K.S. INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr P N SUDHA

SUBJECT CODE/NAME : BEC613B / DATA SECURITY

SEMESTER/YEAR : VI/ III/A

ACADEMIC YEAR : 2024-2025

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: CLASSICAL ENCRYPTION TECHNIQUES:					
1	Classical Encryption Techniques	L+D	BB	1	1	10th Feb 2025
2	Introduction to modular arithmetic	L+D, PS	BB	1	2	11th Feb 2025
3	Substitution techniques	L+ D, PS	BB	3	5	12th to 14th Feb 2025
4	Traditional Block Cipher structure.	L+D	BB	2	7	17th to 18th Feb 2025
5	The AES Cipher	L+D	BB	4	11	19th to 22nd Feb 2025
6	Block Cipher Modes of Operation.	L+D	BB	3	14	24th to 27th Feb 2025
7	To solve QP problems & Pedagogy		LCD	1	15	28th Feb 2025
	MODULE 2: BASIC CONCEPTS OF NUMBER THEORY AND FINITE FIELDS:					
6	Divisibility and The Division Algorithm	L+D	BB	1	16	3rd March 2025
7	Euclidean algorithm& Problems Euclidean algorithm	L+D	BB	4	20	4th to 8th March 2025
8	Problems on Modular arithmetic	L+D	BB	2	22	10th to 11th March 2025
9	Groups, Rings and Fields	L+D	BB	1	23	12th March 2025
10	Finite fields of the form GF(p),	L+D	BB	3	26	13th to 20th March 2025
11	Polynomial Arithmetic,	L+D	BB	2	28	21th to 22nd March 2025
12	Fields of the Form GF(2_m)	L+D	BB	2	30	24th to 26th March 2025
13	To solve QP problems & Pedagogy activity			1	31	27th March 2025

	MODULE 3: MORE ON NUMBER THEORY & ASYMMETRIC CIPHERS					
14	Prime numbers, Fermat's theorem	L+D	BB	2	34	28th to 29th March 2025
15	Euler's theorem	L+D	BB	2	36	1st to 2nd April 2025
16	Principles of Public-Key Cryptosystems	L+D	BB	1	37	3rd April 2025
17	Diffie – Hellman Key Exchange	L+D	BB	2	39	4th to 7th April 2025
18	The RSA algorithm	L+D	BB	2	41	8th to 9th April 2025
19	Elliptic Curve Arithmetic over Zp	L+D	BB	2	43	11th to 12th April 2025
20	Elliptic Curve Cryptography	L+D	BB	3	46	15th to 17th April 2025
21	Discrete logarithm	L+D	BB	1	47	24th April 2025
22	To solve QP problems & Pedagogy activity		LCD		46	24th April 2025
	MODULE 4: CRYPTOGRAPHIC HASH FUNCTIONS & MESSAGE AUTHENTICATION CODES					
23	Application of Hash Functions	L+D, PS	BB	1	47	25th April 2025
24	Requirements and Security	L+D, PS	BB	1	51	26th April 2025
25	Two Simple Hash Functions	L+D	BB	1	52	28th April 2025
26	Hash function based on Cipher Block Chaining	L+D	BB	2	54	29th April to 2nd May 2025
	SHA-512	L+D	BB	1	55	5th May 2025
27	Message Authentication Functions, Security of MACs	L+D	BB	2	57	6th to 7th May 2025
28	MACs based on Hash Functions		LCD	1	58	8th May 2025
	MODULE 5: DIGITAL SIGNATURES & KEY MANAGEMENT AND DISTRIBUTION					
29	Digital Signatures, NIST Digital Signature Algorithm, Algorithm.	L+D, PS	BB	3	61	9th to 12th May 2025
30	Elliptic Curve Digital Signature	L+D	BB	2	63	13th to 14th May 2025
31	Symmetric Key Distribution Using Symmetric Encryption	L+D	BB	1	64	15th to 16th May 2025
32	Symmetric Key Distribution Using Asymmetric Encryption	L+D	BB	2	66	19th to 20th May 2025
33	Distribution of Public Keys	L+D	BB	2	68	30th to31st May 2025
34	To solve QP problems & Pedagogy activity	L+D	BB	1	68	31st May 2025

Text Books:

- William Stallings, "Cryptography and Network Security Principles and Practice", Pearson Education Inc., 6th Edition, 2014, ISBN: 978-93-325-1877-3

Reference Books:

- 1. Bruce Schneier, "Applied Cryptography Protocols, Algorithms, and Source code in C", Wiley Publications, 2nd Edition, ISBN: 9971-51-348-X.
- 2. Cryptography and Network Security, Behrouz A Forouzan, TMH, 2007.

WEB MATERIALS:

- https://archive.nptel.ac.in/courses/106/105/106105162www.cryptolab.us/
- https://cryptopals.com

Details for the teaching Aids

1. BB
2.LCD

4/2/25
Signature of Course In charge

4/2/25
Signature of Module Coordinator

4/2/25
Signature of HOD

K.S. INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Dr. REKHA N
COURSE CODE/NAME : BEC403/CONTROL SYSTEMS
YEAR/ SEMESTER/SECTION : 2nd / 4th /A
BRANCH : Electronics & Communication Engineering

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module 1:Introduction to Control Systems						
1.	Introduction to Control Systems: Types of Control Systems, Effect of Feedback Systems	L+D	BB	2	2	10th & 11th February 2025
2.	Differential equation of Physical Systems – Mechanical Systems	L+ D	BB	4	6	12th February to 17th February 2025
3.	Differential equation of Electrical Systems	L+ D	BB	2	8	18th February to 19th February 2025
4.	Analogous Systems	L+D	BB	3	11	20th to 22nd February 2025
Module 2:Block Diagrams and Signal Flow Graphs						
5.	Block diagrams: Transfer functions	L+D	BB	4	15	24th to 28nd February 2025

6.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+DE	BB	4	19	3rd March to 6th March 2025
7.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+ PS	BB	4	23	7th March to 11th March 2025
Module 3:Time Response of Feedback Control Systems						
8.	Time Response of feedback control systems: Standard test signals,	L+ DE	BB	2	25	12th March & 13th March 2025
9.	Unit step response of First order Systems.	L+D	BB	2	27	14th March & 20th March 2025
10.	Second order Systems	L+D	BB	3	30	21st March to 25th March 2025
11.	Time response specifications of second order systems	L+D	BB	3	33	26th March to 28th March 2025
12.	Steady state errors and error constants.	L+D	BB	3	36	29th March to 2nd April 2025
13.	Introduction to PI, PD	L+DE	LCD	1	37	3rd April 2025
14.	PID Controllers	T+ STx	BB	1	38	4th April 2025
Module 4:Stability Analysis						
15.	Stability analysis: Concepts of stability, Necessary conditions for Stability, Routh stability criterion	L+D	LCD	2	40	7th & 8th April 2025
16.	Relative stability analysis: more on the Routh stability criterion	L+D	BB	2	42	9th & 11th April 2025
17.	Introduction to Root-Locus Techniques	L+D	BB	1	43	15th April 2025
18.	The root locus concepts. Construction of root loci.	L+D	BB	4	47	16th April to 25th April 2025
19.	Frequency domain analysis and stability: Correlation between time and frequency response,	L+D	BB	2	49	26th & 28th April 2025

20.	Bode Plots, Experimental determination of transfer function	L+D	BB	5	54	29th April to 7th May 2025
Module 5:Frequency Domain Analysis and Stability						
21.	Introduction to Polar Plots,	L+PS(Tx)	BB	2	56	8th & 9th May 2025
22.	Nyquist Stability criterion	L+PS(Tx)	BB	4	60	10th May to 14th May 2025
23.	Introduction to lead, lag and lead-lag compensating networks (excluding design).	L+D	LCD	1	61	15th May 2025
24.	Introduction to State variable analysis: Introduction, Concept of State,	L+D	LCD	1	62	16th May 2025
25.	State variables & State model	L+D	LCD	1	63	19th May 2025
26.	State model for electrical systems,	L+D	BB	2	65	20th & 21st May 2025
27.	Solution of state equations	L+D	BB	2	67	30th & 31st May 2025

Text Book:

1. I J.Nagarath and M.Gopal, — Control Systems Engineering, New Age International Publishers, Fifth Edition.

Reference Books:

