Junya Ruhl
Signatured of the Faculty

Signature of the HOD

### **TENTATIVE LESSON PLAN: R1641043**

Course Title: CO	MPUTER NETWORKS (R1641043)	
Section: Sec B	Date: 10/6/19	Page No: 01 of 03
Revision No: 00	Prepared By : G.SURYA PRAKASH	Approved By : HOD

Tools: Black	board,	power-point	presentation
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Tools: Black boa	rd, power-point presentation		
No. of Periods	TOPIC	Date	Mode of
TINITED T IN	IND OD TION TO THE		Delivery
	TRODUCTION		
	stand various network topologies required	for commun	ication, networ
	d some example networks.		
Education/PHI	iter Networks — Andrew S Tanenbaum, 4th Editi	on. Pearson	
		. m. i	
Edition TMH.	inications and Networking – Behrouz A. Forouzai	i. I hird	
	Introduction	21 22 06	
1	introduction	21,22-06- 19	
2	OSI	26-06-19	
3	TCP/IP	27-06-19	-
4	Other Network Models	01-07-19	<b>-</b>
5	Examples of Networks: Novell Networks	01-07-19	Lecture
6	Arpanet, Internet	24-06-19	interspersed with discussions
8	Network Topologies	24-06-19	with discussions
9	WAN, LAN, MAN	01-07-19	
10	Tutorial-Classification of Networks	01-07-19	
	HYSICAL LAYER		
CO1:: Underst	and the physical layer processes such as switching	and encoding	and the behavio
of various trans	smission media,.		
TB :: 1. Compu	ter Networks — Andrew S Tanenbaum, 4th Edition	on. Pearson E	ducation/PHI.
2. Data Commu	inications and Networking – Behrouz A. Forouzan	, Third Editio	n TMH.
3. Data Commu	nications and Networks - Achyut.S.Godbole, TM	н.	
11	Transmission media, Copper	03-07-19	
12	Twisted Pair Wireless	03-07-19	
13	Switching and Encoding	04-07-19	Lecture
14	Asynchronous Communications	05-07-19	interspersed
15	Data Link layer Introduction, Error Detection & Correction, CRC	10-07-19	with discussions
16	ATM-Tutorial		

### UNIT - III DATA LINK LAYER

CO3:: Understand the general principles behind addressing, reliable transmission and other MAC protocols and basics of Ethernet.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.
2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition TMH.

		Touzan, Third Eurin	)II 1 IVIII.
17	Introduction, Design Issues	11-07-19	
18	Framing	12-07-19	Lecture interspersed
19	Elementary Protocol-stop and wait	12-07-19	with discussions
20	Sliding Window	19-07-19	-

#### MEDIUM ACCESS CONTROL SUBLAYER CO4:: Understand the general principles behind addressing, routing, reliable transmission and other MAC protocols with specific examples. TB :: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI. 2. Data Communications and Networking - Behrouz A. Forouzan, Third Edition TMH. MAC Sub Layer: ALOHA 16-08-19 22 Carrier Sense Multiple Access 21-18-19 Ethernet-Classic Ethernet Physical Layer-Classic Ethernet 23 Lecture 27-08-19 MAC Sub layer Protocol-Ethernet Performance interspersed Wireless Lans-The 802.11 Architecture and Protocol Stack-24 28-08-19 The 802.11 Physical Layer with discussions 25 The 802.11 MAC Sub layer Protocol-The 805.11 Frame 31-08-19 Structure-Services - Tutorial UNIT-V NETWORK LAYER CO5:: Analyze various routing algorithms, congestion prevention policies and obtain an overview of the Internet. TB :: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI. 2. Data Communications and Networking - Behrouz A. Forouzan, Third Edition TMH. Virtual Circuit & Datagram Subnets 11-09-19 27 Routing algorithms - Shortest Path Routing 11-09-19 28 Flooding, Hierarchical routing 12-09-19 29 Broad cast, Multi cast, Distance Vector routing 12-09-19 30 Dynamic Routing - Broadcast routing 13-09-19 31 Rotary for mobility Lecture 13-09-19 32 Congestion Control Algorithms interspersed 17-09-19 General Principles of Congestion prevention with discussions policies. The Network layer in the internet 33 19-09-19 34 The Network layer in the ATM Networks-Tutorial 19-09-19 35 Tutorial 19-09-19 UNIT-VI TRANSPORT LAYER & APPLICATION LAYER CO6:: Understand the transport layer services and study the TCP and UDP protocols.

Have an informed view of common Internet applications and protocols.

TB:: 1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI. 2. Data Communications and Networking - Behro

36	Transport Services		on TMH.
37	Connection management	22-09-19	
38	TCP and UDP protocols	24-09-19	T ootuus
39	TCP Congestion Control Tile	25-09-19	Lecture interspersed with discussions Lecture
40	TCP Congestion Control, Timer Management	25-09-19	
	Domain name system	26-09-19	
41	Electronic Mail	27-09-19	
42	The World Web		interspersed
43	Multi Media.	27-09-19	with discussions
44		28-09-19	
	Tutorial	28-09-19	

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## TENTATIVE LESSON PLAN: R1641044 OPTICAL COMMUNICATIONS

C THE OPTI	CAL COMMUNICATIONS	
	Date: 10/6/19	Page No: 1 to 4
Section : Sec I		Approved By : HOD
Revision No: 00	Prepared'By: P.Koteswara Rao	ripproved 25 · ==

Tools: Black board, PPTs

10018: Black board, 11	19		Mode of
S.NO.	TOPIC	Date	Delivery

## UNIT -I OVERVIEW OF OPTICAL FIBER COMMUNICATION

CO1: The necessary components required in modern Optical communications systems and build optical fiber experiments in the laboratory, and learn how to Calculate electromagnetic modes in waveguides

