



# KS INSTITUTE OF TECHNOLOGY BANGALORE

25

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Suma Santosh  
SUBJECT CODE/NAME :21EC32/DIGITAL SYSTEM DESIGN USING VERILOG  
SEMESTER/YEAR/SEC :III/II/B  
ACADEMIC YEAR : 2022-23

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (A)
1	Introduction to combinational logic. Definition of combinational logic	L	BB+P	1	1	31/10/22
2	Introduction to combinational logic. Definition of combinational logic	L	BB+P	1	2	02/11/22
3	Canonical forms	L	BB+P	1	3	03/11/22
4	Canonical forms	L	BB+P	1	4	04/10/22
5	Generation of switching equations from truth tables	L	BB+P	1	5	07/11/22
6	Generation of switching equations from truth tables	L	BB+P	1	6	08/11/22
7	Karnaugh maps- up to 4 variables	L	BB+P	1	7	09/11/22
8	Karnaugh maps- up to 4 variables	L	BB+P	1	8	10/11/22
9	Quine-McCluskey Minimization Technique	L	BB+P	1	9	12/11/22
10	Quine-McCluskey Minimization Technique	L	BB+P	1	10	14/11/22
11	Quine-McCluskey Minimization Technique	L	BB+P	1	11	15/11/22
12	Quine-McCluskey using Don't Care Terms	L	BB+P	1	12	16/11/22
13	Quine-McCluskey using Don't Care Terms	L	BB+P	1	13	17/11/22

**MODULE 4: Introduction to Verilog**



14	Structure of Verilog module	L	BB+P	1	14	18/11/22
15	Structure of Verilog module	L	BB+P	1	15	21/11/22
16	Operators, Data Types	L	BB+P	1	16	22/11/22
17	Operators, Data Types	L	BB+P	1	17	23/11/22
18	Styles of Description	L	BB+P	1	18	24/11/22
19	Verilog Data flow description	L	BB+P	1	19	25/11/22
20	Verilog Data flow description	L	BB+P	1	20	26/11/22
21	Highlights of Data flow description	L	BB+P	1	21	1/12/22
22	Highlights of Data flow description	L	BB+P	1	22	2/12/22
23	Highlights of Data flow description	L	BB+P	1	23	5/12/22
24	Structure of Data flow description	L	BB+P	1	24	6/12/22
25	Structure of Data flow description	L	BB+P	1	25	7/12/22
26	Structure of Data flow description	L	BB+P	1	26	8/12/22
<b>MODULE 2: Logic Design with MSI Components and Programmable Logic Devices</b>						
27	Binary Adders and Subtractors	L	BB+P	1	27	9/12/22
28	Binary Adders and Subtractors	L	BB+P	1	28	10/12/22
29	Comparators	L	BB+P	1	29	12/12/22
30	Comparators	L	BB+P	1	30	13/12/22
31	Decoders	L	BB+P	1	31	14/12/22
32	Decoders	L	BB+P	1	32	15/12/22
33	Decoders	L	BB+P	1	33	16/12/22
34	Encoders, Multiplexers,	L	BB+P	1	34	19/12/22
35	Encoders, Multiplexers,	L	BB+P	1	35	20/12/22
36	Encoders, Multiplexers,	L	BB+P	1	36	21/12/22
37	Programmable Logic Devices (PLDs)	L	BB+P	1	37	22/12/22
38	Programmable Logic Devices (PLDs)	L	BB+P	1	38	23/12/22
39	Programmable Logic Devices (PLDs)	L	BB+P	1	39	24/12/22
<b>MODULE 3: Flip-Flops and its Applications</b>						
40	The Master-Slave Flip-flops (Pulse-Triggered flip-flops): SR flip-flops,	L	BB+P	1	40	26/12/22
41	The Master-Slave Flip-flops (Pulse-	L	BB+P	1	41	27/12/22



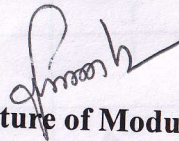
Triggered flip-flops): JK flip-flops,						
42	Characteristic equations	L	BB+P	1	42	28/12/22
43	Registers	L	BB+P	1	43	29/12/22
44	Binary Ripple Counters	L	BB+P	1	44	30/12/22
45	Binary Ripple Counters	L	BB+P	1	45	31/12/22
46	Synchronous Binary Counters	L	BB+P	1	46	5/1/23
47	. Synchronous Binary Counters	L	BB+P	1	47	6/1/23
48	Counters based on Shift Registers	L	BB+P	1	48	9/1/23
49	Counters based on Shift Registers	L	BB+P	1	49	10/1/23
50	Design of Synchronous mod-n Counter using clocked T, JK, D and SR flip-flops.	L	BB+P	1	50	11/1/23
51	Design of Synchronous mod-n Counter using clocked T, JK, D and SR flip-flops.	L	BB+P	1	51	12/1/23
52	Design of Synchronous mod-n Counter using clocked T, JK, D and SR flip-flops.	L	BB+P	1	52	13/1/23
<b>MODULE 5: Verilog Behavioral description</b>						
53	Structure	L	BB+P	1	53	16/1/23
54	Variable Assignment Statement	L	BB+P	1	54	17/1/23
55	Variable Assignment Statement	L	BB+P	1	55	18/1/23
56	Sequential Statements, Loop Statements	L	BB+P	1	56	19/1/23
57	Verilog Behavioral Description of Multiplexers	L	BB+P	1	57	20/1/23
58	Verilog Structural description	L	BB+P	1	58	23/1/23
59	Highlights of Structural description	L	BB+P	1	59	24/1/23
60	Highlights of Structural description	L	BB+P	1	60	25/1/23
61	Organization of structural description	L	BB+P	1	61	27/1/23
62	Structural description of ripple carry adder	L	BB+P	1	62	28/1/23
63	Structural description of ripple carry adder	L	BB+P	1	63	30/1/23
64	Structural description of ripple carry adder	L	BB+P	1	64	31/1/23
65	Structural description of ripple carry adder	L	BB+P	1	65	1/2/23



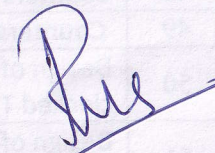
66	Revision	L	BB+P	1	66	7/2/23
67	Revision	L	BB+P	1	67	11/2/23



Signature of Course Incharge



Signature of Module Coordinator



Signature of HOD





# KS INSTITUTE OF TECHNOLOGY BANGALORE

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : S.CHRISTO JAIN

SUBJECT CODE/NAME :21EC33/ Basic Signal Processing

SEMESTER/YEAR/SEC : III/ II/B

ACADEMIC YEAR : 2022-23

SL No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>Module 1: Vector Spaces</b>						
1	introduction Vector spaces.	L	BB+P	1	1	31/10/22
2	Introduction Vector spaces.	L	BB+P	1	2	2/11/22
3	Numerical	L	BB+P	1	3	3/11/22
4	Null subspaces	L	BB+P	1	4	4/11/22
5	Numerical	L	BB+P	1	5	7/11/22
6	Rank and Row reduced form,	L	BB+P	1	6	8/11/22
7	Independence	L	BB+P	1	7	09/11/22
8	Basis and dimension, Dimensions of the four subspaces,	L	BB+P	1	8	10/11/22
9	Rank-Nullity Theorem, Linear Transformations	L	BB+P	1	9	12/11/22
10	Orthogonal Vectors and Subspaces	L	BB+P	1	10	14/11/22
11	Projections and Least squares	L	BB+P	1	11	15/11/22
12	Orthogonal Bases and Gram-Schmidt Orthogonalization procedure	L	BB+P	1	12	16/11/22

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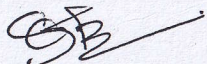


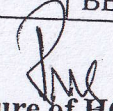
Module 2: Eigen Values and Vectors						
13	Review of Eigen values	L	BB+P	1	13	17/11/22
14	Numerical	L	BB+P	1	14	18/11/22
15	Diagonalization of a Matrix, Special	L	BB+P	1	15	21/11/22
16	Numerical	L	BB+P	1	16	22/11/22
17	Matrices (Positive Definite, Symmetric) and their properties	L	BB+P	1	17	23/11/22
18	Numerical	L	BB+P	1	18	24/12/22
19	Singular Value Decomposition	L	BB+P	1	19	25/12/22
Module 3: Introduction and Classification of signals						
20	Definition of signal and systems with examples,	L	BB+P	1	20	1/12/22
21	Numerical	L	BB+P	1	21	2/12/22
22	Elementary signals	L	BB+P	1	22	5/12/22
23	Numerical	L	BB+P	1	23	6/12/22
24	Functions: Exponential, sinusoidal	L	BB+P	1	24	7/12/22
25	step, impulse and ramp functions	L	BB+P	1	25	12/12/22
26	Basic Operations on signals: Amplitude scaling, addition,	L	BB+P	1	26	13/12/22
27	multiplication, time scaling, time shift	L	BB+P	1	27	14/12/22
28	Time reversal. Expression of triangular,	L	BB+P	1	28	15/12/22
29	rectangular and other waveforms in terms of elementary signals	L	BB+P	1	29	16/12/22
30	System Classification and properties: Linear-nonlinear, Time variant - invariant, causal-noncausal,	L	BB+P	1	30	19/12/22
31	Static-dynamic, stable-unstable, invertible	L	BB+P	1	31	20/12/22



### Module =4: Time Domain Representation of LTI System

32	Impulse response, convolution sum	L	BB+P	1	32	21/12/22
33	Computation of convolution sum using graphical method for unit step and unit step,	L	BB+P	1	33	22/12/22
34	Computation of convolution sum using graphical method for unit step and unit step,	L	BB+P	1	34	23/12/22
35	Numerical					
36	unit step and exponential,	L	BB+P	1	35	24/12/22
37	exponential and exponential	L	BB+P	1	36	26/12/22
38	unit step and rectangular	L	BB+P	1	37	27/12/22
39	Rectangular and rectangular.	L	BB+P	1	38	28/12/22
40	LTI system Properties in terms of impulse response: System interconnection,	L	BB+P	1	39	29/12/22
41	Memory less, Causal,	L	BB+P	1	40	30/12/22
42	Stable, Invertible and Deconvolution and step response	L	BB+P	1	41	31/12/22
43	Stable, Invertible and Deconvolution and step response	L	BB+P	1	42	5/1/23
					43	6/1/23
<b>Module 5: The Z-Transforms:</b>						
44	Z transform,	L	BB+P	1	44	6/1/23
45	properties of the region of convergence	L	BB+P	1	45	9/1/23
46	properties of the Z-transform	L	BB+P	1	46	10/1/23
47	Numerical	L	BB+P	1	47	11/1/23
48	Inverse Z-transform by partial fraction	L	BB+P	1	48	12/1/23
49	Causality and stability	L	BB+P	1	49	13/1/23
50	Transform analysis of LTI systems.	L	BB+P	1	50	16/1/23
51	Transform analysis of LTI systems.	L	BB+P	1	51	17/1/23
52	Numerical	L	BB+P	1	52	18/1/23

  
Signature of Course In charge

  
Signature of HOD

  
Principal





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**K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**LESSON PLAN 2022-23 ODD SEMESTER**