1. Modern Control Engineering‖ K.Ogata, Pearson Education Asia/PHI, 4th Edition, 2002. ISBN : 978-81-203-40107.
2. Automatic Control Systems‖, Benjamin C. Kuo, John Wiley India Pvt. Ltd., 8th Edition, 2008.
3. Feedback and Control System‖ Joseph J Distefano III et al., Schaum's Outlines, TMH, 2nd Edition 2007

Details of the teaching aids: Black Board, LCD Projector

Course In charge **Module coordinator** **HOD ECE**

K. S INSTITUTE OF TECHNOLOGY BANGALORE-560109

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : **Dr. DINEH KUMAR D S**

SUBJECT CODE/NAME : **BEC601 – EMBEDDED SYSTEM DESIGN**

SEMESTER/YEAR/SEC : **VI A**

ACADEMIC YEAR : **2024-25**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (B)
	MODULE 1					
1	**Introduction to Embedded System:** Embedded systems Vs General computing systems	L	BB+P	1	1	10/02/2025
2	History of Embedded Systems, Classification of Embedded systems	L	BB+P	1	2	11/02/2025
3	Major Application Areas of Embedded Systems. Purpose of Embedded Systems	L	BB+P	1	3	12/02/2025
4	The Typical Embedded System, Microprocessor Vs Microcontroller	L	BB+P	1	4	13/02/2025
5	Differences between RISC and CISC, Harvard V/s Von- Neumann, Big-endian V/s Little-endian processors	L	BB+P	1	5	17/02/2025
6	Memory (ROM and RAM types)	L	BB+P	1	6	18/02/2025
7	Sensors & Actuators, The I/O Subsystem – I/O Devices, Light Emitting Diode (LED)	L	BB+P	1	7	19/02/2025
8	7- Segment LED Display, Opt coupler	L	BB+P	1	8	20/02/2025

9	Relay, Piezo buzzer, Push button switch	L	BB+P	1	9	22/02/2025
10	On-board Communication Interface	L	BB+P	1	10	24/02/2025
11	External Communication Interface	L	BB+P	1	11	25/02/2025
12	Embedded Firmware	L	BB+P	1	12	27/02/2025
	MODULE 2					
13	**Embedded System Design Concepts**	L	BB+P	1	13	03/03/2025
14	Characteristics and Quality Attributes of Embedded Systems	L	BB+P	1	14	04/03/2025
15	Operational and non-operational quality attributes	L	BB+P	1	15	05/03/2025
16	Embedded Systems-Application Specific	L	BB+P	1	16	06/03/2025
17	Embedded Systems-Domain Specific	L	BB+P	1	17	08/03/2025
18	Hardware Software Co-Design	L	BB+P	1	18	10/03/2025
19	Program Modeling	L	BB+P	1	19	11/03/2025
20	Embedded firmware design and development	L	BB+P	1	20	12/03/2025
	MODULE – 3					
21	**Operating System basics**	L	BB+P	1	21	13/03/2025
22	Types of operating systems	L	BB+P	1	22	20/03/2025
23	Task, process and threads	L	BB+P	1	23	24/03/2025
24	Thread preemption, Preemptive Task scheduling techniques	L	BB+P	1	24	25/03/2025
25	Task Communication	L	BB+P	1	25	26/03/2025
26	Task synchronization issues – Racing and Deadlock	L	BB+P	1	26	27/03/2025
27	How to choose an RTOS	L	BB+P	1	27	29/03/2025
28	Integration and testing of Embedded hardware	L	BB+P	1	28	1/04/2025
29	Integration and testing of Embedded firmware	L	BB+P	1	29	2/04/2025
30	ESD Environment	L	BB+P	1	30	03/04/2025
	MODULE 4					
31	**ARM Embedded Systems**	L	BB+P	1	31	07/04/2025
32	Introduction, RISC design philosophy	L	BB+P	1	32	08/04/2025
33	Embedded system hardware-AMBA bus protocol	L	BB+P	1	33	09/04/2025

34	ARM bus technology, Memory, Peripherals	L	BB+P	1	34	15/04/2025
35	Embedded system software – Initialization (BOOT) code	L	BB+P	1	35	16/04/2025
36	Operating System, Applications	L	BB+P	1	36	17/04/2025
37	ARM Processor Fundamentals, ARM core dataflow model	L	BB+P	1	37	24/04/2025
38	registers, current program status register	L	BB+P	1	38	26/04/2025
39	Pipeline, Exceptions	L	BB+P	1	39	28/04/2025
40	Interrupts and Vector Table	L	BB+P	1	40	29/04/2025
	MODULE 5					
41	**Introduction to the ARM Instruction set**	L	BB+P	1	41	05/05/2025
42	Introduction	L	BB+P	1	42	06/05/2025
43	Data processing instructions	L	BB+P	1	43	07/05/2025
44	Load – Store instruction	L	BB+P	1	44	08/05/2025
45	Software interrupt instructions	L	BB+P	1	45	10/05/2025
46	Program status register instructions	L	BB+P	1	46	12/05/2025
47	Loading constants	L	BB+P	1	47	13/05/2025
48	ARMv5E extensions	L	BB+P	1	48	14/05/2025
49	Conditional Execution	L	BB+P	1	49	15/05/2025
50	Sample programs	L	BB+P	1	50	19/05/2025
51	Revision	L	BB+P	1	51	20/05/2025
52	Revision	L	BB+P	1	52	21/05/2025
53	Revision	L	BB+P	1	53	31/05/2025

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Signature of Course In charge **Signature of Module Coordinator** **Signature of HOD**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Santhosh Kumar B.R

COURSE TYPE / CODE / TITLE : Theory/ BESCK204C / Introduction to Electronics & Communication

YEAR/ SEMESTER/SECTION : 1st /2nd /I

BRANCH : ICB

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: Power Supplies and Amplifiers						
1	Introduction	L+D	BB	1	1	18/03/2025
2	Power Supplies: Block diagram	L+ D	BB	1	2	19/03/2025
3	Half-wave rectifier and filters	L+ D	BB	1	3	20/03/2025
4	Full-wave rectifiers with filters	L+ D	BB	1	4	21/03/2025
5	Voltage regulators	L+D	BB	1	5	25/03/2025
6	Output resistance and voltage regulation	L+D	BB	1	6	26/03/2025
7	Voltage multipliers	L+D	BB	1	7	27/03/2025

8	Amplifiers, types, gain, Input and output resistance	L+D	BB	1	8	28/03/2025
9	Frequency Response, Negative feedback	L+D	BB	1	9	01/04/2025
10	Bandwidth and Phase Shift	L+D	BB	1	10	02/04/2025
11	Negative Feedback and Multi stage Amplifiers	L+D	BB	1	11	03/04/2025
	MODULE 2: Oscillators					
12	Barkhausen criterion	L+D	BB	1	12	04/04/2024
13	Sinusoidal and non-sinusoidal oscillators	L+D	BB	1	13	08/04/2024
14	Ladder network oscillator	L+ D	BB	1	14	09/04/2024
15	Crystal Controlled Oscillator	L+D	BB	1	15	11/04/2024
16	Operational Amplifiers: characteristics of ideal and practical op-amp	L+D	BB	1	16	12/04/2024
	IA1-17/04/2025					
17	Operational Amplifier Configurations	L+D	BB	1	17	22/04/2024
18	Operational Amplifier Circuits: Voltage Follower, summer	L+D	BB	1	18	23/04/2024
19	Subtractor, Integrator and Differentiator	L+D	BB	1	19	24/04/2024
	MODULE 3: Boolean Algebra and Logic Circuits					
20	Binary numbers, Number Base Conversion	L+D	BB	1	20	14/05/2024
21	Octal & Hexa Decimal Numbers,	L+D	BB	1	21	15/05/2024
22	Complements	L+D	BB	2	22	16/05/2024
23	Axiomatic Definition of Boolean Algebra	L+D	BB	1	23	19/05/2024
24	Basic Theorems and Properties of Boolean Algebra	L+D	BB	1	24	20/05/2024
25	Boolean Functions,			1	25	21/05/2024
	IA2-24/05/2025					
26	Canonical and Standard Forms	L+D	BB	1	26	27/05/2024
27	Other Logic Operations,	L+D	BB	1	26	28/05/2024
28	Digital Logic Gates	L+D	BB	1	27	29/05/2024
29	Combinational Circuits: Introduction and Design procedure	L+D	BB	1	28	30/05/2024