TB: Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

	Overview of optical fiber communication-		
1	Historical development		
2	The general system, advantages of optical fiber		
2	communications	_	
	Optical fiber waveguides- Introduction, Ray		
3	theory transmission	From:	
4	Total Internal Reflection, Acceptance angle	10/06/2019	Lecture interspersed with
5	Numerical Aperture, skew rays		
6	Cylindrical fibers, modes ,v-number	To:	
7	Mode coupling, Step Index fibers	29/06/2019	discussions
8	Graded Index fibers, Single mode fibers		
9	Cut off wavelength, Mode Field Diameter		
10	Effective Refractive Index, Related problems.		
11	Tutorial		

UNIT -II FIBER MATERIALS

CO2: The properties of optical fiber and the amount of light lost going through an Optical system, dispersion of optical fibers

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd

Edition, 2000

Edition			
12	Fiber materials:- Glass, Halide, Active glass		
13	Chalgenide glass, Plastic optical fibers		
14	Signal distortion in optical fibers- Attenuation, Absorption		Lecture interspersed with discussions
15	Scattering and Bending losses	From: 1/07/2019	
16	Core and Cladding losses, Information capacity determination	To:	
17	Group delay, Types of Dispersion:- Material dispersion	13/07/2019	
18	Wave-guide dispersion, Polarization-Mode dispersion		
19	Intermodal dispersion, Pulse broadening in Graded index		
20	Related problems		

### UNIT -III OPTICAL FIBER CONNECTORS

CO3: To know the principles of single and multi-mode optical fiber connectors and their characteristics

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd

Edition, 2000

-	21	Optical fiber Connectors-Connector types		
	22	Single mode fiber connectors, Connector return loss	From:	Lecture
	23	Fiber Splicing- Splicing techniques	15/7/2019	
	24	Splicing single mode fibers, Fiber alignment & joint loss	To: v	interspersed with discussions
	25	Multimode fiber joints, single mode fiber joints.		discussions
	26	Tutorial		
	27	Revision		

### UNIT -IV OPTICAL SOURCES AND DETECTORS

CO4: The working of semiconductor lasers, and analyze the operation of LEDs, laser diodes

And also able to analyze the use of different types of photo detectors

TB: Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

28	Optical sources- LEDs, Structures		
29	Materials		
30	Quantum efficiency		
31	Power, Modulation, Power bandwidth product		
32	Injection Laser Diodes-Modes		
33	Threshold conditions, External quantum efficiency	From: 12/08/2019	Lecture interspersed
34	Laser diode rate equations	_	with
35	Resonant frequencies	To: 31/08/2019	discussions
36	Reliability of LED&ILD		
37	Optical detectors- Physical principles of PIN	- 3	
38	Physical principles of APD		
39	Detector response time, Temperature effect on Avalanche gain, Comparison of Photo detectors, Related problems		

### UNIT - V SOURCE TO FIBER POWER LAUNCHING

CO5: To know the design of optical fiber communication and source to fiber power coupling.

TB: Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd

#### Edition, 2000

40	Source to fiber power launching - Output patterns	From:	T
41	Power coupling, Power launching	02/09/2019	Lecture
42	Equilibrium Numerical Aperture, Laser diode to fiber coupling	To:	interspersed
43	Optical receiver operation- Fundamental receiver operation		discussions
44	Digital signal transmission, error sources		

45	Receiver configuration, Digital receiver performance		
46	Probability of Error, Quantum limit, Analog receivers		
CO6: The al	Fiber Communications – Gerd Keiser, Mc Graw-		
47	Optical system design - Point-to-point links		
48	Component choice and considerations  Link power budget with examples	From:	
49	Rise time budget with examples	06/09/2019 To:	Lecture
50	Line coding in Optical links, WDM	05/10/2019	interspersed
51	M		with

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

Measurement of Attenuation

Eye pattern

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51

52

Signature of HOD

discussions

### TENTATIVE LESSON PLAN: R1641044 OPTICAL COMMUNICATIONS

<b>Course Title: OPTI</b>	CAL COMMUNICATIONS	
Section : Sec II	Date: 10/6/19	Page No: 1 to 4
Revision No: 00	Prepared By: P.Koteswara Rao	
Tools: Black hoard		Approved By : HOD

S.NO. TOPIC	Date	Mode of Delivery
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### UNIT -I OVERVIEW OF OPTICAL FIBER COMMUNICATION

CO1: The necessary components required in modern Optical communications systems and build optical fiber experiments in the laboratory, and learn how to Calculate electromagnetic modes in waveguides

TB: Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

1	Overview of optical fiber communication-		T
1	Historical development		
2	The general system, advantages of optical fiber		
	communications		
3	Optical fiber waveguides- Introduction, Ray		
	theory transmission	From:	Lecture interspersed
4	Total Internal Reflection, Acceptance angle	10/06/2019	
5 Numerical Aperture.	Numerical Aperture, skew rays		
6	Cylindrical fibers, modes ,v-number		with
7	Mode coupling, Step Index fibers	29/06/2019	discussions
8	Graded Index fibers, Single mode fibers	25/00/2019	
9	Cut off wavelength, Mode Field Diameter		
10	Effective Refractive Index, Related problems.		
11	Tutorial		

UNIT -II FIBER MATERIALS

CO2: The properties of optical fiber and the amount of light lost going through an Optical system, dispersion of optical fibers

TB: Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd

Edition, 2 12 13 14 15 16	Fiber materials:- Glass, Hande, Active glass Chalgenide glass, Plastic optical fibers Signal distortion in optical fibers- Attenuation, Absorption  Scattering and Bending losses  Core and Cladding losses, Information capacity determination Group delay, Types of Dispersion:- Material	From: 1/07/2019  To: 13/07/2019	Lecture interspersed with discussions
- 18	Wave-guide dispersion, Polarization-Wode		
19	Intermodal dispersion, Pulse broadening in Graded index		
20	Related problems		

UNIT -III OPTICAL FIBER CONNECTORS CO3: To know the principles of single and multi-mode optical fiber connectors and their characteristics

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd

21	Optical fiber Connectors-Connector types Single mode fiber connectors, Connector return loss	From: 15/7/2019	Lecture
23	Fiber Splicing- Splicing techniques  Splicing single mode fibers, Fiber alignment &	To:	interspersed with
24	inint loss	03/08/2019	discussions
25	Multimode fiber joints, single mode fiber joints.		
26	Tutorial		
27	Revision		