**COURSE INCHARGE : Dr. Chanda. V. Reddy**

**COURSE CODE/TITLE : 21EC34 / ANALOG ELECTRONIC CIRCUITS**

**YEAR/ SEMESTER/SECTION : II / III/ A**

**BRANCH : ECE**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>Module 1:</b>						
1	<b>BJT Biasing:</b> Biasing in BJT amplifier circuits: The Classical Discrete circuit bias (Voltage-divider bias),	L+D	BB / PPT	1	1	31/10/2022
2	The Classical Discrete circuit bias (Voltage-divider bias), problems	L+D	BB / PPT	2	3	2/11/2022, 3/11/2022
3	Biasing using a collector to base feedback resistor.	L+D	BB / PPT	2	5	4/11/2022, 7/11/2022
4	<b>Small signal operation and Models:</b> Collector current and transconductance,	L+D	BB / PPT	1	6	8/11/2022
5	Base current and input resistance,	L+D	BB / PPT	1	7	9/11/2022
6	Emitter current and input resistance,	L+D	BB / PPT	1	8	10/11/2022



7	voltage gain, Separating the signal and the DC quantities,	L+D	BB / PPT	1	10	12/11/2022
8	The hybrid $\Pi$ model,	L+D	BB / PPT	1	11	14/11/2022
9	The T model.	L+D	BB / PPT	1	12	15/11/2022,
10	<b>MOSFETs:</b> Biasing in MOS amplifier circuits: Fixing VGS,	L+D	BB / PPT	1	13	16/11/2022,
11	Fixing VG, Drain to Gate feedback resistor.	L+D	BB / PPT	1	14	17/11/2022
12	Small signal operation and modeling: The DC bias point, signal current in drain, voltage gain,	L+D	BB / PPT	1	15	18/11/2022
13	small signal equivalent circuit models, transconductance, The T equivalent circuit model.	L+D	BB / PPT	1	16	21/11/2022
<b>Module 2:</b>						
14	<b>MOSFET Amplifier configuration:</b> Basic configurations, characterizing amplifiers,	L+D	BB / PPT	1	17	22/11/2022
15	CS amplifier with and without source resistance RS,	L+D	BB / PPT	1	18	23/11/2022
16	Source follower.	L+D	BB / PPT	1	19	24/11/2022
17	<b>MOSFET internal capacitances and High frequency model:</b> The gate capacitive effect, Junction capacitances	L+D	BB / PPT	1	20	25/11/2022
18	High frequency model.	L+D	BB / PPT	1	21	26/11/2022
19	<b>Frequency response of the CS amplifier:</b> The three frequency bands,	L+D	BB / PPT	1	22	1/12/2022
20	high frequency response,	L+D	BB / PPT	2	24	2/12/2022, 5/12/2022
21	Low frequency response.	L+D	BB / PPT	2	26	6/12/2022, 7/12/2022,
22	<b>Oscillators:</b> FET based Phase shift oscillator,	L+D	BB / PPT	1	27	12/12/2022,
23	LC and Crystal Oscillators (no derivation)	L+D	BB / PPT	2	29	13/12/2022, 14/12/2022



Module 3:						
23	<b>Feedback Amplifier:</b> General feedback structure, Properties of negative feedback, The Four Basic Feedback Topologies,	L+D	BB / PPT	2	29	15/12/2022
24	The series-shunt (Qualitative Analysis).	L+D	BB / PPT	1	30	16/12/2022
25	series-series (Qualitative Analysis).	L+D	BB / PPT	1	31	19/12/2022
26	shunt-shunt (Qualitative Analysis).	L+D	BB / PPT	1	32	20/12/2022
27	shunt-series amplifiers (Qualitative Analysis).	L+D	BB / PPT	1	33	21/12/2022
28	<b>Output Stages and Power Amplifiers:</b> Introduction, Classification of output stages, Class A output stage	L+D	BB / PPT	1	34	22/12/2022
29	Class B output stage: Transfer Characteristics, Power Dissipation, Power Conversion efficiency,	L+D	BB / PPT	2	36	23/12/2022, 24/12/2022
30	Class AB output stage,	L+D	BB / PPT	1	37	26/12/2022
31	Class C tuned Amplifier	L+D	BB / PPT	1	38	27/12/2022
Module 4:						
32	<b>Op-Amp Circuits:</b> Op-amp DC and AC Amplifiers	L+D	BB / PPT	1	39	28/12/2022
33	DAC - Weighted resistor and R-2R ladder	L+D	BB / PPT	1	40	29/12/2022
34	ADC Successive approximation type,	L+D	BB / PPT	1	41	30/12/2022
35	Small Signal half wave rectifier, Absolute value output circuit,	L+D	BB / PPT	1	42	31/12/2022



36	Active Filters: First low-pass Butterworth filters,	L+D	BB / PPT	1	43	5/1/2023
37	second order low-pass Butterworth filters	L+D	BB / PPT	1	44	6/1/2023
38	First order low-pass Butterworth filters,	L+D	BB / PPT	1	45	9/1/2023
39	second order high-pass Butterworth filters,	L+D	BB / PPT	1	46	10/1/2023
40	Band-pass filters,	L+D	BB / PPT	1	47	11/1/2023
41	Band reject filters.	L+D	BB / PPT	1	48	12/1/2023
42	<b>555 Timer and its applications:</b> Monostable Multivibrators.	L+D	BB / PPT	1	49	13/1/2023
43	Astable Multivibrators.	L+D	BB / PPT	1	50	16/1/2023
<b>Module 5:</b>						
44	<b>Overview of Power Electronic Systems:</b> Power Electronic Systems,	L+D	BB / PPT	1	51	17/1/2023
45	Power Electronic Converters and Applications.	L+D	BB / PPT	2	53	18/1/2023, 19/1/2023
46	<b>Thyristors:</b> Static Anode-Cathode characteristics and Gate characteristics of SCR,	L+D	BB / PPT	1	54	20 /1/2023,
47	Static Gate characteristics of SCR,	L+D	BB / PPT	1	55	23/1/2023
48	Turn-ON methods,	L+D	BB / PPT	1	56	24 /1/2023
49	Turn-off Mechanism	L+D	BB / PPT	1	57	25 /1/2023
50	Turn-OFF Methods: Natural and Forced Commutation – Class A without design consideration.	L+D	BB / PPT	1	58	27 /1/2023

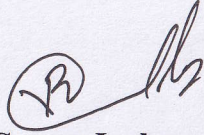


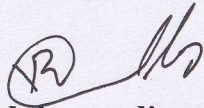
51	<b>Gate Trigger Circuit:</b> Resistance Firing Circuit	L+D	BB / PPT	1	59	28 /1/2023
52	Resistance capacitance firing circuit,	L+D	BB / PPT	1	60	30 /1/2023
53	Unijunction Transistor: Basic operation and UJT Firing Circuit.	L+D	BB / PPT	1	61	31 /1/2023
54	Revision	D	BB	1	62	1/2/2023

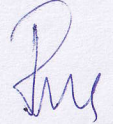
**Text Books:**

1. Microelectronic Circuits, Theory and Applications, Adel S Sedra, Kenneth C Smith, 6th Edition, Oxford, 2015. ISBN:978-0-19-808913-1
2. Op-Amps and Linear Integrated Circuits, Ramakant A Gayakwad, 4th Edition, Pearson Education, 2018. ISBN: 978-93-325-4991-3
3. Electronic Principles, Albert Malvino, David J Bates, 7th Edition, McGraw Hill Education (India) Private Limited, 2017, ISBN:978-0-07-063424-4

- Details of the teaching aids:** 1. BB – Black Board  
2. PPT Power Point Presentation

  
Course Incharge

  
Module coordinator

  
**HOD ECE**  
**HEAD OF THE DEPARTMENT**  
Dept. of Electronics & Communication Engg  
K.S. Institute of Technology  
Bengaluru - 560 109





# KS INSTITUTE OF TECHNOLOGY BANGALORE

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Mrs. Vishalini Divakar

SUBJECT CODE/NAME : 18EC51/TECHNOLOGICAL INNOVATION MANAGEMENT AND ENTREPRENEURSHIP

SEMESTER/YEAR/SEC : V/ III/A

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date A Section
<b>MODULE 1: Management &amp; Planning</b>						
1	<b>Management:</b> Nature and Functions of Management – Importance, Definition	L+D	BB	1	1	11.10.2022
2	Management Functions, Levels of Management	L+D	BB	1	2	12.10.2022
3	Roles of Manager, Managerial Skills	L+ D	BB	1	3	13.10.2022
4	Management & Administration, Management as a Science, Art & Profession	L+D	BB	1	4	14.10.2022
5	ProjectCase Studies	L+D	BB	1	5	15.10.2022
6	Planning-Nature, Importance	L+D	BB	1	6	18.10.2022
7	Types of Plans, Steps and Limitations of Planning	L+D	BB	1	7	19.10.2022
8	Decision Making – Meaning, Types	L+D	BB	1	8	20.10.2022
9	Steps in Decision Making	L+D	BB	1	9	21.10.2022
10	ProjectCase Studies	L+D	BB	1	10	25.10.2022
<b>MODULE 2: Organizing and Staffing: Organization, Directing and Controlling</b>						
11	Meaning, Characteristics, Process of Organizing, Principles of Organizing, Span of Management (meaning and importance only),	L+ D	BB	1	11	27.10.2022



12	Departmentalization, Committees–Meaning, Types of Committees, Centralization Vs Decentralization of Authority and Responsibility	L+D	BB	1	12	28.10.2022
13	Staffing-Need and Importance, Recruitment and Selection Process, Directing and Controlling: Meaning and Requirements of Effective Direction, Giving Orders	L+D	BB	1	13	29.10.2022
14	Motivation-Nature of Motivation, Motivation Theories (Maslow’s Need-Hierarchy Theory and Herzberg’s Two Factor Theory);	L+D	BB	1	14	2.11.2022
15	Communication – Meaning, Importance and Purposes of Communication; Leadership-, Behavioural Approach of Leadership; Coordination-Meaning	L+D	BB	1	15	3.11.2022
16	Types, Techniques of Coordination; Controlling – Meaning, Need for Control System, Benefits of Control,	L+D	BB	1	16	4.11.2022
17	Essentials of Effective Control System, Steps in Control Process	L+D	BB	1	17	8.11.2022
18	Project + Case studies	L+D	BB	1	18	9.11.2022
<b>Module 3: Social Responsibilities of Business, Entrepreneurship</b>						
19	<b>Social Responsibilities of Business:</b> Meaning of Social Responsibility, Social Responsibilities of Business towards Different Groups	L+D	BB	1	19	12.11.2022
20	<b>Internals-I</b>			1	20	14.11.2022
21	Responsibilities of Business towards Different Groups , Social Audit	L+D	BB	1	21	18.11.2022
22	Business Ethics and Corporate Governance	L+D	BB	1	22	22.11.2022
23	<b>Entrepreneurship:</b> Definition of Entrepreneur, Importance of Entrepreneurship, concepts of Entrepreneurship	L+D	BB	1	23	23.11.2022
24	Characteristics of successful Entrepreneur	L+D	BB	1	24	24.11.2022
25	Classification of Entrepreneurs, Myths of Entrepreneurship	L+D	BB	1	25	25.11.2022
26	Entrepreneurial Development models, Entrepreneurial development cycle	L+D	BB	1	26	26.11.2022
27	Problems faced by Entrepreneurs and capacity building for Entrepreneurship	L+D	BB	1	27	29.11.2022