30	Adders' circuits: Half adders	L+D	BB	1	29	31/05/2024
31	Full adder	L+D	BB	1	30	03/06/2024
	MODULE4: Embedded System					
32	Embedded systems vs general computing systems	L+D	BB	1	31	25/04/2024
33	Classification of Embedded Systems	L+D	BB	1	32	26/04/2024
34	Major application areas of Embedded Systems	L+PPT	PPT	1	33	29/04/2024
35	Elements of Embedded System	L+D	BB	1	34	02/05/2024
36	Core of the Embedded System	L+D	BB	1	35	06/05/2024
37	Microprocessor vs Microcontroller, RISC vs CISC	L+PPT	PPT	1	36	07/05/2024
38	Instrumentation and control system,	L+D	BB	1	37	08/05/2024
39	Transducers, Sensors,	L+D	BB	1	38	09/05/2024
40	Actuators, LED	L+D	BB	1	39	10/05/2024
41	7-Segment LED Display	L+D	BB	1	40	13/05/2024
	MODULE 5: Analog Communication Scheme & Digital Modulation Scheme					
42	Modern communication system scheme	L+PPT	BB	1	41	04/06/2024
43	Transmitter, Channel or Medium	L+D	BB	1	42	05/06/2024
44	Noise, Receiver, Multiplexing	L+D	BB	1	43	06/06/2024
45	Types of modulation – AM	L+PPT	BB	1	44	10/06/2024
46	FM Modulation	L+PPT	BB	1	45	11/06/2024
47	Concept of Radio wave propagation	L+D	BB	1	46	12/06/2024
48	Advantages of digital over analog communication	L+D	BB	1	47	13/06/2024
49	Radio signal transmission	L+D	BB	1	48	16/06/2024
50	ASK, FSK, PSK,	L+D	BB	1	49	17/06/2024
51	Multiple access techniques	L+PPT	PPT	1	50	17/06/2024
52	Poster Presentation				51	27/06/2024
53	Poster Presentation				52	28/06/2024
	IA3-20/06/24					

Text Books:

1. Mike Tooley, 'Electronic Circuits, Fundamentals & Applications',4th Edition, Elsevier, 2015. DOI https://doi.org/10.4324/9781315737980. eBook ISBN9781315737980

2. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-2030417-84.

3. K V Shibu, 'Introduction to Embedded Systems', 2nd Edition, McGraw Hill Education (India), Private Limited, 2016

4. S L Kakani and Priyanka Punglia, 'Communication Systems', New Age International Publisher, 2017

Web Materials:

https://www.sciencedirect.com/topics/engineering/power-supply
https://www.techtarget.com/whatis/definition/amplifier
https://archive.nptel.ac.in/courses/117/105/117105143/
https://www.sciencedirect.com/topics/engineering/number-system

Details of the teaching aids: 1. **BB – Black Board**

2. **PPT Power Point Presentation**

Signature of Course In-Charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Santhosh Kumar B.R

COURSE TYPE / CODE / TITLE : Theory/ BESCK204C / Introduction to Electronics & Communication

YEAR/ SEMESTER/SECTION : 1st /2nd /J

BRANCH : CCM

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: Power Supplies and Amplifiers						
1	Introduction	L+D	BB	1	1	17/03/2025
2	Power Supplies: Block diagram	L+ D	BB	1	2	18/03/2025
3	Half-wave rectifier and filters	L+ D	BB	1	3	19/03/2025
4	Full-wave rectifiers with filters	L+ D	BB	1	4	20/03/2025
5	Voltage regulators	L+D	BB	1	5	24/03/2025
6	Output resistance and voltage regulation	L+D	BB	1	6	25/03/2025
7	Voltage multipliers	L+D	BB	1	7	26/03/2025

8	Amplifiers, types, gain, Input and output resistance	L+D	BB	1	8	27/03/2025
9	Frequency Response, Negative feedback	L+D	BB	1	9	29/03/2025
10	Bandwidth and Phase Shift	L+D	BB	1	10	01/04/2025
11	Negative Feedback and Multi stage Amplifiers	L+D	BB	1	11	02/04/2025
	MODULE 2: Oscillators					
12	Barkhausen criterion	L+D	BB	1	12	03/04/2025
13	Sinusoidal and non-sinusoidal oscillators	L+D	BB	1	13	07/04/2025
14	Ladder network oscillator	L+ D	BB	1	14	08/04/2025
15	Crystal Controlled Oscillator	L+D	BB	1	15	09/04/2025
16	Operational Amplifiers: characteristics of ideal and practical op-amp	L+D	BB	1	16	21/04/2025
	IA1-17/04/2025					
17	Operational Amplifier Configurations	L+D	BB	1	17	22/04/2025
18	Operational Amplifier Circuits: Voltage Follower, summer	L+D	BB	1	18	23/04/2024
19	Subtractor, Integrator and Differentiator	L+D	BB	1	19	24/04/2025
	MODULE 3: Boolean Algebra and Logic Circuits					
20	Binary numbers, Number Base Conversion	L+D	BB	1	20	14/05/2025
21	Octal & Hexa Decimal Numbers,	L+D	BB	1	21	15/05/2025
22	Complements	L+D	BB	2	22	19/05/2025
23	Axiomatic Definition of Boolean Algebra	L+D	BB	1	23	20/05/2025
24	Basic Theorems and Properties of Boolean Algebra	L+D	BB	1	24	21/05/2025
25	Boolean Functions,			1	25	26/05/2025
	IA2-24/05/2025					
26	Canonical and Standard Forms	L+D	BB	1	26	27/05/2025
27	Other Logic Operations,	L+D	BB	1	26	28/05/2025
28	Digital Logic Gates	L+D	BB	1	27	29/05/2025
29	Combinational Circuits: Introduction and Design procedure	L+D	BB	1	28	31/05/2025

30	Adders' circuits: Half adders	L+D	BB	1	29	02/06/2025
31	Full adder	L+D	BB	1	30	03/06/2025
	MODULE4: Embedded System					
32	Embedded systems vs general computing systems	L+D	BB	1	31	26/04/2025
33	Classification of Embedded Systems	L+D	BB	1	32	28/04/2025
34	Major application areas of Embedded Systems	L+PPT	PPT	1	33	29/04/2025
35	Elements of Embedded System	L+D	BB	1	34	05/05/2025
36	Core of the Embedded System	L+D	BB	1	35	06/05/2025
37	Microprocessor vs Microcontroller, RISC vs CISC	L+PPT	PPT	1	36	07/05/2025
38	Instrumentation and control system,	L+D	BB	1	37	08/05/2025
39	Transducers, Sensors,	L+D	BB	1	38	10/05/2025
40	Actuators, LED	L+D	BB	1	39	12/05/2024
41	7-Segment LED Display	L+D	BB	1	40	13/05/2025
	MODULE 5: Analog Communication Scheme & Digital Modulation Scheme					
42	Modern communication system scheme	L+PPT	BB	1	41	04/06/2025
43	Transmitter, Channel or Medium	L+D	BB	1	42	05/06/2025
44	Noise, Receiver, Multiplexing	L+D	BB	1	43	09/06/2025
45	Types of modulation – AM	L+PPT	BB	1	44	10/06/2025
46	FM Modulation	L+PPT	BB	1	45	11/06/2025
47	Concept of Radio wave propagation	L+D	BB	1	46	12/06/2025
48	Advantages of digital over analog communication	L+D	BB	1	47	14/06/2025
49	Radio signal transmission	L+D	BB	1	48	16/06/2025
50	ASK, FSK, PSK,	L+D	BB	1	49	17/06/2025
51	Multiple access techniques	L+PPT	PPT	1	50	17/06/2025
52	Poster Presentation				51	27/06/2025
53	Poster Presentation				52	28/06/2025
	IA3-20/06/24					

Text Books:

1. Mike Tooley, 'Electronic Circuits, Fundamentals & Applications',4th Edition, Elsevier, 2015. DOI https://doi.org/10.4324/9781315737980. eBook ISBN9781315737980

2. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-2030417-84.