## UNIT -IV OPTICAL SOURCES AND DETECTORS

CO4: The working of semiconductor lasers, and analyze the operation of LEDs, laser diodes

And also able to analyze the use of different types of photo detectors

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

28	Optical sources- LEDs, Structures		
29	Materials		
30	Quantum efficiency		
	Power, Modulation, Power bandwidth product		
32	Injection Laser Diodes-Modes	From:	
33	Threshold conditions, External quantum efficiency	12/08/2019	Lecture interspersed with
34	Laser diode rate equations	To:	discussions
35	Resonant frequencies	31/08/2019	
36	Reliability of LED&ILD		
37	Optical detectors- Physical principles of PIN	5	
38	Physical principles of APD		
39	Detector response time, Temperature effect on Avalanche gain, Comparison of Photo detectors, Related problems		

## UNIT - V SOURCE TO FIBER POWER LAUNCHING

CO5: To know the design of optical fiber communication and source to fiber power coupling.

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd

Edition,	2000
Edition,	2000

Edition	, 2000	From:	
40	Source to fiber power launching - Output patterns	02/09/2019	Lecture
41	Power coupling, Power launching	02/09/2019	interspersed
42	Equilibrium Numerical Aperture, Laser diode to fiber coupling	To: 14/09/2019	with
43	Optical receiver operation- Fundamental receiver operation	14/05/2015	u.so.
44	Digital signal transmission, error sources		

		Receiver configuration, Digital receiver	
15	45		
	43	performance	
		Probability of Error, Quantum limit, Analog	
46	46	receivers	+

## UNIT -VI OPTICAL SYSTEM DESIGN

CO6: The ability to analyze, design, build, and demonstrate optical fiber experiments in the laboratory

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd

Edition, 2000

47	Optical system design - Point-to- point links, Component choice and considerations	From:	Lecture
48	Link power budget with examples	To: o5/10/2019 into	
49	Rise time budget with examples		interspersed
50	Line coding in Optical links, WDM		with discussions
51	Measurement of Attenuation		discussions
52	Eye pattern		

TB: Optical Fiber Communications - Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000

400 18/10/19

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29/10/19

Section : S	Sec A	TRONIC SWITCHING SYSTEMS (R1641)  Date: 10-6-2019	Page No:	01 of 03
Revision No	o:00	Prepared By: K.Venkateswara Rao		By: HOD
Tools: Black	board, PP7	îs .	Tippiorec	(by . HOD
No. of Periods		TOPIC	Date	Mode of Delivery
Syste	oduced to ms	COMMUNICATION SWITCHING SYSTE elecommunication switching systems and operation switching system and networks - Thys	eration of diff	
1.	Evolut	ion of Telecommunications		, , , , , , , , , , , , , , , , , , , ,
2.	Simple	Telephone Communication		
3.	Basics	of Switching System		
4.	Manua	l Switching System		
5.	Major	Telecommunication Networks		
6.	The state of the state of	WGER SWITCHING SYSTEM		
7.	Signal	ing tones	+	
8.	Step by	y step switching system	From:	
9.	A CONTRACTOR OF THE REAL PROPERTY.	parameters	+	
10.	Design	s of 100 line exchange	10/06/19 To:	
11.		with Uni selectors and Two motion selectors		
12.	The state of the s	S BARSWITCHING	-	Lecture
13.	Princip	oles of Common Control	26/06/19	interspersed with discussion
14.		Tone Dial Telephone	+	
15.		les of Crossbar Switching		
16.		ar Switch Configurations		and the same
17.	Cross p	point Technology	-	
18.	Crossb	ar Exchange Organization		
19.	Tutoria	1.		
TB1: Telec	ned the k Switching	Division Switching nowledge of different Time Division Space S g and Combination Switching ication switching system and networks		
20.	Basic T	ime Division Space Switching		1
21.	Basic T	ime Division Time Switching lised time division Space switch	From:	Lecture
22.	Basic T	ime division time switching: modes of	16/07/19	interspersed
23.	operation	on problems		with discussions
			To:	
24.	Time M	Iultiplexed Space Switching		

26.	Combination Switching	
27.	Time Space (TS) Switching	
28.	Space-time (ST) Switching	
29.	Three-Stage Combination Switching	
30.	n- Stage Combination Switching	
31.	Tutorial	

### UNIT - II ELECTRONIC SPACE DIVISION SWITCHING

CO2:: Obtained the knowledge of different electronic Space Division switching systems.

TB1: Telecommunication switching system and networks - Thyagarajan Viswanath, PHI 2000.

No. of Periods	ods TOPIC		Mode of Delivery	
32.	Stored Program Control	From:		
33.	Centralized SPC		Lecture interspersed with discussions	
34.	Distributed SPC	27/06/19		
35.	Software Architecture			
36.	Application Software, Enhanced Services	To: 15/07/19		
37.	Two-Stage Networks			
38.	Three-Stage Networks, n- Stage Networks.			
39.	Tutorial			

#### UNIT -I V TELEPHONE NETWORKS

CO4:: Analyzed the performance of telecommunication network and implement the signaling technique In communication networks

TB3: Advanced Electronic Communications systems - Wayne Tomasi, PHI 2004.

40.	Subscriber Loop System		
41.	Switching Hierarchy and Routing		
42.	Transmission Plan, Transmission Systems		
43.	Numbering Plan and Charging Plan	7	
44.	Numbering Plan and Charging Plan	From:	Lecture
45.	In-channel Signaling, Common Channel Signaling	12/08/19	interspersed
46.	CCITT Signaling System no.6		with discussions
47.	CCITT Signaling System no.7	To:	
48.	Statistical Multiplexing	20/00/10	
49.	Local- Area and Wide- Area Networks	30/08/19	
50.	Broad band Networks,		
51.	Large scale networks		
52.	Large-scale Networks		

## UNIT - VI INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

CO6: Obtained the knowledge of network architecture and its protocols and Introduced ISDN and BISDN services in existing data networks

TB1:: Telecommunication switching system and networks – Thyagarajan Vi

No. of Periods	TOPIC	DATE	Mode of
54	Introduction and Motivation		Delivery
55	New Services		
56	ISDN Network and Protocol architecture		
57	Transmission Channels	THE TENE	
58	User- Network Interfaces	From:	Lecture interspersed with discussions
59	Signaling, Numbering and Addressing	16/09/19	
60	Service Characterization	-3.37.45	
61	Interworking	To:	
62	ISDN Standards		
63	Expert Systems in ISDN	6/10/19	
64	Broadband ISDN		
65	Voice Data Integration		
66	Tutorial		

#### UNIT - V **SWITCHING NETWORKS**

CO5:: Gained understanding on different switching networks and information on Telecommunications Traffic

TB1: Telecommunication switching system and networks - Thyagarajan Viswanath, PHI 2000.