28	Project+ Case studies	L+D	BB	1	28	30.11.2022
<b>Module 4: Family Business, Idea Generation and Feasibility Analysis</b>						
29	Meaning, designing, analyzing and improvising; Business Plan – Meaning, Scope and Need	L+D	BB	1	29	1.12.2022
30	Financial, Marketing, Human Resource and Production/Service Plan; Business plan Formats	L+D	BB	1	30	2.12.2022
31	Project report preparation and presentation, Why some Business Plan fails?	L+D	BB	1	31	6.12.2022
32	Financing and How to start a Business? Financial opportunity identification; Banking sources	L+D	BB	1	32	7.12.2022
33	Nonbanking Institutions and Agencies; Venture Capital – Meaning and Role in Entrepreneurship	L+D	BB	1	33	8.12.2022
34	Government Schemes for funding business; Pre launch, Launch and Post launch requirements;	L+D	BB	1	34	9.12.2022
35	Procedure for getting License and Registration; Challenges and Difficulties in Starting an Enterprise	L+D	BB	1	35	10/12/2022
36	Project Design and Network Analysis: Introduction, Importance of Network Analysis,	L+D	BB	1	36	13/12/2022
37	Network Techniques, Need for Network Techniques	L+D	BB	1	37	14/12/2022
38	Origin of PERT and CPM, Network,	L+D	BB	1	38	15/12/2022
39	Steps in PERT CPM, Advantages, Limitations and Differences	L+D	BB	1	39	16/12/2022
40	Internals-II	L+D	BB	1	40	19/12/2022
<b>Module 5: Business model, Financing and How to start a Business?</b>						
41	Project+ Case studies	L+D	BB	1	41	22/12/2022
42	Business model–Meaning, designing, analyzing and improvising	L+D	BB	1	42	23/12/2022
43	Business Plan – Meaning, Scope and Need; Financial, Marketing	L+D	BB	1	43	24/12/2022
44	Human Resource and Production/Service Plan; Business plan Formats	L+D	BB	1	44	27/12/2022
45	Human Resource and Production/Service Plan; Business	L+D	BB	1	45	28/12/2022



	plan Formats					
46	Project report preparation and presentation;	L+D	BB	1	46	29/12/2022
47	Project report preparation and presentation;	L+D	BB	1	47	30/12/2022
48	Why some Business Plan fails?	L+D	BB	1	48	3.1.2023
49	Financing and How to start a Business? Financial opportunity identification	L+D	BB	1	49	4.1.2023
50	Banking sources	L+D	BB	1	50	5.1.2023
51	Nonbanking Institutions and Agencies	L+D	BB	1	51	6.1.2023
52	Venture Capital – Meaning and Role in Entrepreneurship; Government	L+D	BB	1	52	10.1.2023
53	Schemes for funding business; Pre launch, Launch and Post launch requirements	L+D	BB	1	53	11.1.2023
54	Schemes for funding business; Pre launch, Launch and Post launch requirements	L+D	BB	1	54	12.1.2023
55	Procedure for getting License and Registration	L+D	BB	1	55	13.1.2023
56	Challenges and Difficulties in Starting an Enterprise	L+D	BB	1	56	17.1.2023
57	Challenges and Difficulties in Starting an Enterprise	L+D	BB	1	57	17.1.2023
58	Internals-III			1	58	18.1.2023
59	University Question paper review	L+D	BB	1	59	27.1.2023

*NOD*

Course In charge

*PC*

Module Coordinator

*P. S. S.*

HOD

*S. Kumar. G.*  
PRINCIPAL





(13)

**K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**COURSE PLAN 2022-23 ODD SEMESTER**

**COURSE INCHARGE : V.SANGEETHA**

**COURSE CODE/TITLE : 18EC52/ DIGITAL SIGNAL PROCESSING**

**YEAR/ SEMESTER/SECTION : III/VI/A**

**BRANCH : ECE**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE 1: Discrete Fourier Transforms (DFT)</b>						
1	Discrete Fourier Transforms (DFT): Frequency domain sampling and reconstruction of discrete time signals	L+D	BB	1	1	10.10.2021
2	DFT as a linear transformation	L+D	BB	1	2	11.10.2021
3	DFT and its relationship with other transforms	L+D	BB	1	3	12.10.2021
4	Properties of DFT-Linearity, Periodicity	L+D	BB	1	4	13.10.2021
5	Properties of DFT-Symmetry	L+D	BB	1	5	15.10.2021
6	Multiplication of two DFTs- the circular convolution	L+D	BB	1	6	17.10.2021
7	Multiplication of two DFTs- the circular convolution	L+D	BB	1	7	18.10.2021
8	Additional DFT Properties-Circular Time, frequency shift problems	L+D	BB	1	8	19.10.2021
9	Circular convolution in time, Parseval's Theorem	L+D	BB	1	9	20.10.2021
10	Problems on different properties	L+PS	BB	1	10	27.10.2021



<b>MODULE 2: Linear Filtering methods based on the DFT</b>						
11	Use of DFT in linear filtering	L+D	BB	1	11	31.10.2021
12	Filtering of long data sequences	L+D	BB	1	12	02.11.2021
13	Overlap-save problems	L+D	BB	1	13	03.11.2021
14	Internal Assessment –I			1	14	07.11.2021
15	Overlap-add method problems	L+D	BB	1	15	10.11.2021
16	Fast-Fourier-Transform (FFT) algorithms:	L+D	BB	1	16	12.11.2021
17	Direct computation of DFT, need for efficient computation of the DFT (FFT algorithms)			1	17	14.11.2021
18	Radix-2 FFT algorithm for the computation of DFT and IDFT–, decimation-in-time and decimation-in-frequency algorithms	L+D	BB	1	18	15.11.2021
19	Problems on DIT FFT	L+PS	BB	1	19	16.11.2021
20	Problems on DIF FFT	L+PS	BB	1	20	17.11.2021
21	Problems on DIT,DIF FFT	L+PS	BB	1	21	21.11.2021
<b>MODULE 3: Design of FIR Filters</b>						
22	Structure for FIR Systems	L+AV	LCD	1	22	22.11.2021
23	Direct form, Linear Phase	L+D	BB	1	23	23.11.2021
24	Lattice structure	L+AV	LCD	1	24	24.11.2021
25	FIR filter design: Introduction to FIR filters	L+D	BB	1	25	26.11.2021
26	design of FIR filters using - Rectangular	L+D	BB	1	26	28.11.2022
27	Hamming, Hanning and Bartlett windows	L+D	BB	1	27	29.11.2022
28	Hamming, Hanning and Bartlett windows	L+D	BB	1	28	30.11.2022
29	Hamming, Hanning and Bartlett windows	L+D	BB	1	29	01.12.2022
30	Problems on Hamming window	L+PS	BB	1	30	05.12.2022
<b>MODULE 4: IIR Filter Design</b>						
31	Structure for IIR Systems: Direct form, Parallel form structures	L+D	BB	1	31	06.12.2022
32	Cascade form structure	L+D	BB	1	32	07.12.2022



33	IIR filter design: Characteristics of commonly used analog filter – Butterworth and Chebyshev filters	L+D	BB	1	33	08.12.2022
34	Analog to analog frequency transformations	L+D	BB	1	34	10.12.2022
35	Internal Assessment –II			1	35	12.12.2022
36	Design of IIR Filters from analog filter using Butterworth filter	L+D	BB	1	36	15.12.2022
37	Problems on Impulse invariance	L+PS	BB	1	37	19.12.2022
38	Problems on Impulse invariance	L+PS	BB	1	38	20.12.2022
39	Bilinear transformation	L+D	BB	1	39	21.12.2022
40	Problems on Bilinear transformation	L+PS	BB	1	40	23.12.2022
41	Problems on Bilinear transformation	L+PS	BB	1	41	24.12.2022
42	Problems on Bilinear transformation	L+PS	BB	1	42	26.12.2022
43	Problems on IIR Filter Structure	L+PS	BB	1	43	27.12.2022
<b>MODULE 5: Digital Signal Processors</b>						
44	DSP Architecture	L+D	BB	1	44	28.12.2022
45	DSP Hardware Units	L+D	BB	1	45	29.12.2022
46	Fixed point format, Floating point Format	L+D	BB	1	46	02.01.2023
47	IEEE Floating point formats, Fixed point digital signal processors	L+D	BB	1	47	03.01.2023
48	Floating point processors	L+D	BB	1	48	04.01.2023
49	FIR filter implementations in Fixed point systems	L+D	BB	1	49	05.01.2023
50	IIR filter implementations in Fixed point systems	L+D	BB	1	50	07.01.2023
51	Revision of module 1,2	L+D	BB	1	51	09.01.2023
52	Revision of module 3,4	L+D	BB	1	52	10.01.2023
53	Revision of module 5	L+D	BB	1	53	11.01.2023
54	Revision of University QP	L+D	BB	1	54	16.01.2023
55	Internal Assessment –III			1	55	18.01.2023
56	Revision of University QP	L+D	BB	1	56	21.01.2023

**Text Books:**

1. Digital signal processing – Principles Algorithms & Applications, Proakis & Monalakis, Pearson education, 4th Edition, New Delhi, 2007.
2. Li Tan, Jean Jiang, " Digital Signal processing-Fundamentals and Applications", Academic press, 2013. ISBN:978-0-12-415893

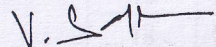


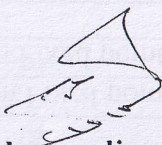
**Reference Books:**

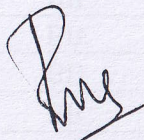
1. Sanjit K Mitra, "Digital Signal Processing, A Computer Based Approach", 4<sup>th</sup> Edition, McGraw Hill education, 2013
2. Oppenheim & Schaffer, "Discrete Time Signal Processing", PHI, 2003.
3. D. Ganesh Rao and Vineeth P Gejji, "Digital Signal processing", Cengage India Private Limited, 2017, ISBN "9386858231"

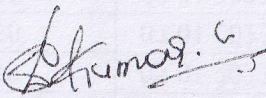
**Details for Teaching Aids:**

1. Black Board
2. Laptop, PPT, LCD Projector

  
Course In-charge

  
Module coordinator

  
HOD-ECE

  
Principal





# K S INSTITUTE OF TECHNOLOGY BANGALORE

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr. Rekha N

SUBJECT CODE/NAME :18EC53/PRINCIPLES OF COMMUNICATION SYSTEM

YEAR/SEMESTER/SEC : III/V A

ACADEMIC YEAR : 2022-23

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE 1:Amplitude Modulation, SSB, VSB</b>						
1	Introduction, Time Domain description of AM	L+D	BB	1	1	11/10/22
2	Frequency Domain Description of AM	L+D	BB	1	2	12/10/22
3	Switching modulator, envelope detector	L+ D	BB	1	3	13/10/22
4	Time and frequency domain description of DSBSC	L+D	BB	1	4	14/10/22
5	Ring modulator, coherent detection	L+D	BB	1	5	15/10/22
6	COSTAS Receiver, Quadrature Carrier Multiplexing	L+D	BB	1	6	18/10/22
7	SSB Modulation, VSB Modulation	L+D	BB	1	7	19/10/22
8	Frequency Translation, Frequency Division Multiplexing	L+D	BB	1	8	20/10/22
9	VSB transmission of Analog and Digital Television	L+D	BB	1	9	21/10/22
10	Numericals	L+D	PPT	1	10	25/10/22
11	Numericals	L+D	PPT	1	11	27/10/22
12	Numericals	L+D	PPT	1	12	28/10/22