3. K V Shibu, 'Introduction to Embedded Systems', 2nd Edition, McGraw Hill Education (India), Private Limited, 2016

4. S L Kakani and Priyanka Punglia, 'Communication Systems', New Age International Publisher, 2017

Web Materials:

https://www.sciencedirect.com/topics/engineering/power-supply
https://www.techtarget.com/whatis/definition/amplifier
https://archive.nptel.ac.in/courses/117/105/117105143/
https://www.sciencedirect.com/topics/engineering/number-system

Details of the teaching aids: 1. **BB – Black Board**

2. **PPT Power Point Presentation**

Signature of Course In-Charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

K.S. INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Dr. DEVIKA B
COURSE CODE/NAME : BEC403/CONTROL SYSTEMS
YEAR/ SEMESTER/SECTION : 2nd / 4th /A
BRANCH : Electronics & Communication Engineering

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module 1:Introduction to Control Systems						
1.	Introduction to Control Systems: Types of Control Systems, Effect of Feedback Systems	L+D	BB	2	2	10th & 11th February 2025
2.	Differential equation of Physical Systems – Mechanical Systems	L+ D	BB	4	6	12th February to 17th February 2025
3.	Differential equation of Electrical Systems	L+ D	BB	2	8	18th February to 19th February 2025
4.	Analogous Systems	L+D	BB	3	11	20th to 22nd February 2025
Module 2:Block Diagrams and Signal Flow Graphs						
5.	Block diagrams: Transfer functions	L+D	BB	4	15	24th to 28nd February 2025

6.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+DE	BB	4	19	3rd March to 6th March 2025
7.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+ PS	BB	4	23	7th March to 11th March 2025
Module 3:Time Response of Feedback Control Systems						
8.	Time Response of feedback control systems: Standard test signals,	L+ DE	BB	2	25	12th March & 13th March 2025
9.	Unit step response of First order Systems.	L+D	BB	2	27	14th March & 20th March 2025
10.	Second order Systems	L+D	BB	3	30	21st March to 25th March 2025
11.	Time response specifications of second order systems	L+D	BB	3	33	26th March to 28th March 2025
12.	Steady state errors and error constants.	L+D	BB	3	36	29th March to 2nd April 2025
13.	Introduction to PI, PD	L+DE	LCD	1	37	3rd April 2025
14.	PID Controllers	T+ STx	BB	1	38	4th April 2025
Module 4:Stability Analysis						
15.	Stability analysis: Concepts of stability, Necessary conditions for Stability, Routh stability criterion	L+D	LCD	2	40	7th & 8th April 2025
16.	Relative stability analysis: more on the Routh stability criterion	L+D	BB	2	42	9th & 11th April 2025
17.	Introduction to Root-Locus Techniques	L+D	BB	1	43	15th April 2025
18.	The root locus concepts, Construction of root loci.	L+D	BB	4	47	16th April to 25th April 2025
19.	Frequency domain analysis and stability: Correlation between time and frequency response,	L+D	BB	2	49	26th & 28th April 2025

20.	Bode Plots, Experimental determination of transfer function	L+D	BB	5	54	29th April to 7th May 2025
Module 5:Frequency Domain Analysis and Stability						
21.	Introduction to Polar Plots,	L+PS(Tx)	BB	2	56	8th & 9th May 2025
22.	Nyquist Stability criterion	L+PS(Tx)	BB	4	60	10th May to 14th May 2025
23.	Introduction to lead, lag and lead-lag compensating networks (excluding design).	L+D	LCD	1	61	15th May 2025
24.	Introduction to State variable analysis: Introduction, Concept of State,	L+D	LCD	1	62	16th May 2025
25.	State variables & State model	L+D	LCD	1	63	19th May 2025
26.	State model for electrical systems,	L+D	BB	2	65	20th & 21st May 2025
27.	Solution of state equations	L+D	BB	2	67	30th & 31st May 2025

Text Book:

1. I J.Nagarath and M.Gopal, — Control Systems Engineering, New Age International Publishers, Fifth Edition.

Reference Books:

1. Modern Control Engineering‖ K.Ogata, Pearson Education Asia/PHI, 4th Edition, 2002. ISBN : 978-81-203-40107.
2. Automatic Control Systems‖, Benjamin C. Kuo, John Wiley India Pvt. Ltd., 8th Edition, 2008.
3. Feedback and Control System‖ Joseph J Distefano III et al., Schaum's Outlines, TMH, 2nd Edition 2007

Details of the teaching aids: Black Board, LCD Projector

Course In charge **Module coordinator** **HOD ECE**

K. S INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr. Electa Alice Jayarani A

SUBJECT CODE/NAME :BA1654D – Introduction to Artificial Intelligence

SEMESTER/YEAR/SEC :VI A

ACADEMIC YEAR : 2024-25

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (B)
	MODULE 1					
1	What is artificial intelligence? AI problems	L	BB+P	1	1	10/02/2025
2	The underlying assumptions, AI techniques	L	BB+P	1	2	11/02/2025
3	Level of the model, Criteria for success,	L	BB+P	1	3	12/02/2025
4	History of AI	L	BB+P	1	4	13/02/2025
5	Defining the problems, production systems	L	BB+P	1	5	17/02/2025
6	Problem and production system characteristics	L	BB+P	1	6	18/02/2025
7	Issues in the design of search programs	L	BB+P	1	7	19/02/2025
8	Additional problems	L	BB+P	1	8	20/02/2025
9	Exercises	L	BB+P	1	9	22/02/2025
	MODULE 2					
10	Knowledge representation issues, representations and mapping, Approaches	L	BB+P	1	10	24/02/2025
11	Issues in knowledge representation, frame problem	L	BB+P	1	11	25/02/2025
12	Using Predicate logic: representation of simple facts in logic,	L	BB+P	1	12	27/02/2025

13	Representing instance and ISA relationships, computable functions and predicates	L	BB+P	1	13	03/03/2025
14	Resolution and natural deduction	L	BB+P	1	14	04/03/2025
15	Representing knowledge using rule: Procedural Verus declarative knowledge	L	BB+P	1	15	05/03/2025
16	Logic programming, Forward Verus Backward reasoning	L	BB+P	1	16	06/03/2025
17	Matching and control knowledge	L	BB+P	1	17	08/03/2025
18	Exercises	L	BB+P	1	18	10/03/2025
MODULE – 3						
19	Symbolic reasoning under uncertainty: Nonmonotonic reasoning	L	BB+P	1	19	11/03/2025
20	Logics for Nonmonotonic reasoning, implementation issues	L	BB+P	1	20	12/03/2025
21	Augmenting problem solver, Implementation Depth first search	L	BB+P	1	21	13/03/2025
22	Depth first search, Breadth first search	L	BB+P	1	22	20/03/2025
23	Statistical reasoning: Probability and Baye's theorem	L	BB+P	1	23	24/03/2025
24	Certainty factor and ruled based systems	L	BB+P	1	24	25/03/2025
25	Bayesian's Network, Dumpster Shafer Theory	L	BB+P	1	25	26/03/2025
26	Fuzzy Logic	L	BB+P	1	26	27/03/2025
27	Exercises	L	BB+P	1	27	29/03/2025
MODULE 4						
28	Game playing: Overview	L	BB+P	1	28	01/04/2025
29	Adding Alpha Beta cutoffs, additional refinements	L	BB+P	1	29	02/04/2025
30	Iterative Deepening	L	BB+P	1	30	03/04/2025
31	Specific games	L	BB+P	1	31	07/04/2025
32	Natural Language processing: Introduction	L	BB+P	1	32	08/04/2025
33	Syntactic Processing, Sematic analysis	L	BB+P	1	33	09/04/2025
34	Discourse and pragmatic processing,	L	BB+P	1	34	15/04/2025

35	Statistical NLP, Spell checking	L	BB+P	1	35	16/04/2025
36	Exercises	L	BB+P	1	36	17/04/2025
MODULE 5						
37	Learning, Rote learning, learning by taking advice	L	BB+P	1	37	24/04/2025
38	Learning in problem solving, learning from examples, explanation-based learning	L	BB+P	1	38	26/04/2025
39	Discovery, Analogy	L	BB+P	1	39	28/04/2025
40	Formal learning theory, Neural net learning and Genetic learning	L	BB+P	1	40	29/04/2025
41	Expert systems: Representing and using domain knowledge	L	BB+P	1	41	05/05/2025
42	Expert system Shells	L	BB+P	1	42	06/05/2025
43	Explanation	L	BB+P	1	43	07/05/2025
44	Knowledge Acquisition	L	BB+P	1	44	08/05/2025
45	Exercises	L	BB+P	1	45	10/05/2025
46	Revision	L	BB+P	1	46	12/05/2025
47	Revision	L	BB+P	1	47	13/05/2025
48	Revision	L	BB+P	1	48	14/05/2025
49	Revision	L	BB+P	1	49	15/05/2025
50	Revision	L	BB+P	1	50	19/05/2025
51	Revision	L	BB+P	1	51	20/05/2025
52	Revision	L	BB+P	1	52	21/05/2025

Signature of Course In charge **Signature of Module Coordinator** **Signature of HOD**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Ramya K R