TB2: Telecommunications Switching, Traffic and Networks- J. E. Flood, 2006, Pearson Education

67	Single- Stage Networks		-
68	Grading, Link Systems		
69	Grades of service of link systems		
70	Application of Graph Theory to link Systems		College
71	Use of Expansion	From	
72	Call Packing		Lecture
73	Rearrange-able Networks	2/09/19	interspersed with discussions
74	Strict- Sense non-blocking Networks		Will discussions
75	Sectionalized Switching Networks	To:	
76	Tutorial	14/9/19	
77	The Unit of Traffic, Congestion, Traffic Measurement	141/11/	
78	A Mathematical Model		
79	Lost-call Systems, Queuing Systems		

Signature of the Faculty Date:

SRK INSTITUTE OF TECHNOLOGDate: ENIKEPADU, VIJAYAWADA

Signature of the HOD

section:	Sec B	RONIC SWITCHING SYSTEMS (R1641) Date: 10-6-2019		: 01 of 03
Revision No : 00 Prepa Tools: Black board, PPTs		Prepared By: K.Venkateswara Rao	Approved By : HOD	
No. of Periods	DOARD, PP 18	TOPIC	Date	Mode of Delivery
Dyste	oduced tel ms communica	OMMUNICATION SWITCHING SYSTE ecommunication switching systems and operation switching system and networks - Thyson of Telecommunications	eration of dif	
2.		Telephone Communication	4	
3.		of Switching System		
4.	and the same of th	Switching System		
5.				
6.		elecommunication Networks		
7.		VGER SWITCHING SYSTEM		
8.	Signalin			
9.	THE REAL PROPERTY OF THE PROPERTY OF THE PARTY OF THE PAR	step switching system	From: _	
	A SECTION AND ASSESSMENT	parameters	10/06/19	
10.	The second secon	of 100 line exchange	_ 10/00/17	
11.		with Uni selectors and Two motion selectors	To:	
12.		BARSWITCHING	26/06/19	Lecture
13.	Principle	es of Common Control	20/00/19	interspersed with discussion
14.	Touch T	one Dial Telephone		with discussion
15.	Principle	s of Crossbar Switching		
16.	Crossbar	Switch Configurations		
17.	Cross po	int Technology		
18.	Crossbar	Exchange Organization		
19.	Tutorial.	g- t-g-maxion -		
B1: Telec	ted the knowitching a communication of the communic	vision Switching owledge of different Time Division Space So and Combination Switching ation switching system and networks		
20.		ne Division Space Switching		T
21.	Generalis	ne Division Time Switching ed time division Space switch	From:	Lecture
22.	Basic Tin operation	ne division time switching: modes of	16/07/19	interspersed with discussions
23.	simple pr	보다면 하는 사람들은 사람들은 아니는	To:	
24.	Time Mu	tiplexed Space Switching	03/00/40	
25.	Time Mul	tiplexed Time Switching	03/08/19	

26.	Combination Switching	
27.	Time Space (TS) Switching	
28.	Space-time (ST) Switching	
29.	Three-Stage Combination Switching	
30.	n- Stage Combination Switching	
31.	Tutorial	

## UNIT - II ELECTRONIC SPACE DIVISION SWITCHING

CO2:: Obtained the knowledge of different electronic Space Division switching systems.

TB1: Telecommunication switching system and networks - Thyagarajan Viswanath, PHI 2000.

No. of Periods	TOPIC	DATE	Mode of Delivery
32.	Stored Program Control		Denvery
33.	Centralized SPC	From:	, i
34.	Distributed SPC	27/06/19 To: 15/07/19	Lecture interspersed with discussions
35.	Software Architecture		
36.	Application Software, Enhanced Services		
37.	Two-Stage Networks		
. 38.	Three-Stage Networks, n- Stage Networks.		180.4
39.	Tutorial		

### UNIT -I V TELEPHONE NETWORKS

CO4:: Analyzed the performance of telecommunication network and implement the signaling technique In communication networks

TB3: Advanced Electronic Communications systems - Wayne Tomasi, PHI 2004

40.	Subscriber Loop System	1111 20	04.
41.	Switching Hierarchy and Routing	+	
42.	Transmission Plan, Transmission Systems		
43.	Numbering Plan and Charging Plan		
44.	Numbering Plan and Charging Plan	From:	T 4
45.	In-channel Signaling, Common Channel Signaling	12/08/19	Lecture
46.	CCITT Signaling System no.6	12/08/19	with discussions
47.	CCITT Signaling System no.7	To:	
48.	Statistical Multiplexing		
49.	Local- Area and Wide- Area Networks	30/08/19	
50.	Broad band Networks,		
51.	Large scale networks		
52.	Large-scale Networks		

## UNIT - VI INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

CO6: Obtained the knowledge of network architecture and its protocols and Introduced ISDN and BISDN services in existing data networks