<b>MODULE 2: Angle Modulation</b>						
13	Basic Definition, Frequency Modulation	L+D	BB	1	13	29/10/22
14	Narrow Band FM	L+D	BB	1	14	31/10/22
15	Wideband FM	L+D	BB	1	15	2/11/22
16	Transmission Bandwidth of FM signals, Generation of FM signals	L+D	BB	1	16	3/11/22
17	Demodulation of FM Signals	L+D	BB	1	17	4/11/22
18	FM Stereo Multiplexing, PLL	L+D	BB	1	18	8/11/22
19	Non Linear Model of PLL	L+D	BB	1	19	9/11/22
20	Linear model of PLL	L+D	BB	1	20	10/11/22
21	Non Linear Effects in FM, Superheterodyne Receiver	L+D	BB	1	21	12/10/22
22	Numericals	L+D	PPT	1	22	17/11/22
23	Numericals	L+D	PPT	1	23	18/11/22
<b>Module 3: Noise, Noise in Analog Modulation</b>						
24	Shot Noise, Thermal Noise, White Noise	L+D	BB	1	24	22/11/22
25	Noise Equivalent Bandwidth + Numericals	L+D	BB+PPT	1	25	23/11/22
26	Introduction to Noise in Analog Modulation, Receiver Model	L+I	BB	1	26	24/11/22
27	Noise in DSBSC Receivers	L+D	BB	1	27	25/11/22
28	Noise in AM Receivers	L+D	BB	1	28	26/11/22
29	Threshold Effect	L+D	BB	1	29	29/11/22
30	Noise in FM Receivers	L+D	BB	1	30	30/11/22
31	Capture Effect, FM threshold effect	L+D	BB	1	31	1/12/22
32	FM Threshold reduction, Preemphasis in FM	L+D	BB	1	32	2/12/22
33	Deemphasis in FM + Numericals	L+D	BB+PPT	1	33	6/12/22
34	Numericals	L+D	PPT	1	34	7/12/22
<b>Module 4: Sampling and Quantization</b>						
35	Introduction to Sampling and Quantization	L+D	BB	1	35	8/12/22



36	Why digitize analog sources, The low pass sampling process	L+D	BB	1	36	9/12/22
37	Pulse Amplitude Modulation	L+D	BB	1	37	10/12/22
38	Time Division Multiplexing	L+D	BB	1	38	13/12/22
39	Pulse Position Modulation	L+D	BB	1	39	14/12/22
40	Generation of PPM Waves	L+D	BB	1	40	15/12/22
41	Generation of PPM Waves	L+D	BB	1	41	16/12/22
42	Detection of PPM Waves	L+D	BB	1	42	22/12/22
43	Detection of PPM Waves	L+I	BB	1	43	23/12/22
44	Numericals	L+D	PPT	1	44	24/12/22
45	Numericals	L+D	PPT	1	45	27/12/22
<b>MODULE 5: Sampling and Quatization (Continued)</b>						
46	The Quatization Random Process	L+D	BB	1	46	28/12/22
47	Quantization Noise	L+D	BB	2	48	29 & 30/12/22
48	Pulse Code Modulation: Sampling	L+D	BB	1	49	3/1/23
49	Quantization	L+D	BB	1	50	4/1/23
50	Encoding , Regeneration	L+D	BB	1	51	5/1/23
51	Decoding , Filtering	L+D	BB	1	52	6/1/23
52	Multiplexing	L+D	BB	1	53	10/1/23
53	Delta Modulation	L+D	BB	1	54	11/1/23
54	Video+Mpeg + Numericals	L+D	BB+PPT	1	55	12/1/23
55	Vocoders + Numericals	L+D	BB+PPT	1	56	13/1/23
56	Numericals	L+D	PPT	1	57	17/1/23
57	Revision	L+D	BB	1	58	24/1/23
58	Revision	L+D	BB	1	59	25/1/23
59	Revision	L+D	BB	1	60	27/1/23

**Text Books:**

1. "Communication Systems", Simon Haykin and Moher, 5<sup>th</sup> edition, John Willey, India Pvt Ltd, 2010, ISBN 978-81-265-2151-7



**Reference Books:**


1. Modern Digital and Analog Communication Systems, B P Lathi, Oxford University Press, 4<sup>th</sup> edition.
2. An Introduction to Analog and Digital Communications, Simon Haykins, John Wiley India Pvt Ltd, 2008, ISBN 978-81-265-3653-5.
3. Principles of Communication Systems, H Taub and D L Schilling, TMH 2011.
4. Communication Systems, Harold P E, Stern Samy, AMahmond, Pearson Edition, 2004.

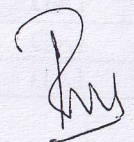
**Web materials:**

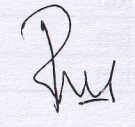
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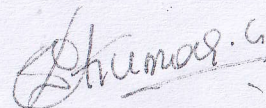
<https://www.youtube.com/watch?v=qNSaaRRkEnQ>

<https://www.youtube.com/watch?v=iS8jmhVAfoQ>

  
**Signature of Course Incharge**  
Dr. Rekha. N.

  
**Signature of Module Coordinator**  
Dr. P.N. Sudha.

  
**Signature of HOD/ECE**  
Dr. P.N. Sudha.







# KS INSTITUTE OF TECHNOLOGY BANGALORE

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : BHARGAVI ANANTH

SUBJECT CODE/NAME : 18EC54/INFORMATION THEORY AND CODING

SEMESTER/YEAR/SEC : V/ III/A,B

ACADEMIC YEAR : 2022-23

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (A)	Proposed Date (B)
<b>Module 1: Module 1: Information Theory</b>							
1	Introduction, Measure of information, numericals	L	BB+P	1	1	10/10/22	10/10/22
2	Information content of message, Average Information content of symbols in Long Independent sequences,	L	BB+P	1	2	11/10/22	11/10/22
3	Numericals	L	BB+P	1	3	13/10/22	12/10/22
4	Numericals	L	BB+P	1	4	14/10/22	14/10/22
5	Extended Source	L	BB+P	1	5	15/10/22	15/10/22
6	Numericals	L	BB+P	1	6	17/10/22	17/10/22
7	Numericals	L	BB+P	1	7	18/10/22	18/10/22
8	Markov Statistical Model	L	BB+P	1	8	20/10/22	19/10/22
9	Numericals	L	BB+P	1	9	21/10/22	21/10/22
10	Numericals	L	BB+P	1	10	27/10/22	28/10/22
<b>MODULE 2: Source Coding</b>							
11	Encoding of the Source Output	L	BB+P	1	11	28/10/22	29/10/22



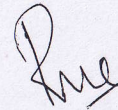
12	Numericals	L	BB+P	1	12	31/10/22	31/10/22
13	Shannon's Encoding Algorithm	L	BB+P	1	13	3/11/22	2/11/22
14	Numericals	L	BB+P	1	14	4/11/22	4/11/22
15	Shannon Fano Encoding Algorithm	L	BB+P	1	15	7/11/22	7/11/22
16	Numericals	L	BB+P	1	16	8/11/22	8/11/22
17	Source coding theorem, Prefix Codes	L	BB+P	1	17	10/11/22	9/11/22
18	Numericals	L	BB+P	1	18	12/11/22	12/11/22
19	Kraft McMillan Inequality property	L	BB+P	1	19	17/11/22	18/11/22
20	Huffman	L		1	20	18/11/22	21/11/22
<b>MODULE 3: Information Channels</b>							
21	Communication Channels, Discrete Communication channels	L	BB+P	1	21	21/11/22	22/11/22
22	Numericals	L	BB+P	1	22	22/11/22	26/11/22
23	Channel Matrix, Joint probability Matrix	L	BB+P	1	23	28/11/22	28/11/22
24	Numericals	L	BB+P	1	24	29/11/22	29/11/22
25	Binary Symmetric Channel, System Entropies	L	BB+P	1	25	1/12/22	30/11/22
26	Numericals	L	BB+P	1	26	2/12/22	2/12/22
27	Mutual Information, Channel Capacity	L	BB+P	1	27	5/12/22	5/12/22
28	Numericals	L	BB+P	1	28	6/12/22	6/12/22
29	Channel Capacity of Binary Symmetric Channel, Binary Erasure Channel	L	BB+P	1	29	8/12/22	7/12/22
30	Numericals, Muroga's Theorem	L	BB+P	1	30	9/12/22	9/12/22
<b>MODULE 4: Error Control Coding</b>							
31	Introduction, Examples of Error control coding, methods of Controlling Errors	L	BB+P	1	31	10/12/22	10/12/22
32	Types of Errors, types of Codes, Linear Block Codes: matrix description of Linear Block Codes	L	BB+P	1	32	12/12/22	12/12/22
33	Error detection & Correction capabilities of Linear Block Codes	L	BB+P	1	33	13/12/22	13/12/22
34	Numericals	L	BB+P	1	34	15/12/22	14/12/22



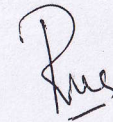
35	Numericals	L	BB+P	1	35	16/12/22	16/12/22
36	Single error correction Hamming code	L	BB+P	1	36	22/12/22	23/12/22
37	Numericals	L	BB+P	1	37	23/12/22	24/12/22
38	Table lookup Decoding using Standard Array, Numericals	L	BB+P	1	38	26/12/22	26/12/22
39	Algebraic Structure of Cyclic Codes, Encoding using an (n-k) Bit Shift register, Syndrome Calculation, Error Detection and Correction	L	BB+P	1	39	27/12/22	27/12/22
40	Numericals	L	BB+P	1	40	29/12/22	28/12/22
<b>Module 5: Convolution Codes</b>							
41	Convolution Encoder	L	BB+P	1	41	30/12/22	30/12/22
42	Numericals	L	BB+P	1	42	31/12/22	31/12/22
43	Time domain approach	L	BB+P	1	43	2/1/23	2/1/23
44	Numericals	L	BB+P	1	44	3/1/23	3/1/23
45	Transform domain approach	L	BB+P	1	45	5/1/23	4/1/23
46	Numericals	L	BB+P	1	46	6/1/23	6/1/23
47	Code Tree, Trellis and State Diagram	L	BB+P	1	47	9/1/23	9/1/23
48	Numericals	L	BB+P	1	48	10/1/23	10/1/23
49	Numericals	L	BB+P	1	49	12/1/23	11/1/23
50	Viterbi Algorithm	L	BB+P	1	50	13/1/23	13/1/23
51	Numericals	L	BB+P	1	51	16/1/23	16/1/23
52	Numericals	L	BB+P	1	52	17/1/23	17/1/23