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II / A

BRANCH : Computer Science and Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	1	18-3-2025
2	Problems	L+PS	BB	1	2	19-3-2025
3	series, parallel circuits	L+D	BB	1	3	20-3-2025
4	problems	L+PS	BB	1	4	21-3-2025
5	series-parallel circuits	L+D	BB	1	5	25-3-2023
6	Problems	L+PS	BB	1	6	26-3-2025
7	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	7	27-3-2025
8	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	8	28-3-2025
9	Power Generation: Hydel, Nuclear	L+D	PPT	1	9	1-4-2025

10	Power Generation: Solar, wind	L+D	PPT	1	10	2-4-2025
Module2: A.C. Fundamentals and Three phase Circuits						
11	Equation of AC Voltage and current.	L+D	BB	1	11	3-4-2025
12	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	12	4-4-2025
13	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	13	8-4-2025
14	Problems, Concept of Impedance.	L+PS	BB	1	14	9-4-2025
15	Analysis of R-L, R-C Series circuits, concept of power factor	L+D	BB	1	15	11-4-2025
Internal Test -1 (17/4/2025)						
16	problems	L+PS	BB	2	17	22-4-2025 23-4-2025
17	Analysis of R-L-C Series circuits	L+D	BB	1	18	24-4-2025
18	Problems	L+PS	BB	1	19	25-4-2025
19	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	1	20	26-4-2025
20	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	2	22	29-4-2025 2-5-2025
Module 4-Transformers and Three-phase induction Motors						
21	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	23	6-5-2025
22	Types and construction of single-phase transformers	L+D	PPT	1	24	7-5-2025
23	EMF equation, losses	L+D	BB	1	25	8-5-2025
24	Problems	L+PS	BB	1	26	9-5-2025
25	variation of losses with respect to load, Efficiency	L+D	BB	1	27	10-5-2025
26	Problems	L+PS	BB	2	29	13-5-2025 14-5-2025
27	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	30	15-5-2025

28	Principle of operation, constructional features of motor types – squirrel cage and wound rotor	L+D	PPT	1	31	16-5-2025
29	Slip and its significance. Problems	L+D	BB	1	32	20-5-2025
	Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures					
30	**Domestic Wiring**: Requirements, Types of wiring: casing, capping, Two way and three-way control of load.	L+D	BB	1	33	21-5-2025
	Internal Test -2 (24/5/2025)					
31	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	34	27-5-2025
32	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	35	28-5-2025
33	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	36	29-5-2025
34	problems	L+PS	BB	1	37	30-5-2025
35	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	38	31-5-2025
36	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	39	3-6-2025
37	Earthing and its types,	L+D	PPT	1	40	4-6-2025
	Module 3- DC Machines					
38	**DC Machines**: Generator- constructional details	L+D	PPT	1	41	5-6-2025
39	Principle of operation, induced emf expression.	L+D	PPT	1	42	6-6-2025
40	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	43	10-6-2025
41	Problems.	L+PS	BB	1	44	11-6-2025
42	Motor-Principle of operation, back emf and torque equations	L+D	BB	1	45	12-6-2025
43	Types of motors, Problems	L+D	BB	1	46	13-6-2025
44	Characteristics (shunt and series only), speed control (armature & field) of DC motors (series & shunt only),	L+D	BB	1	47	17-6-2025

	Problems, Applications of DC motors.					
Internal Test -3 (20/6/2025)						
45	Activity / Pedagogy		PPT	2	49	27/6/2025 28/6/2025

Text Books:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.

2. A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill 4th edition, 2019.

2. Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.

3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge

Module Coordinator

HOD

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

PRINCIPAL

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BENGALURU - 560 109.

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Ramya K R

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II / B

BRANCH : Computer Science and Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	1	17-3-2025
2	Problems	L+PS	BB	1	2	18-3-2025
3	series, parallel circuits	L+D	BB	1	3	19-3-2025
4	problems	L+PS	BB	1	4	20-3-2025
5	series-parallel circuits	L+D	BB	1	5	24-3-2023
6	Problems	L+PS	BB	1	6	25-3-2025
7	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	7	26-3-2025
8	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	8	27-3-2025

9	Power Generation: Hydel, Nuclear	L+D	PPT	1	9	29-3-2025
10	Power Generation: Solar, wind	L+D	PPT	1	10	1-4-2025
Module2: A.C. Fundamentals and Three phase Circuits						
11	Equation of AC Voltage and current.	L+D	BB	1	11	2-4-2025
12	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	12	3-4-2025
13	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	13	7-4-2025
14	Problems, Concept of Impedance.	L+PS	BB	1	14	8-4-2025
15	Analysis of R-L, R-C Series circuits, concept of power factor	L+D	BB	1	15	9-4-2025
Internal Test -1 (17/4/2025)						
16	problems	L+PS	BB	2	17	21-4-2025 22-4-2025
17	Analysis of R-L-C Series circuits	L+D	BB	1	18	23-4-2025
18	Problems	L+PS	BB	1	19	24-4-2025
19	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	1	20	26-4-2025
20	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	2	22	28-4-2025 29-4-2025
Module 4-Transformers and Three-phase induction Motors						
21	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	23	5-5-2025
22	Types and construction of single-phase transformers	L+D	PPT	1	24	6-5-2025
23	EMF equation, losses	L+D	BB	1	25	7-5-2025
24	Problems	L+PS	BB	1	26	8-5-2025
25	variation of losses with respect to load, Efficiency	L+D	BB	1	27	10-5-2025
26	Problems	L+PS	BB	2	29	12-5-2025

						13-5-2025
27	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	30	14-5-2025
28	Principle of operation, constructional features of motor types – squirrel cage and wound rotor	L+D	PPT	1	31	15-5-2025
29	Slip and its significance. Problems	L+D	BB	1	32	19-5-2025
Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures						
30	**Domestic Wiring**: Requirements, Types of wiring: casing, capping, Two way and three-way control of load.	L+D	BB	1	33	20-5-2025
Internal Test -2 (24/5/2025)						
31	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	34	21-5-2025
32	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	35	26-5-2025
33	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	36	27-5-2025
34	problems	L+PS	BB	1	37	28-5-2025
35	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	38	29-5-2025
36	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	39	31-5-2025
37	Earthing and its types,	L+D	PPT	1	40	2-6-2025
	Module 3- DC Machines					
38	**DC Machines**: Generator- constructional details	L+D	PPT	1	41	3-6-2025
39	Principle of operation, induced emf expression.	L+D	PPT	1	42	4-6-2025
40	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	43	5-6-2025
41	Problems.	L+PS	BB	1	44	9-6-2025
42	Motor-Principle of operation, back emf and torque equations	L+D	BB	1	45	10-6-2025

43	Types of motors, Problems	L+D	BB	1	46	11-6-2025
44	Characteristics (shunt and series only), speed control (armature & field) of DC motors (series & shunt only), Problems, Applications of DC motors.	L+D	BB	1	47	12-6-2025
45	Problems	L+D	BB	1	48	14-6-2025
Internal Test -3 (20/6/2025)						
46	Pedagogy / Activity		PPT	3	51	16/6/2025 17/6/2025 28/6/2025

Text Books:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.

2. A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill 4th edition, 2019.

2. Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.