TB1:: Telecommunication switching system and networks - Thyagarajan Visw

TOPIC	DATE	Mode of
Introduction and Motivation	The state of the s	Delivery
New Services		
ISDN Network and Protocol architecture		
Transmission Channels		
User- Network Interfaces		Lecture interspersed with discussions
Signaling, Numbering and Addressing		
Service Characterization		
Interworking	To:	
ISDN Standards		
Expert Systems in ISDN	6/10/19	
Broadband ISDN		
Voice Data Integration		
Tutorial		
	Introduction and Motivation New Services ISDN Network and Protocol architecture Transmission Channels User- Network Interfaces Signaling, Numbering and Addressing Service Characterization Interworking ISDN Standards Expert Systems in ISDN Broadband ISDN Voice Data Integration	Introduction and Motivation  New Services  ISDN Network and Protocol architecture  Transmission Channels  User- Network Interfaces  Signaling, Numbering and Addressing  Service Characterization  Interworking  ISDN Standards  Expert Systems in ISDN  Broadband ISDN  Voice Data Integration

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TB2: Telecommunications Switching, Traffic and Networks- J. E. Flood, 2006, Pearson

67	Single- Stage Networks	The Victorian	
68	Grading, Link Systems		
69	Grades of service of link systems		
70	Application of Graph Theory to link Systems	-	- Application of the second
71	Use of Expansion	From	
72	Call Packing		Lecture
73	Rearrange-able Networks	2/09/19	interspersed with discussion
74	Strict- Sense non-blocking Networks		With discussion
75	Sectionalized Switching Networks	To:	
76	Tutorial	14/9/19	
77	The Unit of Traffic, Congestion, Traffic Measurement	14/2/13	
78	A Mathematical Model		
79	Lost-call Systems, Queuing Systems		

Signature of the Faculty Date: 111/19

ENIKEPADU, VIJAYAWADA

Signature of the HOD

Course Title: EM	BEDDED SYSTEMS (R164104D)	
Section : A	Date: Ulula	Page No: 01 of 03
Revision No: 00	Prepared By: MD.SHABEENA BEGUM	Approved By : HOD

	Revision No: 00   Prepared By: MD.SHABEENA BEGUM   Ap		proved By: HOD		
	Tools: Black board, PPTs, Moodle				
No. of	TOPIC	Date	Mode of Delivery		
Periods UNIT -I	INTRODUCTION				
		nhaddad arratam	1 1:00		
	Understand the building blocks of typical engy and memory types.	nbedded system	s and different memory		
1 <b>B</b> : Em	bedded Systems by Shibu k.v.  Embedded Systems Definition	17/6/19	<u> </u>		
2.	Embedded Systems Definition  Embedded vs General computing Systems,	17/6/19	4		
	History of Embedded Systems.	17/0/19			
3.	Classifications of Embedded Systems	18/6/19			
4.	major applications of Embedded Systems	19/6/19			
5.	The Typical Embedded System-Core of the	20/6/19			
and we have the constraints	Embedded Systems	\$2.5 a section of the			
6.	Memory	21/6/19	I active interest		
7.	Passive System and other system Components	22/6/19	Lecture interspersed with discussions		
8.	Sensors and Actuators	24/6/19			
9.	Embedded Firmware	1/7/19			
10.	Domain Specific Examples of an Embedded	. 2/7/19			
	Systems				
11.	Communication Interface	3,4/7/19			
12.	Characteristics and Quality attributes of an	5,8,8/7/19			
	Embedded Systems Application Specific Embedded System-Washing Machine				
13.	Tutorial	8/7/19			

UNIT -II EMBEDDED HARDWARE DESIGN
CO2: Student can understand the principles and the implementation of various communication devices.

### TB: Embedded Systems by Shibu k.v.

14.	Analog and Digital Electronic Components	9/7/19	
15.	I/O Types and Examples	11/7/19	
16.	Serial Communication Devices	12/7/19	,
17.	Parallel Device Ports	12/7/19	Lecture interspersed with discussions
18.	Wireless Devices	15/7/19	
19.	Timer and Counting devices	16/7/19	
20.	Real time Clock, Watchdog Timer	17,17/7/19	

Course Title: EMBEDDED ŞYŞTEMS (R164104D)				
Section : A	Date: 4 1 9	Page No: 02 of 03		
Revision No: 00	Prepared By: MD.SHABEENA BEGUM	Approved By: HOD		

Tools: Black board, PPTs

No. of	TOPIC	Date	Mode of Delivery
Periods			

#### UNIT -III EMBEDDED FIRMWARE DESIGN

CO3: Student can understand the concept of firmware design approaches, ISR concept and interrupt sources.

TB: Embedded Systems by Shibu k.v.

21.	Embedded Firmware design approaches	19/7/19	
22.	Embedded Firmware development languages	24/7/19	
23.	Concepts of C vs Embedded C, Compiler vs	25/7/19	Lecture interspersed
	Cross Compiler		with discussions
24.	ISR concept, Interrupt Sources	29/7/19	
25.	Interrupt Servicing mechanisms	30/7/19	
26.	DMA	31/7/19	
27.	Device Driver Programming	16,16/8/19	
28.	Embedded Firmware design approaches	17/8/19	

## UNIT –IV REAL TIME OPERATIONG SYSTEM AND HARDWARE SOFTWARE CO DESIGN

CO4: Student can understand the os basics and rtos and also the design of hardware and software interfaces

TB1: Embedded systems by Shibu k.v.

29.	Operating Systems Basics	21/8/19	
30.	Types of Operating Systems	22/8/19	
31.	Task, Process and Threads	24/8/19	
32.	Multiprocessing, Multitasking	26/8/19	
33.	Device Drivers	30/8/19	Lecture interspersed
34.	Task Scheduling	30/8/19	with discussions
35.	Threads processes scheduling	31/8/19	
36.	Task Communication	3/9/19	
37.	Task Synchronization, How to choose an	3/9/19	
	RTOS		
38.	Fundamental Issues in Hardware Software Co-	9/9/19	
	Design		
39.	Computational Models in Embedded design	11/9/19	
40.	Hardware Software Trade-Offs	11/9/19	
41.	Integration of Hardware and Firmware, ICE	16,17/9/19	