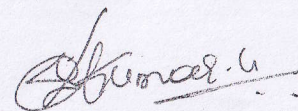
Signature of Course Incharge



Signature of Module Coordinator



Signature of HOD



SIGNATURE OF PRINCIPAL





# KS INSTITUTE OF TECHNOLOGY, BANGALORE

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

23

NAME OF THE STAFF : Kavya B M  
SUBJECT CODE/NAME : 18EC55/Electromagnetic waves  
SEMESTER/YEAR : V 'B' / III  
ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Offline Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE 1</b>						
1	Revision of Vector Calculus	L+D	BB	1	1	10.10.2022
2	Revision of Vector Calculus	L+D	BB	1	2	11.10.2022
3	<b>Coulomb's Law, Electric Field Intensity and Flux density: Introduction</b>	L+D	BB	1	3	13.10.2022
4	Experimental law of Coulomb	L+D	BB	1	4	14.10.2022
5	Coulombs law	L+D	BB	1	5	15.10.2022
6	Electric Field intensity	L+D	BB	1	6	17.10.2022
7	Field due to continuous volume charge distribution	L+D	BB	1	7	18.10.2022
8	Field of a line charge	L+D	BB	1	8	20.10.2022
9	Field due to infinite sheet of charge	L+D	BB	1	9	21.10.2022
10	Electric flux density		BB	1	10	25.10.2022
11	Problems on Electric field intensity	L+PS	BB	1	11	27.10.2022
12	Problems on volume integral	L+PS	BB	1	12	28.10.2022
13	Problems on Electric Flux density	L+PS	BB	1	13	31.10.2022



**MODULE 2**

14	<b>Gauss's law and Divergence: Gauss Law</b>	L+D	BB	1	14	3.11.2022
15	Application of Gauss Law to a point charge and line charge.	L+D	BB	1	15	4.11.2022
16	Application of Gauss law to surface charge and volume charge	L+D	BB	1	16	7.11.2022
17	Point form of Gauss Law	L+D	BB	1	17	8.11.2022
18	Divergence	L+D	BB	1	18	10.11.2022
19	Maxwell's First equation (Electrostatics),	L+D	BB	1	19	12.11.2022
20	Vector Operator and divergence theorem.		BB	1	20	17.11.2022
21	Energy expended in moving a point charge in an electric field	L+D	BB	1	21	18.11.2022
22	The line integral	L+D	BB	1	22	21.11.2022
23	Definition of potential difference and potential,	L+D	BB	1	23	22.11.2022
24	The potential field of point charge, potential gradient	L+D	BB	1	24	24.11.2022
25	Current and Current density, Continuity of current.	L+PS	BB	1	25	25.11.2022
26	Problems on Maxwell's equations	L+PS	BB	1	26	28.11.2022
27	Problems on energy	L+PS	BB	1	27	29.11.2022

**MODULE 3**

28	<b>Poisson's and Laplace's Equation: Derivation of Poisson's and Laplace's Equations.</b>	L+D	BB	1	28	01.12.2022
29	Uniqueness theorem.	L+D	BB	1	29	02.12.2022
30	Examples of the solution of Laplace's equation.	L+D	BB	1	30	05.12.2022
31	Numerical problems on Laplace Equation	L+PS	BB	1	31	06.12.2022
32	<b>Steady Magnetic Field</b> Biot-Savart Law, Ampere's circuital law	L+D	BB	1	32	08.12.2022
33	Curl, Stokes' theorem, Magnetic flux and magnetic flux density	L+D	BB	1	33	09.12.2022



34	Scalar and Vector Magnetic Potentials.	L+D	BB	1	34	10.12.2022
35	Problems on Poisson's equation	L+PS	BB	1	35	12.12.2022
36	Problems on Laplace equations	L+PS	BB	1	36	13.12.2022
37	Problems on applications of Amperes Circuital law .	L+PS	BB	1	37	15.12.2022
38	Problems on applications of Amperes Circuital law	L+PS	BB	1	38	16.12.2022
<b>MODULE 4</b>						
39	<b>Magnetic Forces</b> Force on a moving charge, differential current elements	L+D	BB	1	39	22.12.2022
40	Force between differential current elements.	L+D	BB	1	40	23.12.2022
41	Numerical Problems	L+PS	BB	1	41	26.12.2022
42	<b>Magnetic Materials</b> Magnetization and permeability,	L+D	BB	1	42	27.12.2022,
43	Magnetic boundary conditions, Magnetic circuit.	L+D	BB	1	43	29.12.2022
44	Potential Energy and forces on magnetic materials.	L+D	BB	1	44	30.12.2022
45	Inductance and mutual reactance.	L+D	BB	1	45	31.12.2022
46	Numerical Problems	L+PS	BB	1	46	02.01.2023
47	Faraday's law of electromagnetic induction – integral and point form	L+D	BB	1	47	03.01.2023
48	Numerical Problems	L+PS	BB	1	48	05.01.2023
<b>MODULE 5</b>						
49	<b>Maxwell's equations : Continuity equation</b>	L+D	BB	1	49	06.01.2023
50	Inconsistency of Ampere's law with continuity equation, displacement current, conduction current	L+D	BB	1	50	09.01.2023
51	Maxwell's equations in point form and integral integral form.	L+D	BB	1	51	10.01.2023
52	Maxwell's equations for different media	L+D	BB	1	52	12.01.2023
53	<b>Uniform Plane Wave:</b> Plane wave, Uniform plane wave, Derivation of plane wave equations from Maxwell's equations	L+D	BB	1	53	13.01.2023
54	Solution of wave equation for perfect dielectric, Relation between E and H	L+D	BB	1	54	16.01.2023



55	Wave propagation in free space, solution of wave equation of wave equation for sinusoidal excitation	L+D	BB	1	55	17.01.2022
56	Wave propagation in any conducting media and good conductors, Skin effect or depth of penetration	L+D	BB	1	56	23.01.2022
57	Poynting theorem and Wave power	L+D	BB	1	57	24.01.2022
58	Numerical Problems	L+PS	BB	1	58	27.01.2022

**TEXT BOOK:**

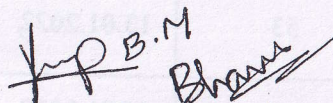
1. W.H. Hayt and J.A. Buck, "Engineering Electromagnetics", 8th Edition, Tata McGraw-Hill, ISBN-978-0-07-061223-5.

**REFERENCES:**

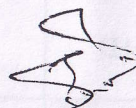
1. Elements of Electromagnetics- Matthew N.O., Sadiku, Oxford university press, 4<sup>th</sup> Edn.
2. Electromagnetic Waves and Radiating systems- E.C Jordan and K.G. Balmain, PHI, 2<sup>nd</sup> Edn.
3. Electromagnetics-Joseph Edminister, Schaum Outline Series, McGraw Hill.
4. Fundamentals of Electromagnetics for Engineering – N. Narayana Rao, Pearson.

**WEB MATERIALS:**

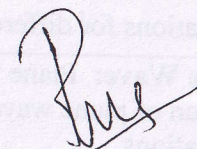
- 1 <https://nptel.ac.in/courses/108106073/>
2. <https://freevideolectures.com/course/2340/electromagnetic-fields>
3. <https://www.khanacademy.org/science/physics/.../v/discovery-of-electromagnetism>
4. <https://www.quora.com/Are-there-any-good-online-video-course-sites-for-learning>



Signature of Course In-charge



Signature of Module Coordinator



Signature of HOD-ECE





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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

5

**COURSE PLAN**

**NAME OF THE STAFF** : Dr. B Sudarshan  
**COURSE CODE/NAME** : 18EC56/VERILOG HDL  
**SEMESTER/YEAR** : V / III (A & B sections)  
**ACADEMIC YEAR** : 2022-2023

Sl. No.	Topic to be Covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	
						A Section	B Section
<b>MODULE 1: Overview of Digital Design with Verilog HDL &amp; Hierarchical Modeling Concepts</b>						<b>A Section</b>	<b>B Section</b>
1.	Evolution of CAD, emergence of HDLs	L+D	BB	1	1	10/10/2022	10/10/2022
2.	Typical HDL-flow	L+D	BB	1	2	11/10/2022	12/10/2022
3.	why Verilog HDL? Trends in HDLs	L+D	BB	1	3	12/10/2022	13/10/2022
4.	Top-down and bottom-up design methodology	L+D	BB	2	5	13/10/2022 17/10/2022	14/10/2022 15/10/2022
5.	Differences between modules and module instances	L+D	BB	1	6	18/10/2022	17/10/2022
6.	Parts of a simulation, Design block	L+D	BB	1	7	19/10/2022	19/10/2022
7.	Stimulus block., Examples	L+D	BB	1	8	20/10/2022	20/10/2022
<b>MODULE 2: Basic Concepts, Modules and Ports</b>							
8.	Lexical conventions	L+D	BB	1	9	27/10/2022	21/10/2022
9.	Data types	L+D	BB	1	10	29/10/2022	27/10/2022
10.	Data types	L+D	BB	1	11	31/10/2022	28/10/2022
11.	System tasks	L+D	BB	1	12	2/11/2022	29/10/2022
12.	Compiler directives	L+D	BB	1	13	27/10/2022	31/10/2022
13.	Compiler directives, examples	L+D	BB	1	14	3/11/2022	2/11/2022
14.	Module definition	L+D	BB	1	15	7/11/2022	3/11/2022



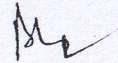
15.	Port declaration	L+D	BB	1	16	8/11/2022	4/11/2022
16.	Connecting ports	L+D	BB	1	17	9/11/2022	7/11/2022
17.	Hierarchical name referencing	L+D	BB	1	18	10/11/2022	9/11/2022
<b>MODULE 3: Gate-Level Modeling &amp; Dataflow Modeling</b>							
18.	Modeling using basic Verilog gateprimitives	L+D	BB	1	19	12/11/2022	10/11/2022
19.	Description of and/or and buf/not typeGates	L+D	BB	1	20	17/11/2022	17/11/2022
20.	Description of and/or and buf/not typeGates	L+D	BB	1	21	21/11/2022	18/11/2022
21.	Rise, Fall and Turn-off delays	L+D	BB	1	22	22/11/2022	21/11/2022
22.	min, max and typical delays	L+D	BB	1	23	26/11/2022	28/11/2022
23.	Continuous assignments	L+D	BB	1	24	28/11/2022	30/11/2022
24.	Delay specification, Expressions	L+D	BB	1	25	29/11/2022	1/12/2022
25.	Operators, Operands, Operator types.	L+D	BB	1	26	30/11/2022	2/12/2022
26.	Examples	L+D	BB	1	27	1/12/2022	5/12/2022
<b>MODULE 4: Behavioral Modeling</b>							
27.	Structured procedure, initial statement	L+D	BB	1	28	5/12/2022	7/12/2022
28.	always statement	L+D	BB	1	29	6/12/2022	8/12/2022
29.	blocking and non-blocking statements	L+D	BB	1	30	7/12/2022	9/12/2022
30.	delay control, generate statement	L+D	BB	1	31	8/12/2022	12/12/2022
31.	conditional statements, multiwaybranching	L+D	BB	1	32	10/12/2022	14/12/2022
32.	loops-while loop, for loop	L+D	BB	1	33	12/12/2022	15/12/2022
33.	loops-Repeat, forever	L+D	BB	1	34	13/12/2022	16/12/2022
34.	sequential and parallel blocks	L+D	BB	1	35	14/12/2022	22/12/2022
35.	Examples	L+D	BB	1	36	22/12/2022	23/12/2022
<b>MODULE 5: Useful Modeling Techniques:</b>							
36.	Procedural continuous assignments	L+D	BB	1	37	24/12/2022	24/12/2022
37.	overriding parameters	L+D	BB	1	38	26/12/2022	26/12/2022
38.	conditional compilation and execution	L+D	BB	1	39	27/12/2022	28/12/2022
39.	useful system tasks	L+D	BB	1	40	28/12/2022	29/12/2022