3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge

Module Coordinator

HOD

HEAD OF THE DEPARTMENT
Dept. of Electronics & Communication Engg.
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K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
Department of Electronics & Communication Engineering
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE :Dr. Bharathi Gururaj

COURSE TYPE / CODE / TITLE : Theory/ BAI654D / Introduction to Artificial Intelligence

YEAR/ SEMESTER/SECTION : 3rd/VI /B

BRANCH : Electronics & Communication Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1	Introduction to Artificial Intelligence	L+D	BB+P	1	1	10/02/2025
2	What is AI, Goals of AI	L+ D	BB+P	1	2	11/02/2025
3	AI Problems	L+ D	BB+P	1	3	13/02/2025
4	AI Techniques, Level of model	L+ D	BB+P	1	4	14/02/2025
5	Defining the problem as a state space search	L+D	BB+P	1	5	17/02/2025
6	Production of systems	L+D	BB+P	1	6	18/02/2025
7	Problem Characteristics	L+D	BB+P	1	7	20/02/2025
8	Production of system characteristics, Issues in the design of search programs.	L+D	BB+P	1	8	21/02/2025
	MODULE-2					
9	Knowledge representation Issues, representations and Mappings	L+D	BB+P	1	9	22/02/2025 Monday
10	Approaches to knowledge representation. Issues in knowledge representation	L+D	BB+P	1	10	24/02/2025
11	The Frame problem, Representing simple facts in logic	L+D	BB+P	1	11	27/02/2025
12	Representing Instance and ISA Relationships, Computable functions and Predicates.	L+D	BB+P	1	12	28/02/2025
13	Resolution and Natural Deduction	L+D	BB+P	1	13	03/03/2025

14	Procedural versus Declarative Knowledge	L+ D	BB+P	1	14	04/02/2025
15	Logic Programming, forward versus Backward Reasoning	L+D	BB+P	1	15	06/03/2025
16	Matching, Control knowledge	L+D	BB+P	1	16	07/03/2025
	MODULE-3					
17	Introduction to Nonmonotonic reasoning, Logics for Nonmonotonic reasoning	L+D	BB+P	1	17	10/03/2025
18	Implementation Issues, Augmenting a problem solver	L+D	BB+P	1	18	11/03/2025
19	Implementation: Depth first search	L+D	BB+P	1	19	13/03/2025
20	Implementation: Breadth first search	L+D	BB+P	1	20	14/03/2025
	IA-1,17/03/2025 – 19/03/2025					
21	Probability and Bayes Theorem	L+D	BB+P	1	21	20/03/2025
22	Certainty Factors and Rule based systems	L+D	BB+P	1	22	21/03/2025
23	Bayesian Networks	L+D	BB+P	1	23	24/03/2025
24	Dempster -Shafer Theory, Fuzzy logic	L+D	BB+P	1	24	25/03/2025
	MODULE- 4					
25	Game Playing: The Minimax search Procedure	L+D	BB+P	1	25	27/03/2025
26	Adding Alpha-beta Cutoffs	L+D	BB+P	1	26	28/03/2025
27	Additional Refinements, Iterative Deepening	L+D	BB+P	1	27	29/03/2025 MONDAY TT
28	References on Specific games	L+D	BB+P	1	28	01/04/2025
29	Natural Language Processing: Introduction	L+D	BB+P	1	29	03/04/2025
30	Syntactic Processing	L+D	BB+P	1	30	04/04/2025
31	Semantic Analysis,	L+D	BB+P	1	31	07/04/2025
32	Discourse and Pragmatic Processing	L+D	BB+P	1	32	08/04/2025
33	Statistical NLP,	L+D	BB+P	1	33	11/04/2025

34	Spell Checking	L+D	BB+P	1	34	15/04/2025
35	Learning Expert Systems: Learning,	L+D	BB+P	1	35	17/04/2025
	IA – 2, 21/04/2025 – 23/04/2025					
36	Rote Learning	L+D	BB+P	1	36	24/04/2025
37	Learning by Taking Advice,	L+D	BB+P	1	37	25/04/2025
38	Problem Solving	L+D	BB+P	1	38	28/04/2025
39	Learning from Examples: Induction,	L+D	BB+P	1	39	29/04/2025
40	Explanation based Learning	L+D	BB+P	1	40	02/05/2025
41	Discovery, Analogy	L+D	BB+P	1	41	05/05/2025
42	Formal Learning theory	L+D	BB+P	1	42	06/05/2025
43	Neural Network Learning	L+D	BB+P	1	43	08/05/2025
44	Genetic Learning	L+D	BB+P	1	44	09/05/2025
45	Expert Systems: Representing and Using Domain Knowledge	L+D	BB+P	1	45	10/05/2025
46	Expert Systems: Representing and Using Domain Knowledge	L+D	BB+P	1	46	12/05/2025
47	Expert systems Shells, Explanation,	L+D	BB+P	1	47	13/05/2025
48	Knowledge Acquisition	L+D	BB+P	1	48	15/05/2025
49	Activity	L+D	BB+P	1	49	16/05/2025
50	Activity	L+D	BB+P	1	50	19/05/2025
51	Activity	L+D	BB+P	1	51	20/05/2025
52	VTU Question paper discussion, Revision	L+D	BB+P	1	52	21/05/2025

53	VTU Question paper discussion, Revision	L+D	BB+P	1	53	30/05/2025
54	VTU Question paper discussion, Revision	L+D	BB+P	1	54	31/05/2025

Textbooks:

1. E. Rich, K. Knight & S. B. Nair, Artificial Intelligence, 3rd Edition, McGraw Hill.,2009

Reference Books

1. Stuart Rusell, Peter Norving, Artificial Intelligence: A Modern Approach, 2nd Edition, Pearson Education

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2. Dan W. Patterson, Introduction to Artificial Intelligence and Expert Systems, 1st Edition, Prentice Hal of India, 2015
3. G. Luger, Artificial Intelligence: Structures and Strategies for complex problem Solving, 4th Edition, Pearson Education, 2002. 5. N.P. Padhy "Artificial Intelligence and Intelligent Systems", Oxford University Press, 2015

Web links and Video Lectures (e-Resources):

1. https://nptel.ac.in/courses/106102220
2. https://nptel.ac.in/courses/106105077
3. https://archive.nptel.ac.in/courses/106/105/106105158/
4. https://archive.nptel.ac.in/courses/106/106/106106140/

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

Bharathi Gowrai
Signature of Course In-Charge

Bharathi Gowrai
Signature of Module Coordinator

Signature of HOD

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **Vishalini Divakar**

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II / F

BRANCH : **Artificial Intelligence and Machine Learning**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	Introduction	L+PS	BB	1	1	17/3/2025
2	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	2	18/3/2025
3	Problems	L+PS	BB	1	3	20/3/2025
4	series, parallel circuits	L+D	BB	1	4	21/3/2025
5	problems	L+PS	BB	1	5	24/3/2025
6	series-parallel circuits	L+D	BB	1	6	25/3/2025
7	Problems	L+PS	BB	1	7	27/3/2025
8	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	8	28/3/2025
9	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	9	29/3/2025

10	Power Generation: Hydel, Nuclear	L+D	PPT	1	10	1/4/2025
11	Power Generation: Solar, wind	L+D	PPT	1	11	3/4/2025
Module2: A.C. Fundamentals and Three phase Circuits						
12	Equation of AC Voltage and current.	L+D	BB	1	12	4/4/2025
13	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	13	7/4/2025
14	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	14	8/4/2025
15	Analysis of R-L, R-C Series circuits, concept of power factor , Concept of Impedance, Problems	L+PS	BB	1	15	11/4/2025
Internal Test -1 (16/4/2025)						
17	Analysis of R-L-C Series circuits	L+D	BB	1	17	21/4/2025
18	Problems	L+PS	BB	1	18	22/4/2025
19	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	1	19	24/4/2025
20	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	2	20	25/4/2025
Module 4-Transformers and Three-phase induction Motors						
21	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	21	28/4/2025
22	Types and construction of single-phase transformers	L+D	PPT	1	22	29/4/2025
23	EMF equation, losses, Problems	L+PS	BB	1	23	2/5/2025
24	variation of losses with respect to load, Efficiency	L+D	BB	1	24	5/5/2025
25	Problems	L+PS	BB	2	25	6/5/2025
26	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	26	8/5/2025
27	Principle of operation, constructional features of motor types – squirrel cage and wound rotor	L+D	PPT	1	27	9/5/2025
28	Slip and its significance	L+D	BB	1	28	10/5/2025

29	Problems	L+PS	BB	1	29	12/5/2025
	Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures					
30	**Domestic Wiring**: Requirements, Types of wiring: casing, capping	L+D	BB	1	30	13/5/2025
31	Two way and three-way control of load.	L+D	PPT	1	31	15/5/2025
32	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	32	16/5/2025
33	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	33	19/5/2025
34	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	34	20/5/2025
35	Problems	L+D	BB	1	35	21/5/2025
	Internal Test -2 (23/5/2025)					
37	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	37	26/5/2025
38	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	38	27/5/2025
39	Earthing and its types	L+D	PPT	1	39	29/5/2025
	Module 3- DC Machines					
40	**DC Machines**: Generator- constructional details	L+D	PPT	1	40	30/5/2025
41	Principle of operation, induced emf expression.	L+D	PPT	1	41	31/5/2025
42	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	42	2/6/2025
43	Problems.	L+PS	BB	1	43	3/6/2025
44	Motor-Principle of operation, back emf	L+D	BB	1	44	5/6/2025
45	torque equation derivation	L+D	BB	1	45	6/6/2025
46	Types of motors	L+D	BB	1	46	9/6/2025
47	Problems.	L+PS	BB	2	47	10/6/2025
48	Characteristics (shunt and series only)	L+D	BB	1	48	12/6/2025

49	Problems.	L+D	BB	1	49	13/6/2025
50	speed control (armature & field) of DC motors (series & shunt only)	L+D	BB	1	50	14/6/2025
51	Problems	L+D	BB	1	51	16/6/2025
52	Problems, Applications of DC motors	L+D	BB	1	52	17/6/2025
Internal Test -3 (19/6/2025)						
55	Activity / Pedagogy		PPT	2	55	27/6/2025 28/6/2025

Text Books:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.