Course T	Title: EMBEDDED SYSTEMS (R164104D)		
Section	: A Date: 4 11 9		ge No: 03 of 03
	No: 00 Prepared By: MD.SHABEENA BEO	GUM Ap	proved By : HOD
	ick board, PPTs		
No. of	TOPIC	Date	Mode of Delivery
Periods			
UNIT -V	EMBEDDED SYSTEM DEVELOPMENT	Γ	
CO5: Stu	udent can understand the concept of IDE and Hard	lware debugging	
	BEDDED SYSTEMS ARCHITECTURE BY		
42.	The Integrated development Environment	18/9/19	
43.	Types of files generated on Cross-Compilation	18/9/19	
44.	Dissemblers / Decompiler	19/9/19	Lecture interspersed
45.	Embedded tools	19/9/19	with discussions
46.	Simulators, Emulators, Debugging	21/9/19	
47.	Target Hardware debugging	23,23/9/19	
48.	Boundary Scan, Embedded Software		
10	Development process and tools		
49.	TUTORIAL	24/9/19	
UNIT -V			G
	adent can understand the debugging tools and testi		
TB1: EN	IBEDDED SYSTEMS ARCHITECTURE BY	TAMMY NEO	RGAARD.
50.	The Main Software Utility Tool	25/9/19	
51.	CAD and the Hardware	25/9/19	
52.	Translation tools pre-processors	26/9/19	
53.	Debugging Tools	26/9/19	
54.	Quality assurance and Testing of the design	26/9/19	Lecture interspersed
55.	Testing on host machine	27,28/9/19	with discussions
56.	Simulators		

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Laboratory Tools TUTORIAL

56. 57.

58.

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28/9/19

	Course Title: E	MBEDDED SYSTEMS (R164104D)	
	Section : B	Date: 4 11 19	Page No: 01 of 03
1000	Revision No: 00	Prepared By : MD.SHABEENA BE	GUM Approved By: HOD

Tools: Bla	ck board, PPTs, Moodle		
No. of	TOPIC	Date	Mode of Delivery
Periods			
UNIT -I	INTRODUCTION		
CO1:	Understand the building blocks of typical en	mbedded systems	s and different memory
technolog	gy and memory types.		
TB: Em	bedded Systems by Shibu k.v.		
1.	Embedded Systems Definition	17/6/19	
2.	Embedded vs General computing Systems,	17/6/19	
	History of Embedded Systems.		
3.	Classifications of Embedded Systems	18/6/19	
4.	major applications of Embedded Systems	19/6/19	
5.	The Typical Embedded System-Core of the Embedded Systems	20/6/19	

т.	major apprecions of Embedded Systems	17/0/17	
5.	The Typical Embedded System-Core of the Embedded Systems	20/6/19	
6.	Memory	22/6/19	T
7.	Passive System and other system Components	22/6/19	Lecture interspersed with discussions
8.	Sensors and Actuators	.24/6/19	
9.	Embedded Firmware	25/6/19	
10.	Domain Specific Examples of an Embedded Systems	1,1/7/19	
11.	Communication Interface	2,2/7/19	
12.	Characteristics and Quality attributes of an	4/7/19	

2/8/19

### EMBEDDED HARDWARE DESIGN

Embedded Systems Application Specific Embedded System-Washing Machine Tutorial

CO2: Student can understand the principles and the implementation of various communication devices.

### TB: Embedded Systems by Shibu k.v.

13.

14.	Analog and Digital Electronic Components	5/7/19	
15.	I/O Types and Examples	6,6/7/19	
16.	Serial Communication Devices	8/7/19	
17.	Parallel Device Ports	9/7/19	Lecture interspersed
18.	Wireless Devices	11/7/19	with discussions
19.	Timer and Counting devices	15,16/7/19	
20.	Real time Clock, Watchdog Timer	16/7/19	

Course Title: EMBEDDED SYSTEMS (R164104D)					
Section : B	Date: 4	Page No: 02 of 03			
Revision No: 00	Prepared By: MD.SHABEENA BEGUM	Approved By: HOD			

Tools: Black board, PPTs				
No. of	TOPIC	Date	Mode of Delivery	
Periods			·	

#### UNIT -III EMBEDDED FIRMWARE DESIGN

CO3: Student can understand the concept of firmware design approaches, ISR concept and interrupt sources.

TB: Embedded Systems by Shibu k.v.

21.	Embedded Firmware design approaches	18/7/19	
22.	Embedded Firmware development languages 22,22/7/19		
23.	Concepts of C vs Embedded C, Compiler vs	23/7/19	Lecture interspersed
	Cross Compiler		with discussions
24.	ISR concept, Interrupt Sources	25/7/19	
25.	Interrupt Servicing mechanisms	27/7/19	
26.	DMA	27/7/19	
27.	Device Driver Programming	29/7/19	
28.	Embedded Firmware design approaches	30/7/19	

### UNIT -IV REAL TIME OPERATIONG SYSTEM AND HARDWARE SOFTWARE CO DESIGN

CO4: Student can understand the os basics and rtos and also the design of hardware and software interfaces

TB1: Embedded systems by Shibu k.v.

29.	Operating Systems Basics	17/8/19	
30.	Types of Operating Systems	19/8/19	
31.	Task, Process and Threads	19/8/19	
32.	Multiprocessing, Multitasking 20		
33.	Device Drivers	21/8/19	Lecture interspersed
34.	Task Scheduling	22/8/19	with discussions
35.	Threads processes scheduling	24/8/19	
36.	Task Communication	26/8/19	
37.	Task Synchronization, How to choose an RTOS	27/8/19	
38.	Fundamental Issues in Hardware Software Co- Design	28,31/8/19	
39.	Computational Models in Embedded design	3/9/19	
40.	Hardware Software Trade-Offs	9/9/19	
41.	Integration of Hardware and Firmware, ICE	12/9/19	