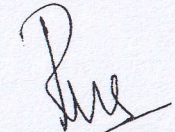
40.	<b>Logic Synthesis with Verilog:</b> LogicSynthesis	L+D	BB	1	41	29/12 2022	309/12/2022
41.	Impact of logic synthesis	L+D	BB	1	42	31/12 2022	31/12/2022
42.	Verilog HDL Synthesis.	L+D	BB	1	43	2/1/2023	2/1/2023
43.	Verilog HDL Synthesis.	L+D	BB	1	44	3/1/2023	4/1/2023
44.	Verilog HDL Synthesis.	L+D	BB	1	45	4/1/2023	5/1/2023
45.	Synthesis design flow	L+D	BB	1	46	5/1/2023	6/1/2023
46.	Synthesis design flow	L+D	BB	1	47	9/1/2023	9/1/2023
47.	Synthesis design flow	L+D	BB	1	48	10/1/2023	11/1/2023
48.	Verification of Gate-Level Netlist	L+D	BB	1	49	11/1/2023	12/1/2023
49.	Verification of Gate-Level Netlist	L+D	BB	1	50	12/1/2023	13/1/2023
50.	Revision	L+D	BB	1	51	16/1/2023	16/1/2023
51.	Revision	L+D	BB	1	52	17/1/2023	27/1/2023



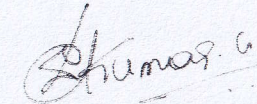
Signature of Course In charge



Signature of Module Coordinator



Signature of HOD







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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**NAME OF THE STAFF : Dr.Dinesh Kumar D S**  
**SUBJECT CODE/NAME : 18EC71/COMPUTER NETWORKS**  
**SEMESTER/YEAR/SEC : VII / A**  
**ACADEMIC YEAR : 2022-2023**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>Module 1</b>						
1	Introduction: Data Communications: Components, Representations,	L+D	BB+PPT	1	1	19/09/22
2	Data Flow, Networks Physical Structures,	L+D	BB+PPT	1	2	20/09/22
3	Network Types: LAN, WAN,	L+ D	BB+PPT	1	3	22/09/22
4	Switching, Internet		BB+PPT		4	23/09/22
5	Protocol Layering: Scenarios, Principles, Logical Connections	L+ D	BB+PPT	1	5	26/09/22
6	TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite.	L+D	BB+PPT	1	6	27/09/22
7	Description of layers	L+ D	BB+PPT	1	7	29/09/21
8	Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing,	L+AV	BB+PPT	1	8	30/09/22
9	The OSI Model: OSI Versus TCP/IP	L+D	BB+PPT	1	9	03/10/22
<b>Module2</b>						
10	<b>Data-Link Layer:</b> Introduction: Nodes and Links, Services, Categories of link	L+D	BB+PPT	1	10	06/10/22
11	Sublayers, Link Layer addressing: Types of addresses	L+ D	BB+PPT	1	11	07/10/22
12	ARP	L+D	BB+PPT	1	12	10/10/22
13	<b>Data Link Control (DLC) services:</b> Framing, Flow and Error Control	L+D	BB+PPT	1	13	11/10/22
14	Data Link Layer Protocols: Simple Protocol	L+D	BB+PPT	1	14	13/10/22
15	Stop and Wait protocol, Piggybacking	L+D	BB+PPT	1	15	14/10/22
16	Media Access Control: Random Access: Pure ALOHA ,slotted ALOHA	L+ D	BB+PPT	1	16	15/10/22
17	CSMA, CSMA/CD, CSMA/CA	L+ D	BB+PPT	1	17	20/10/22
18	<b>Wired and Wireless LANs:</b> Ethernet Protocol,	L+D	BB+PPT	1	18	21/10/22



19	Standard Ethernet	L+D	BB+PPT	1	19	25/10/22
20	Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control	L+D	BB+PPT	1	20	27/10/22
<b>Module 3</b>						
21	<b>Network Layer:</b> Introduction, Network Layer services: Packetizing.	L+D	BB+PPT	1	21	28/10/22
22	Routing and Forwarding, Other services	L+D	BB+PPT	1	22	31/10/22
23	Packet Switching: Datagram Approach, Virtual Circuit Approach	L+D	BB+PPT	1	23	3/11/22
24	IPv4 Addresses: Address Space, Classful Addressing	L+D	BB+PPT	1	24	4/11/22
25	Classless Addressing	L+D	BB+PPT	1	25	7/11/22
26	DHCP, Network Address Resolution		BB+PPT		26	8/11/22
27	Forwarding of IP Packets: Based on destination Address, Based and Label	L+D	BB+PPT	1	27	10/11/22
28	Network Layer Protocols: Internet Protocol (IP): Datagram Format	L+D	BB+PPT	1	28	12/11/22
29	Options, Security of IPv4 Datagrams	L+D	BB+PPT	1	29	14/11/22
30	Unicast Routing: Introduction Routing Algorithms: Distance Vector Routing	L+D	BB+PPT	1	30	15/11/22
31	Link State Routing, Path vector routing	L+D	BB+PPT	1	31	17/11/22
<b>Module 4</b>						
32	<b>Transport Layer:</b> Introduction: Transport Layer Services, Connectionless and Connection oriented Protocols	L+D	BB+PPT	1	32	18/11/22
33	Transport Layer Protocols: Simple protocol	L+D	BB+PPT	1	33	24/11/22
34	Stop and wait protocol, Go-Back-N Protocol	L+D	BB+PPT	1	34	25/11/22
35	, Selective repeat protocol	L+D	BB+PPT	1	35	28/11/22
36	User Datagram Protocol: User Datagram UDP Services	L+D	BB+PPT	1	36	29/11/22
37	Transmission Control Protocol: TCP Services, Features	L+D	BB+PPT	1	37	1/12/22
38	Segments, TCP connection	L+D	BB+PPT	1	38	2/12/22
39	State Transition diagram, Windows in TCP	L+D	BB+PPT	1	39	5/12/22
40	Flow control, Error control, TCP congestion control	L+D	BB+PPT	1	40	6/12/22
<b>Module 5</b>						
41	Application Layer: Introduction: providing services	L+D	BB+PPT	1	41	8/12/22
42	Application- layer paradigms,	L+D	BB+PPT	1	42	9/12/22
43	Standard Client -Server Protocols: WWW, Hyper Text Transfer Protocol,	L+D	BB+PPT	1	43	10/12/22
44	FTP: Two connections, Control Connection, Data Connection	L+D	BB+PPT	1	44	12/12/22
45	Electronic Mail: Architecture	L+D	BB+PPT	1	45	13/12/22
46	Wed Based Mail	L+D	BB+PPT	1	46	15/12/22



47	Telnet: Local versus remote logging.	L+D	BB+PPT	1	47	16/12/22
48	Domain Name system: Name space,DNS in internet,	L+D	BB+PPT	1	48	19/12/22
49	Resolution, DNS Messages	L+D	BB+PPT	1	49	20/12/22
50	Registrars, DDNS, Security of DNS	L+D	BB+PPT	1	50	26/12/22
51	Revision	L+D	BB+PPT	1	51	27/12/22
52	Revision	L+D	BB+PPT	1	52	31/12/22

**TEXTBOOK:**

T1: Data Communications and Networking, Forouzan, 5th Edition, McGraw Hill, 2016 ISBN: 1-25-906475-3.

**REFERENCES:**

R1: Computer Networks, James J Kurose, Keith W Ross, Pearson Education, 2013, ISBN: 0-273-76896.

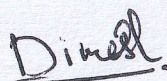
R2: Introduction to Data Communication and Networking, WayarlesTomasi, Pearson Education, 2007, ISBN: 0130138282.

**WEB MATERIALS:**

W1: <https://nptel.ac.in/courses/106/105/106105183/>

W2: <https://nptel.ac.in/courses/106/105/106105081/>


W3: <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/lecture-notes/>



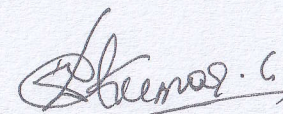
**Course Incharge**



**Module Coordinator**



**HOD ECE**



**Principal**





14

**K S INSTITUTE OF TECHNOLOGY BANGALORE**  
**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

NAME OF THE STAFF : Praveen A  
SUBJECT CODE/NAME : 18EC72/VLSI Design  
SEMESTER/YEAR/SEC : VII /IV/A  
ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE 1: Introduction &amp; MOS Transistor Theory</b>						
1	A Brief History	L+I	LCD	1	1	19-09-22
2	MOS Transistors, CMOS Logic	L+D	BB	1	2	20-09-22
3	CMOS Logic	L+D	BB	1	3	21-09-22
4	Introduction to MOS Transistor Theory	L+D	BB	1	4	23-09-22
5	Long channel I-V Characteristics	L+ I	BB, LCD	1	5	26-09-22
6	Long channel I-V Characteristics	L+I	BB, LCD	1	6	27-09-22
7	Non-ideal I-V Effects	L+D	BB	1	7	28-09-22
8	Non-ideal I-V Effects	L+D	BB	1	8	30-09-22
9	Non-ideal I-V Effects	L+D	BB	1	9	01-10-22
10	DC Transfer Characteristics	L+I	BB, LCD	1	10	03-10-22
11	DC Transfer Characteristics	L+I	BB, LCD	1	11	07-10-22
12	DC Transfer Characteristics	L+I	BB, LCD	1	12	10-10-22



## MODULE 2: Fabrication and MOSFET Scaling

13	CMOS Fabrication using N-well	L+ I	BB+LCD	1	13	11-10-22
14	CMOS Fabrication using N-well	L+I	BB+LCD	1	14	12-10-22
15	Basic Layout concepts	L+ I	BB+LCD	1	15	14-10-22
16	Basic Layout concepts	L+ I	BB+LCD	1	16	15-10-22
17	VLSI Design Flow	L+D	BB	1	17	17-10-22
18	Introduction to Fabrication Process	L+I	BB, LCD	1	18	18-10-22
19	CMOS Technologies	L+ I	BB+LCD	1	19	19-10-22
20	CMOS Technologies	L+ I	BB+LCD	1	20	21-10-22
21	CMOS Technologies	L+ I	BB+LCD	1	21	25-10-22
22	Layout Design Rules	L+ I	BB+LCD	1	22	28-10-22
23	Layout Design Rules	L+ I	BB+LCD	1	23	29-10-22
24	MOSFET Scaling and Small-Geometry Effects	L+D	BB	1	24	31-10-22
25	MOSFET Scaling and Small-Geometry Effects	L+D	BB	1	25	02-11-22
26	MOSFET Capacitances	L+D	BB	1	26	04-11-22
27	MOSFET Capacitances	L+D	BB	1	27	07-11-22