2. A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill 4th edition, 2019.

2. Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.

3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge **Module Coordinator** **HOD**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **Vishalini Divakar**

COURSE TYPE / CODE/TITLE: **Theory/BESCK204B /Introduction to Electrical Engineering**

YEAR/ SEMESTER/SECTION : **I / II / E**

BRANCH : **Artificial Intelligence and Machine Learning**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	Introduction	L+PS	BB	1	1	17/3/2025
2	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	2	18/3/2025
3	Problems	L+PS	BB	1	3	19/3/2025
4	series, parallel circuits	L+D	BB	1	4	21/3/2025
5	problems	L+PS	BB	1	5	24/3/2025
6	series-parallel circuits	L+D	BB	1	6	25/3/2025
7	Problems	L+PS	BB	1	7	26/3/2025
8	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	8	28/3/2025
9	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	9	29/3/2025

10	Power Generation: Hydel, Nuclear	L+D	PPT	1	10	1/4/2025
11	Power Generation: Solar, wind	L+D	PPT	1	11	2/4/2025
Module2: A.C. Fundamentals and Three phase Circuits						
12	Equation of AC Voltage and current.	L+D	BB	1	12	4/4/2025
13	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	13	7/4/2025
14	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	14	8/4/2025
15	Analysis of R-L, R-C Series circuits, concept of power factor , Concept of Impedance	L+PS	BB	1	15	9/4/2025
16	Problems	L+D	BB	1	16	11/4/2025
Internal Test -1 (16/4/2025)						
18	Analysis of R-L-C Series circuits	L+D	BB	1	18	21/4/2025
19	Problems	L+PS	BB	1	19	22/4/2025
20	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	1	20	23/4/2025
21	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	1	21	25/4/2025
Module 4-Transformers and Three-phase induction Motors						
22	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	22	26/4/2025
23	Types and construction of single-phase transformers	L+D	PPT	1	23	28/4/2025
24	EMF equation, losses	L+D	BB	1	24	29/4/2025
25	Problems	L+PS	BB	1	25	2/5/2025
26	variation of losses with respect to load, Efficiency	L+D	BB	1	26	5/5/2025
27	Problems	L+PS	BB	1	27	6/5/2025
28	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	28	7/5/2025
29	Principle of operation, constructional features of motor	L+D	PPT	1	29	9/5/2025

	types – squirrel cage and wound rotor					
30	Slip and its significance	L+D	BB	1	30	12/5/2025
31	Problems	L+PS	BB	1	31	13/5/2025
Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures						
32	**Domestic Wiring**: Requirements, Types of wiring: casing, capping	L+D	BB	1	32	14/5/2025
33	Two way and three-way control of load.	L+D	PPT	1	33	16/5/2025
34	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	34	19/5/2025
35	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	35	20/5/2025
36	Problems	L+D	BB	1	36	21/5/2025
Internal Test -2 (23/5/2025)						
38	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	38	26/5/2025
39	problems	L+PS	BB	1	39	27/5/2025
40	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	40	28/5/2025
41	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	41	30/5/2025
42	Earthing and its types	L+D	PPT	1	42	2/6/2025
	Module 3- DC Machines					
43	**DC Machines**: Generator- constructional details	L+D	PPT	1	43	3/6/2025
44	Principle of operation, induced emf expression.	L+D	PPT	1	44	4/6/2025
45	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	45	6/6/2025
46	Problems.	L+PS	BB	2	46	9/6/2025
47	Motor-Principle of operation, back emf and torque equations	L+D	BB	1	47	10/6/2025

48	Types of motors	L+D	BB	1	48	11/6/2025
49	Problems.	L+PS	BB	2	49	13/6/2025
50	Characteristics (shunt and series only), Problems.	L+D	BB	1	50	14/6/2025
51	speed control (armature & field) of DC motors (series & shunt only)	L+D	BB	1	51	16/6/2025
52	Problems, Applications of DC motors	L+D	BB	1	52	17/6/2025
Internal Test -3 (19/6/2025)						
55	Activity / Pedagogy		PPT	2	55	27/6/2025 28/6/2025

Text Books:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.

2. A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.

Reference Books:

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2. Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.

3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge **Module Coordinator** **HOD**

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

LESSON PLAN 2024-2025 EVEN Semester

COURSE INCHARGE : Mrs.V.SANGEETHA

COURSE CODE/NAME :BEC402/ PRINCIPLES OF COMMUNICATION AND SYSTEMS

SEMESTER/YEAR/SEC :VI/ II/A

ACADEMIC YEAR : 2024-25

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (A)
MODULE 2: Amplitude Modulation Fundamentals						
1	Amplitude Modulation Fundamentals:	L	BB+P	1	1	11/02/25
2	AM Concepts	L	BB+P	1	2	12/02/25
3	Modulation index and Percentage of Modulation,Problems	L	BB+P	1	3	13/02/25
4	Sidebands and the frequency domain,	L	BB+P	1	4	14/02/25
5	AM Power, Single Sideband Modulation.	L	BB+P	1	5	18/02/25
6	AM Circuits: Amplitude Modulators:	L	BB+P	1	6	19/02/25
7	Diode Modulator, Transistor Modulator, collector Modulator.	L	BB+P	2	8	20/02/25, 21/02/25
8	Amplitude Demodulators: Diode Detector	L	BB+P	1	9	25/02/25
9	Balanced Modulators: Lattice Modulators.	L	BB+P	1	10	27/02/25
10	Frequency Division Multiplexing: Transmitter-Multiplexer, Receiver-Demultiplexer.	L	BB+P	1	11	28/02/25
MODULE 3: Fundamentals of Frequency Modulation						
11	Fundamentals of Frequency Modulation: Basic Principles of Frequency Modulation	L	BB+P	1	12	04/03/25
12	Principles of Phase Modulation, Modulation index and sidebands	L	BB+P	1	13	05/03/25

13	Noise Suppression Effects of FM	L	BB+P	1	14	06/03/25
14	Frequency Modulation versus Amplitude Modulation.	L	BB+P	1	15	07/03/25
15	FM Circuits: Frequency Modulators	L	BB+P	1	16	08/03/25
16	Voltage Controlled Oscillators	L	BB+P	1	17	11/03/25
17	Frequency Demodulators: Slope Detectors	L	BB+P	1	18	12/03/25
18	Phase Locked Loops	L	BB+P	1	19	13/03/25
19	Communication Receiver: Super heterodyne receiver	L	BB+P	1	20	14/03/25
20	Frequency Conversion: Mixing Principles, JFET Mixer	L	BB+P	1	21	20/03/25
21	Problems	L	BB+P	1	22	21/03/25
	MODULE 4: Digital Representation of Analog Signals					
22	Digital Representation of Analog Signals: Introduction, Why Digitize Analog Sources	L	BB+P	1	22	25/03/25
23	The Sampling process	L	BB+P	1	23	26/03/25
24	Pulse Amplitude Modulation	L	BB+P	1	24	27/03/25
25	Time-Division Multiplexing, Pulse Position Modulation	L	BB+P	1	25	28/03/25
26	Generation and Detection of PPM wave	L	BB+P	2	27	01/04/25, 02/04/25
27	The Quantization Process.	L	BB+P	1	28	03/04/25
28	Pulse Code Modulation: Sampling, Quantization, Encoding	L	BB+P	1	29	04/04/25
29	line Codes and Problems	L	BB+P	2	31	08/04/25, 15/04/25
30	Differential encoding	L	BB+P	1	32	16/04/25
31	Regeneration, Decoding, filtering, multiplexing	L	BB+P	1	33	17/04/25
	MODULE 5: Baseband Transmission of Digital signals					
32	Baseband Transmission of Digital signals: Introduction	L	BB+P	1	34	24/04/25
33	Intersymbol Interference, Eye Pattern	L	BB+P	1	35	25/04/25
34	Nyquist criterion for distortionless Transmission	L	BB+P	1	36	26/04/25
35	Baseband M-ary PAM Transmission.	L	BB+P	1	37	28/04/25
36	Noise: Signal to Noise Ratio	L	BB+P	1	38	29/04/25
37	External Noise, Internal Noise	L	BB+P	1	39	02/05/25