Section	: B Date: 4 11 9	Pa	<b>ge No</b> : 03 of 03
Revision	No: 00 Prepared By: MD.SHABEENA BEG	UM Ap	proved By : HOD
FOX 10 (8)	ack board, PPTs		
No. of	TOPIC	Date	Mode of Delivery
Periods			
UNIT -	V EMBEDDED SYSTEM DEVELOPMENT		
CO5: St	udent can understand the concept of IDE and Hardy	ware debugging	;.
TB: EM	IBEDDED SYSTEMS ARCHITECTURE BY T	AMMY NEO	RGAARD.
	DEDDED SISIEMS ARCHITECTURE DI 1	TATITUTE TIME	
		TRIVINIT IVEO	
42.	The Integrated development Environment	13/9/19	
42.	The Integrated development Environment	13/9/19	Lecture interspersed
42. 43.	The Integrated development Environment Types of files generated on Cross-Compilation	13/9/19 16/9/19	-
42. 43. 44.	The Integrated development Environment Types of files generated on Cross-Compilation Dissemblers / Decompiler	13/9/19 16/9/19 17/9/19	Lecture interspersed
42. 43. 44. 45.	The Integrated development Environment Types of files generated on Cross-Compilation Dissemblers / Decompiler Embedded tools	13/9/19 16/9/19 17/9/19 20/9/19	Lecture interspersed
42. 43. 44. 45. 46.	The Integrated development Environment Types of files generated on Cross-Compilation Dissemblers / Decompiler Embedded tools Simulators, Emulators, Debugging	13/9/19 16/9/19 17/9/19 20/9/19 21/9/19	Lecture interspersed
42. 43. 44. 45. 46. 47.	The Integrated development Environment Types of files generated on Cross-Compilation Dissemblers / Decompiler Embedded tools Simulators, Emulators, Debugging Target Hardware debugging	13/9/19 16/9/19 17/9/19 20/9/19 21/9/19	Lecture interspersed
42. 43. 44. 45. 46. 47.	The Integrated development Environment Types of files generated on Cross-Compilation Dissemblers / Decompiler Embedded tools Simulators, Emulators, Debugging Target Hardware debugging Boundary Scan, Embedded Software	13/9/19 16/9/19 17/9/19 20/9/19 21/9/19	Lecture interspersed

TB1: EMBEDDED SYSTI	EMS ARCHITECTURE	BY TAMMY NEORGAARD.

50.	The Main Software Utility Tool	23/9/19		
51.	CAD and the Hardware	24/9/19		
52.	Translation tools pre-processors	25/9/19		
53.	Debugging Tools	26/9/19		
54.	Quality assurance and Testing of the design	28/9/19	Lecture interspersed	
55.	Testing on host machine	28/9/19	with discussions	
56.	Simulators			
57.	Laboratory Tools			
58.	TUTORIAL			

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# TENTATIVE LESSON PLAN: R164104F NETWORK SECURITY AND CRYPTOGRAPHY

Course Title: NI Branch : ECE	-A Date: 10/06/19	Page No	: 01 of 03
Revision No : 0			d By : HOD
Tools: Black be			
No. of Periods	TOPIC	Date	Mode of Delivery
CO1: Understa	c Principles and the Basic Principles of Security Goals, Crypt aphy and Network Security, Behrouz A Forouza Hill."	tographic Attac in, Debdeep Mi	ks ikhopadhyay
1	Security Goals	10,11/6/19	
2	Cryptographic Attacks	12 /6/19	
3	Services and Mechanisms	13/6/19	
4	Mathematics of Cryptography.	14/6/19	
5	Security fundamentals	15/6/19	
6	Security requirements	18/6/19	T
7	Relation Between services and mechanisms	19/6/19	Lecture
8	Attacks on integrity	20/6/19	interspersed with
9	Attack on availability	24/6/19	discussions
10	Cryptography	25/6/19	discussions
11	Stereography	20,24/6/19	
12	Availability	26,28/6/19	
13	Security Goals	1,2,3/7/19	
14	tutorial	5,6/7/19	
	ndtheSymmetricEncryptionofMathematics of Symphy and Network Security, Behrouz A Forouza Hill."    Mathematics of Symmetric Key Cryptography		
16		9/7/19	Tastuma
	Introduction to Modern		Lecture
17	Introduction to Modern Symmetric Key Ciphers,	10/7/19	
17 18		10/7/19 11/7/19	interspersed with
	Symmetric Key Ciphers, Data Encryption		interspersed with
18	Symmetric Key Ciphers, Data Encryption Standard,	11/7/19	interspersed with
18 19 20 UNIT-III As CO3: Learn al T1:- Cryptogr	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption bout the Asymmetric Encryption of Mathematical aphy and Network Security, Behrouz A Forouza	11/7/19 12/7/19 15/7/19 s of Asymmetri	interspersed with discussions
18  19 20  UNIT-III As CO3: Learn al T1:- Cryptogr (3e) Mc Graw	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption bout the Asymmetric Encryption of Mathematics aphy and Network Security, Behrouz A Forouza Hill."	11/7/19 12/7/19 15/7/19 s of Asymmetri	interspersed with discussions
18 19 20 UNIT-III As CO3: Learn al T1:- Cryptogr	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption bout the Asymmetric Encryption of Mathematical aphy and Network Security, Behrouz A Forouza	11/7/19 12/7/19 15/7/19 s of Asymmetri an, Debdeep M	interspersed with discussions

24	Transposition ciphers	20/7/19	Lecture
25	Asymmetric Key Cryptography	22/7/19	interspersed
26	Stream and block ciphers	23/7/19	with
27	Combination ciphers	24,26/7/19	discussions
28	Digital Signature	30,31/7/19	
29	tutorial	2,5/8/19	
30	Key Management	7/8/19	

UNIT-IV Data Integrity, Digital Signature Schemes & Key Management

CO4: Gain knowledge about Data Integrity, Digital Signature Schemes& Key Management T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

(3e)	Mc	Graw	Hill."	

31	Message Integrity and MessageAuthentication	7,9/8/19	
32	tutorial	13/8/19	
33	Cryptographic Hash Functions	14/8/19	Lecture
34	Digital Signature	16/8/19	interspersed
35	Key Management	28/8/19	with
36	tutorial	30/8/19	discussions

#### **UNIT-V** Transistor Biasing and Thermal Stabilization

CO5: : Network Security-I

T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

(3e) Mc Graw Hill."