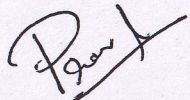
## MODULE 3: Delay and Combinational Circuit Design

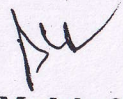
28	Introduction to Delay concept	L+D	BB	1	28	08-11-22
29	Transient Response	L+D	BB	1	29	12-11-22
30	Transient Response	L+D	BB	1	30	14-11-22
31	RC Delay Model	L+D	BB	1	31	15-11-22
32	RC Delay Model	L+D	BB	1	32	16-11-22
33	Linear Delay Model	L+I	BB	1	33	18-11-22
34	Linear Delay Model	L+D	BB	1	34	21-11-22
35	Logical Efforts of Paths	L+D	BB	1	35	22-11-22
36	Logical Efforts of Paths	L+D	BB	1	36	23-11-22
37	Introduction to combinational circuit design	L+D	BB	1	37	25-11-22
38	Circuit families	L+I	LCD	1	38	26-11-22
39	Circuit families	L+I	LCD	1	39	28-11-22
40	Circuit families	L+I	LCD	1	40	29-11-22

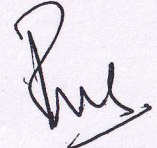


<b>MODULE 4: Sequential Circuit Design and Dynamic Logic Circuits</b>						
41	Introduction to sequential circuit design	L+D	BB	1	41	30-11-22
42	Circuit Design for Latches	L+D	BB	1	42	02-12-22
43	Circuit Design for Latches	L+D	BB	1	43	05-12-22
44	Circuit Design for Flip-Flops	L+D	BB	1	44	06-12-22
45	Circuit Design for Flip-Flops	L+D	BB	1	45	07-12-22
46	Introduction Dynamic circuit design	L+D	BB	1	46	09-12-22
47	Basic Principles of Pass Transistor Circuits	L+D	BB	1	47	10-12-22
48	Synchronous Dynamic Circuit Techniques	L+D	BB	1	48	12-12-22
49	Dynamic CMOS Circuit Techniques				49	13-12-22
<b>MODULE 5: Semiconductor Memories &amp; Testing and Verification</b>						
50	Introduction to Semiconductor Memories	L+D	BB	1	50	14-12-22
51	Dynamic Random-Access Memory	L+D	BB	1	51	16-12-22
52	Static Random-Access Memory	L+D	BB	1	52	19-12-22
53	Introduction Testing and Verification	L+D	BB	1	53	20-12-22
54	Logic Verification Principles	L+D	BB	1	54	21-12-22
55	Manufacturing Test Principles	L+D	BB	1	55	23-12-22
56	Design for testability	L+D	BB	1	56	24-12-22
57	Revision	L+I	LCD	1	57	26-12-22

12

  
Signature of Course In charge

  
Signature of Module Coordinator

  
Signature of HOD ECE





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**K S INSTITUTE OF TECHNOLOGY BANGALORE**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**COURSE PLAN ODD SEM-2022-23**

**NAME OF THE STAFF : Mrs. POOJA S**

**SUBJECT CODE/NAME : 18EC732/ SATELLITE COMMUNICATION**

**SEMESTER/SEC : VII SEM / A**

**ACADEMIC YEAR : 2022-2023**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE -1: SATELLITE ORBITS &amp; TRAJECTORIES</b>						
1	Satellite Orbits and Trajectories: Definition	L+AV	BB	1	1	20/09/2022
2	Basic Principles	L+ D	LCD +BB	1	2	21/09/2022
3	Orbital Parameters	L+ D	LCD +BB	1	3	22/09/2022
4	Injection Velocity and satellite Trajectory	L+D	LCD +BB	1	4	23/09/2022
5	Types of satellite orbits	L+D	LCD +BB	1	5	27/09/2022
6	Orbital perturbations	L+D	LCD +BB	1	6	28/09/2022
7	Satellite stabilization	L+D	LCD +BB	1	7	29/09/2022
8	Orbital effects on satellite's performance	L+D	LCD +BB	1	8	30/09/2022
9	Eclipses, Look angles: Azimuth and Elevation angles	L+D	BB	1	9	06/10/2022
<b>MODULE -2: SATELLITE SUBSYSTEM &amp; EARTH STATION</b>						
10	Satellite Power supply subsystem	L+ D	BB	1	12	07/10/2022
11	Attitude and Orbit control	L+D	LCD +BB	1	13	11/10/2022
12	Tracking, Telemetry and command subsystem	L+D, PS	LCD +BB	1	14	12/10/2022



13	Types of earth station	L+D, PS	LCD +BB	1	15	13/10/2022
14	Architecture	L+D, PS	LCD +BB	1	16	14/10/2022
15	Design considerations, Testing	L+D, PS	LCD +BB	1	17	20/10/2022
16	Earth Station Hardware	L+D, PS	LCD +BB	1	18	21/10/2022
17	Satellite tracking	L+D	LCD +BB	1	19	25/10/2022

### MODULE -3: MULTIPLE ACCESS TECHNIQUES & SATELLITE LINK DESIGN

18	Introduction to Multiple Access Techniques	L+D	BB	1	23	02/11/2022
19	FDMA (No Derivation)	L+D	LCD +BB	1	24	03/11/2022
20	SCPC Systems	L+D	LCD +BB	1	25	04/11/2022
21	TDMA, CDMA, SDMA	L+D	LCD +BB	1	26	08/11/2022
22	Satellite link design fundamentals	L+D	LCD +BB	1	27	09/11/2022
23	Transmission Equation	L+D	LCD +BB	1	28	10/11/2022
24	Satellite Link Parameters	L+D	LCD +BB	1	29	15/11/2022
25	Propagation considerations	L+D	LCD +BB	1	30	16/11/2022

### MODULE -4: COMMUNICATION SATELLITES

26	Introduction to Communication Satellites	L+AV	BB	1	33	17/11/2022
27	Related Applications	L+D	LCD +BB	1	34	18/11/2022
28	Frequency Bands, Payloads	L+D	LCD +BB	1	35	24/11/2022
29	Satellite vs Terrestrial networks	L+D	LCD +BB	1	36	25/11/2022
30	Satellite Telephony	L+D	LCD +BB	1	37	29/11/2022
31	Satellite Television	L+D	LCD +BB	1	38	30/11/2022
32	Satellite Radio	L+D	LCD +BB	1	39	01/12/2022
33	Regional Satellite Systems	L+D	LCD +BB	1	40	02/12/2022
34	National Satellite Systems	L+D	BB	1	41	06/12/2022

### MODULE -5: REMOTE SENSING, WEATHER FORECASTING & NAVIGATION SATELLITES

35	Classification of Remote Sensing Systems	L+AV	BB	1	44	07/12/2022
36	Orbits, Payloads	L+D	LCD +BB	1	45	08/12/2022
37	Types of images: Image classification	L+D	LCD +BB	1	46	09/12/2022



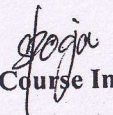
38	Interpretation, Applications	L+D	LCD +BB	1	47	13/12/2022
39	Fundamentals of weather forecasting satellites	L+D	LCD +BB	1	48	14/12/2022
40	Images, Orbits, Payloads, Applications	L+D	LCD +BB	1	49	15/12/2022
41	Development of Satellite Navigation Systems	L+D	LCD +BB	1	50	16/12/2022
42	GPS system, Applications	L+D	LCD +BB	1	51	20/12/2022
43	VTU QP Revision	L+D	BB	1	52	21/12/2022
44	VTU QP Revision	L+D	BB	1	53	27/12/2022
45	VTU QP Revision	L+D	BB	1	54	31/12/2022

**Text Book:**

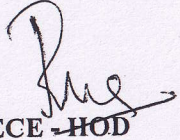
“Communication Systems”, Simon Haykins & Moher, 5th Edition, John Willey, India Pvt. Ltd, 2010, ISBN 978 – 81 – 265 – 2151 – 7.

**Reference Books:**

1. Modern Digital and Analog Communication Systems, B. P. Lathi, Oxford University Press., 4<sup>th</sup> edition.
2. An Introduction to Analog and Digital Communication, Simon Haykins, John Wiley India Pvt. Ltd., 2008, ISBN 978-81-265-3653-5.
3. Principles of Communication Systems, H. Taub & D.L. Schilling, TMH, 2011.
4. Communication Systems, Harold P.E, Stern Samy and A. Mahmond, Pearson Edition, 2004.

  
Course In charge

  
Module Coordinator

  
ECE -HOD





# K.S. INSTITUTE OF TECHNOLOGY BANGALORE

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr P N SUDHA

SUBJECT CODE/NAME : 18EC744/CRYPTOGRAPHY

SEMESTER/YEAR : VII/ IV/A

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>MODULE 1: CLASSICAL ENCRYPTION TECHNIQUES &amp; BASIC CONCEPTS OF NUMBER THEORY &amp; FINITE FIELDS</b>						
1	Symmetric cipher model, Substitution techniques	L+I	LCD	4	4	19 <sup>th</sup> Sep to 22 <sup>nd</sup> Sep2022
2	Transposition techniques	L+D, PS	BB	1	5	26 <sup>th</sup> Sep
3	Euclidean algorithm	L+ D, PS	BB	8	13	27 <sup>th</sup> Sep to 6 <sup>th</sup> Oct 2022
4	Modular arithmetic	L+D	BB	2	15	10 <sup>th</sup> Oct to 11 <sup>th</sup> Oct 2022
5	Pedagogy		LCD	1	16	12 <sup>th</sup> Oct 2022
<b>MODULE 2: SYMMETRICAL CIPHERS</b>						
6	SYMMETRIC CIPHERS: Traditional Block Cipher structure	L+D	BB	2	18	12 <sup>th</sup> Oct 2021 to 13 <sup>th</sup> Oct2022
7	Data Encryption Standard (DES)	L+D	BB	3	21	15 <sup>th</sup> Oct2021 to 20 <sup>th</sup> Oct2022
8	The AES Cipher	L+D	BB	2	23	25 <sup>th</sup> Oct2021 to 27 <sup>th</sup> Oct2022
9	Pedagogy		LCD			31 <sup>th</sup> Oct2022
<b>MODULE 3: BASIC CONCEPTS OF NUMBER &amp; FINITE FIELDS</b>						
10	Groups, Rings and Fields, Finite fields of the form GF(p)	L+D	BB	1	24	2 <sup>nd</sup> Nov 2022



11	Prime numbers	L+D	BB	2	26	4 <sup>th</sup> Nov to 7 <sup>th</sup> Nov 2022
12	Fermat's theorem,	L+D	BB	1	27	8 <sup>th</sup> Nov 2021
13	Euler's theorem,	L+D	BB	1	28	9 <sup>th</sup> Nov 2021
14	Discrete Logarithm	L+D	BB	1	29	10 <sup>th</sup> Nov 2021
15	Pedagogy activity		LCD	1	30	12 <sup>th</sup> Nov 2021
<b>MODULE 4: ASYMMETRIC CIPHER</b>						
16	Principle of public Key cryptosystem	L+D, PS	BB	2	32	14 <sup>th</sup> Nov 2022 to 15 <sup>th</sup> Nov 2022
17	Principles of Public-Key Cryptosystems: The RSA algorithm	L+D, PS	BB	2	34	16 <sup>th</sup> Nov 2022 to 17 <sup>th</sup> Nov 2022
18	Diffie - Hellman Key Exchange	L+D	BB	3	37	24 <sup>th</sup> Nov 2022 to 28 <sup>th</sup> Nov 2022
19	Elliptic Curve Arithmetic,	L+D	BB	3	40	29 <sup>th</sup> Nov 2022 to 2 <sup>nd</sup> Dec 2022
20	Elliptic Curve Cryptography	L+D	BB	3	43	5 <sup>th</sup> Dec 2022 to 7 <sup>th</sup> Dec 2022
21	Pedagogy activity		LCD	1	44	5 <sup>th</sup> Dec 2022 to 7 <sup>th</sup> Dec 2022
<b>MODULE 5: PSEUDO-RANDOM-SEQUENCE GENERATORS AND STREAM CIPHERS</b>						
22	Linear Feedback Shift Registers	L+D, PS	BB	1	45	8 <sup>th</sup> Dec 2022
23	Design and analysis of stream ciphers	L+D	BB	1	46	10 <sup>th</sup> Dec 2022
24	Design & analysis of Stream ciphers using LFSRs	L+D	BB	2	48	12 <sup>th</sup> Dec 2022 to 13 <sup>th</sup> Dec 2022
25	A5 algorithm	L+D	BB	1	49	14 <sup>th</sup> Dec 2022
26	Hughes XPD/KPD	L+D	BB	1	50	15 <sup>th</sup> Dec 2022
27	Nanotequ	L+D	BB	1	51	19 <sup>th</sup> Dec 2022
28	Additive generators	L+D	BB	1	52	19 <sup>th</sup> Dec 2022
29	Gifford generator	L+D	BB	1	53	20 <sup>th</sup> Dec 2022
30	PKZIP	L+D	BB	1	54	21 <sup>st</sup> Dec 2022
31	Pedagogy activity	L+D	LCD	1	55	26 <sup>th</sup> Dec 2022
32	Revision	L+D	BB, LCD	4	59	27 <sup>th</sup> Dec 2022
33	Revision	L+D	BB, LCD	2	61	27 <sup>th</sup> Dec 2022
34	Revision	L+D	BB, LCD	1	62	27 <sup>th</sup> Dec 2022



**Text Books:**

- William Stallings , “Cryptography and Network Security Principles and Practice”, Pearson Education Inc., 6th Edition, 2014, ISBN: 978-93-325-1877-3
- Bruce Schneier, “Applied Cryptography Protocols, Algorithms, and Source code in C”, Wiley Publications, 2nd Edition, ISBN: 9971-51-348-X

**Reference Books:**

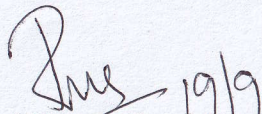
- Understanding Cryptography - A Textbook for Students and Practitioners, Paar, Christof, Pelzl, Jan, Springer (2010).
- Cryptography Engineering: Design Principles and Practical Applications, Niels Ferguson, Bruce Schneier, Tadayoshi Kohno, Wiley (2010).
- Cryptography: Theory and Practice, Third Edition, Douglas R. Stinson, CRC Press (2005).
- Cryptography: A Very Short Introduction, Fred C. Piper; Sean Murphy, Oxford University Press (2002)..

**WEB MATERIALS:**

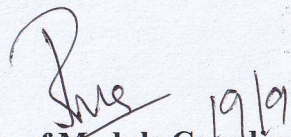
- <https://learncryptography.com/>
- [www.cryptolab.us/](http://www.cryptolab.us/)
- <https://cryptopals.com>

**Details for the teaching Aids**

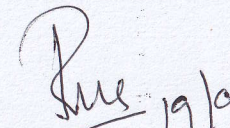
1. BB
- 2.LCD

 19/19

Signature of Course In charge

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Signature of Module Coordinator

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Signature of HOD





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**K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**LESSON PLAN 2022-23 ODD SEMESTER**

**COURSE INCHARGE : Dr. Surekha Borra**  
**COURSE CODE/TITLE : 18ME751**  
**YEAR/ SEMESTER/SECTION : IV/ VII/A**  
**BRANCH : ECE**

	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
<b>Module 1: Basic Introduction to Energy</b>						
1	Energy and power, forms of energy, primary energy sources, energy flows	L+D	BB+PPT	1	1	19/9/22
2	World energy production and consumption	L+D	BB+PPT	1	2	21/9/22
3	Key energy trends in India: Demand,	L+ D	BB+PPT	1	3	22/9/22
4	Electricity	L+D	BB+PPT	1	4	23/9/22
5	Access to modern energy	L+D	BB+PPT	1	5	26/9/22
6	Energy production and trade	L+D	BB+PPT	1	6	28/9/22
7	Factors affecting India's energy development	L+ D	BB+PPT	1	7	29/9/22
8	Economy and demographics, Policy and institutional framework	L+D	BB+PPT	1	8	30/9/22
9	Energy prices and affordability	L+D	BB+PPT	1	9	1/10/22
10	Social and environmental aspects, Investment	L+D	BB+PPT	1	10	3/10/22
<b>Module 2: Energy storage systems</b>						
11	Thermal energy storage methods	L+D	BB+PPT	1	11	6/10/22
12	Energy saving, Thermal energy storage systems	L+D	BB+PPT	1	12	7/10/22
13	Energy Management: Principles of Energy Management	L+ D	BB+PPT	1	13	8/10/22
14	Energy demand estimation	L+D	BB+PPT	1	14	10/10/22
15	Energy pricing, Energy Audit: Purpose	L+D	BB+PPT	1	15	12/10/22
16	Methodology with respect to process Industries	L+D	BB+PPT	1	16	13/10/22
17	IA-1			1	17	19/10/22
18	Characteristic method employed in Certain Energy Intensive Industries	L+D	BB+PPT	1	18	20/10/22
19	Problems	L+D	BB+PPT	1	19	21/10/22



20	Problems	L+D	BB+PPT	1	20	27/10/22
<b>Module 3: Environment</b>						
21	Introduction, Multidisciplinary nature of environmental studies-	L+D	BB+PPT	1	21	28/10/22
22	Definition, scope and importance	L+D	BB+PPT	1	22	31/10/22
23	Need for public awareness	L+ D	BB+PPT	1	23	2/11/22
24	Ecosystem: Concept, Energy flow	L+D	BB+PPT	1	24	3/11/22
25	Structure and function of an ecosystem	L+D	BB+PPT	1	25	4/11/22
26	Food chains	L+D	BB+PPT	1	26	7/11/22
27	Food webs and ecological pyramids	L+ D	BB+PPT	1	27	9/11/22
28	Forest ecosystem, Grassland ecosystem	L+D	BB+PPT	1	28	10/11/22
29	Desert ecosystem and Aquatic ecosystems	L+D	BB+PPT	1	29	14/11/22
30	Ecological succession	L+D	BB+PPT	1	30	16/11/22
<b>Module 4: Environmental Pollution</b>						
31	Environmental Pollution, Definition, Cause, effects	L+D	BB+PPT	1	31	17/11/22
32	Control measures of - Air pollution Water pollution, Soil pollution	L+D	BB+PPT	1	32	18/11/22
33	IA-2			1	33	23/11/22
34	Marine pollution, Noise pollution	L+D	BB+PPT	1	34	24/11/22
35	Thermal pollution and nuclear hazards	L+ D	BB+PPT	1	35	26/11/22
36	Solid waste Management	L+D	BB+PPT	1	36	28/11/22
37	Disaster management Role of an individual in prevention of pollution	L+D	BB+PPT	1	37	29/11/22
38	Pollution case studies	L+D	BB+PPT	1	38	30/11/22
<b>Module 5: Social Issues and Environment</b>						
39	Social Issues and the Environment	L+D	BB+PPT	1	39	1/12/22
40	Climate change, global warming	L+D	BB+PPT	1	40	2/12/22
41	Acid rain, ozone layer depletion	L+ D	BB+PPT	1	41	5/12/22
42	Accidents and holocaust. Case Studies	L+D	BB+PPT	1	42	7/12/22
43	Wasteland reclamation	L+D	BB+PPT	1	43	8/12/22
44	Consumerism	L+D	BB+PPT	1	44	9/12/22
45	Nuclear and waste products	L+ D	BB+PPT	1	45	12/12/22
46	Environment Protection Act, Air (Prevention and Control of Pollution) Act	L+D	BB+PPT	1	46	13/12/22
47	Water (Prevention and control of Pollution) Act, Wildlife Protection Act	L+D	BB+PPT	1	47	14/12/22



48	Forest Conservation Act Issues involved in enforcement of environmental legislation	L+D	BB+PPT	1	48	15/12/22
49	Group assignments: Assignments related to e-waste management	L+D	BB+PPT	1	49	16/12/22
50	Municipal solid waste management;	L+ D	BB+PPT	1	50	19/12/22
51	Air pollution control systems; Water treatment systems	L+D	BB+PPT	1	51	21/12/22
52	IA-3			1	52	24/12/22
53	Wastewater treatment plants; Solar heating systems	L+D	BB+PPT	1	53	26/12/22
54	Solar power plants; Thermal power plants;	L+ D	BB+PPT	1	54	28/12/22
55	Hydroelectric power plants; Biofuels	L+D	BB+PPT	1	55	29/12/22
56	Environmental status assessments; Energy status assessments etc.	L+D	BB+PPT	1	56	30/12/22

**Textbooks:**

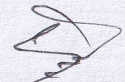
1. Textbook for Environmental Studies for Undergraduate Courses of all Branches of Higher Education by University grant commission and Bharathi Vidyapeeth Institute of environment education and Research, Pune
2. De, B. K., Energy Management audit & Conservation, 2nd Edition, Vrinda Publication, 2010.


**Reference Books:**

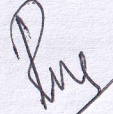
1. Energy Management Hand book, Turner, W. C., Doty, S. and Truner, W. C, Fairmont Press 7th Edition 2009
2. Energy Management Murphy, W. R Elsevier 2007
3. Energy Management Principles Smith, C. B Pergamum 2007
4. Environment pollution control Engineering, C S Rao New Age International reprint 2015, 2nd edition
5. Environmental studies, Benny Joseph Tata McGraw Hill, 2nd edition, 2008

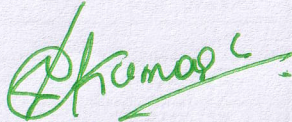
**Details of the teaching aids:**

Black Board and Power Point Presentations

  
Course Incharge

  
Module coordinator

  
HOD ECE

  
PRINCIPAL