37	Security at application layer:	7,9/8/19	
38	Pre image resistance	13/8/19	
39	PGP and S/MIME	14/8/19	
40	Random oracle model	16/8/19	Lecture
41	Security at the Transport Layer	17/8/19	interspersed
42	Birthday problem	28/8/19	with discussions
43	Comparison process	30/8/19	discussions
44	SSL and TLS	4/9/19	
45	tutorial	6/9/19	

#### UNIT-VI Network Security-II

CO6: Understand the Security at the Network Layer: IPSec, System Security

T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

(3e) Mc Graw Hill."

46	Security at the Network Layer:	6,7/9/19	Lecture
47	IPSec	9,12/9/19	interspersed
48	System Security	13,16/9/19	with
49	tutorial	17/9/19	discussions

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### TENTATIVE LESSON PLAN: R164104F NETWORK SECURITY AND CRYPTOGRAPHY

Branch : ECE	-B Date: 10/06/19	Page No	: 01 of 03
Revision No :	00 Prepared By: D.RAVI TEJ		ed By : HOD
Tools: Black b			•
No. of Periods	No. of Periods TOPIC Date		Mode of Delivery
UNIT-I Bas			
CO1: Underst	and the Basic Principles of Security Goals, Cryp	tographic Atta	cks
	aphy and Network Security, Behrouz A Forouza	an, Debdeep M	ukhopadhyay
(3e) Mc Graw			
1	Security Goals	10,11/6/19	
2	Cryptographic Attacks	12 /6/19	
3	Services and Mechanisms	13/6/19	
4	Mathematics of Cryptography.	14/6/19	
5	Security fundamentals	15/6/19	
6	Security requirements	18/6/19	T
7	Relation Between services and mechanisms	19/6/19	Lecture
8	Attacks on integrity	20/6/19	interspersed with
9	Attack on availability	24/6/19	
10	Cryptography	25/6/19	discussions
11	Stereography	20,24/6/19	
12	Availability	26,28/6/19	
13	Security Goals	1,2,3/7/19	
14	tutorial	5,6/7/19	
UNIT-II Syr	nmetric Encryption		
	ndtheSymmetricEncryptionofMathematics of Sy	vmmetric Kev	Cryptography
T1:- Cryptogr	aphy and Network Security, Behrouz A Forouza	n, Debdeep M	ukhopadhyay
(3e) Mc Graw			1 00
15	Mathematics of Symmetric Key Cryptography	8/7/19	
16	Introduction to Modern	9/7/19	Lecture
10	introduction to Modern		Lecture
17	Symmetric Key Ciphers,	10/7/19	
17	Symmetric Key Ciphers,	10/7/19 11/7/19	
		10/7/19 11/7/19	interspersed with
17	Symmetric Key Ciphers, Data Encryption	V0.5-2-10.000.000.000.000	interspersed with
17 18	Symmetric Key Ciphers, Data Encryption Standard,	11/7/19 12/7/19	interspersed with
17 18 19 20	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard	11/7/19	interspersed with
17 18 19 20 <b>UNIT-III</b> As	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial  ymmetric Encryption	11/7/19 12/7/19 15/7/19	interspersed with discussions
17 18 19 20 UNIT-III As CO3: Learn al	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption out the Asymmetric Encryption of Mathematics	11/7/19 12/7/19 15/7/19 s of Asymmetri	interspersed with discussions
17 18 19 20 UNIT-III As CO3: Learn al	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption out the Asymmetric Encryption of Mathematics aphy and Network Security, Behrouz A Forouza	11/7/19 12/7/19 15/7/19 s of Asymmetri	interspersed with discussions
17 18 19 20 UNIT-III As CO3: Learn al T1:- Cryptogra	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption out the Asymmetric Encryption of Mathematics aphy and Network Security, Behrouz A Forouza Hill."	11/7/19 12/7/19 15/7/19 s of Asymmetri nn, Debdeep M	interspersed with discussions
17 18 19 20 UNIT-III As CO3: Learn al T1:- Cryptogra (3e) Mc Graw	Symmetric Key Ciphers,  Data Encryption Standard,  Advanced Encryption Standard tutorial symmetric Encryption out the Asymmetric Encryption of Mathematics aphy and Network Security, Behrouz A Forouza	11/7/19 12/7/19 15/7/19 s of Asymmetri	interspersed with discussions

24	Transposition ciphers	20/7/19	Lecture
25	Asymmetric Key Cryptography	22/7/19	interspersed
26	Stream and block ciphers	23/7/19	with
27	Combination ciphers	24,26/7/19	discussions
28	Digital Signature	30,31/7/19	
29	tutorial	2,5/8/19	
30	Key Management	7/8/19	

UNIT-IV Data Integrity, Digital Signature Schemes & Key Management

CO4: Gain knowledge about Data Integrity, Digital Signature Schemes Key Management T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

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•	30	TATE	Giaw	TILL	•

31	Message Integrity and MessageAuthentication	7,9/8/19	
32	tutorial	13/8/19	
33	Cryptographic Hash Functions	14/8/19	Lecture
34	Digital Signature	16/8/19	interspersed
35	Key Management	28/8/19	with
36	tutorial	30/8/19	discussions

UNIT-V Transistor Biasing and Thermal Stabilization

CO5: : Network Security-I

T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

(3e) M	c	Graw	Hill."	•

37	Security at application layer:	7,9/8/19	
38	Pre image resistance	13/8/19	
39	PGP and S/MIME	14/8/19	
40	Random oracle model	16/8/19	Lecture
41	Security at the Transport Layer	17/8/19	interspersed
42	Birthday problem	28/8/19	with
43	Comparison process	30/8/19	discussions
44	SSL and TLS	4/9/19	
45	tutorial	6/9/19	

UNIT-VI Network Security-II

CO6: Understand the Security at the Network Layer: IPSec, System Security

T1:- Cryptography and Network Security, Behrouz A Forouzan, Debdeep Mukhopadhyay,

(	(3e)	) Mc	Graw	Hill.	"

46	Security at the Network Layer:	6,7/9/19	Lecture
47	IPSec	9,12/9/19	interspersed
48	System Security	13,16/9/19	with
49	tutorial	17/9/19	discussions

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