38	Semiconductor Noise	L	BB+P	1	40	06/05/25
39	Expressing Noise Levels	L	BB+P	1	41	07/05/25
40	Noise in Cascade Stages	L	BB+P	1	42	08/05/25
41	Problems				43	09/05/25
Module-1:						
42	Random Variables and Processes: Introduction	L	BB+P	1	44	10/05/25
43	Probability, Conditional Probability	L	BB+P	1	45	13/05/25
44	Random variables.	L	BB+P	1	46	14/05/25
45	Statistical Averages: Function of a random variable,	L	BB+P	1	47	15/05/25
46	Moments, Random Processes,	L	BB+P	1	48	16/05/25
47	Mean, Correlation and Covariance function:	L	BB+P	1	49	19/05/25
48	Properties of autocorrelation function	L	BB+P	1	50	20/05/25
49	Cross–correlation functions	L	BB+P	1	51	21/05/25
50	Gaussian Process: Gaussian Distribution Function	L	BB+P	1	52	30/05/25
51	Revision	L	BB+P	1	53	31/05/25

TEXTBOOK:

Books 1. Louis E Frenzel, Principles of Electronic Communication Systems, 3rd Edition, Mc Graw Hill Education (India) Private Limited, 2016. ISBN: 978-0-07-066755-6.

2. Simon Haykin & Michael Moher, Communication Systems, 5th Edition, John Wiley, India Pvt. Ltd, 2010, ISBN: 978-81-265-2151-7.

REFERENCES:

1. B P Lathi, Zhi Ding, "Modern Digital and Analog Communication Systems", Oxford University Press., 4th edition, 2010, ISBN: 97801980738002.
2. Herbert Taub, Donald L Schilling, Goutam Saha, "Principles of Communication systems", 4th Edition, Mc Graw Hill Education (India) Private Limited, 2016. ISBN: 978-1-25-902985-1

WEB MATERIALS:

1. Principles of Communication Systems https://nptel.ac.in/courses/108104091
2. Communication Engineering https://nptel.ac.in/courses/117102059

Course Incharge **Module Coordinator** **HOD**

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : S. Christo Jain

SUBJECT CODE/NAME : BEC405A/MICOCONTROLLER

SEMESTER/YEAR/SEC : IV/ II/A

ACADEMIC YEAR : 2024-25

Module-1: Microcontroller

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (B)
1	Microprocessor Vs Microcontroller	L	BB+P	1	1	11/2/2025
2	Micro controller & Embedded Processors,	L	BB+P	1	2	13/2/2025
3	Processor Architectures-Harvard Vs Princeton & RISC Vs CISC	L	BB+P	1	3	14/2/2025
4	8051 Architecture- Registers,	L	BB+P	1	4	14/2/2025
5	8051 Architecture- Registers,	L	BB+P	1	5	17/2/2025
6	Pin diagram	L	BB+P	1	6	19/2/2025
7	I/O ports functions,	L	BB+P	1	7	20/2/2025
8	Internal Memory organization	L	BB+P	1	8	21/2/2025
9	External Memory (ROM & RAM) interfacing.	L	BB+P	1	9	22/2/2025
	MODULE 2: Instruction Set					
10	8051 Addressing Modes	L	BB+P	1	10	24/2/2025
11	8051 Addressing Modes	L	BB+P	1	11	27/2/2025
12	Data Transfer Instructions	L	BB+P	1	12	28/2/2025
13	Arithmetic instructions	L	BB+P	1	13	03/3/2025

14	Logical Instructions	L	BB+P	1	14	05/3/2025
15	Jump & Call Instructions	L	BB+P	1	15	06/3/2025
16	Stack & Subroutine Instructions of 8051	L	BB+P	1	16	07/3/2025
17	Stack & Subroutine Instructions of 8051	L	BB+P	1	17	08/3/2025
18	Additional Examples	L	BB+P	1	18	10/3/2025
	MODULE 3:Timers/Counters & Serial port programming					
19	Basics of Timers & Counters	L	BB+P	1	19	12/3/2025
20	Data types & Time delay in the 8051 using C	L	BB+P	1	20	13/3/2025
21	Programming 8051 Timers, Mode 1 & Mode 2 Programming	L	BB+P	1	21	14/3/2025
22	Programming 8051 Timers, Mode 1 & Mode 2 Programming	L	BB+P	1	22	20/3/2025
23	Counter Programming (Assembly Language only)	L	BB+P	1	23	21/3/2025
24	Counter Programming (Assembly Language only)	L	BB+P	1	24	24/3/2025
25	Basics of Serial Communication	L	BB+P	1	25	26/3/2025
26	Programming the 8051 to transfer data serially	L	BB+P	1	26	27/3/2025
27	Programming the 8051 to receive data	L	BB+P	1	27	28/3/2025
	MODULE 4: Interrupt Programming:					
28	Basics of Interrupts,	L	BB+P	1	28	29/3/2025
29	8051 Interrupts,	L	BB+P	1	29	02/4/2025
30	8051 Interrupts,	L	BB+P	1	30	03/4/2025
31	Programming Timer Interrupts	L	BB+P	1	31	04/4/2025
32	Programming Timer Interrupts	L	BB+P	1	32	07/4/2025
33	Programming Serial	L	BB+P	1	33	09/4/2025

	Communication Interrupts					
34	Programming Serial Communication Interrupts	L	BB+P	1	34	11/4/2025
35	Interrupt Priority in 8051(Assembly Language only)	L	BB+P	1	35	16/4/2025
36	Interrupt Priority in 8051(Assembly Language only)	L	BB+P	1	36	17/4/2025
MODULE 5: I/O Port Interfacing & Programming:						
37	I/O Programming in 8051 C	L	BB+P	1	37	24/4/2025
38	LCD interfacing,	L	BB+P	1	38	25/4/2025
39	LCD interfacing,	L	BB+P	1	39	26/4/2025
40	DAC 0808 Interfacing	L	BB+P	1	40	28/4/2025
41	ADC 0804 interfacing	L	BB+P	1	41	02/5/2025
42	Stepper motor interfacing,	L	BB+P	1	42	05/5/2025
43	DC motor control	L	BB+P	1	43	07/5/2025
44	Pulse Width Modulation (PWM) using C only	L	BB+P	1	44	08/5/2025
45	Revision	L	BB+P	1	45	10/5/2025 to last working day

Signature of Course Incharge **Signature of Module Coordinator** **Signature of HOD**

K S INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE STAFF : P Pragati

SUBJECT CODE/NAME : BEC401/Electromagnetic Theory

SEMESTER/YEAR : IV 'B'/ II

ACADEMIC YEAR : 2024-2025

Sl. No.	Topic to be covered	Offline Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1.	Revision of Vector Calculus	L+D	BB	1	1	10.02.2025
2.	**Coulomb's Law, Electric Field Intensity and Flux density:** Introduction	L+D	BB	1	2	10.02.2025
3.	Experimental law of Coulomb	L+D	BB	1	3	11.02.2025
4.	Problems on Coulomb's law	L+PS	BB	1	4	12.02.2025
5.	Electric Field intensity	L+D	BB	1	5	13.02.2025
6.	Problems on Electric field Intensity	L+PS	BB	1	6	17.02.2025
7.	E due to continuous volume charge distribution	L+D	BB	1	7	17.02.2025
8.	E of a line charge	L+D	BB	1	8	18.02.2025
9.	E due to infinite sheet of charge	L+D	BB	1	9	19.02.2025
10.	Problems on distribution of charges	L+PS	BB	1	10	20.02.2025
11.	Problems on distribution of charges	L+PS	BB	1	11	22.02.2025
12.	Problems on distribution of charges	L+PS	BB	1	12	22.02.2025
13.	Electric flux density	L+D	BB	1	13	24.02.2025
14.	Problems on Electric Flux density	L+PS	BB	1	14	24.02.2025
15.	Problems on Electric Flux density	L+PS	BB	1	15	25.02.2025
	MODULE 2					

16.	**Gauss's law and Divergence:** Gauss Law , Application of Gauss Law to a point charge	L+ D	BB	1	16	27.02.2025
17.	Application of Gauss Law to a Line charge	L+D	BB	1	17	03.03.2025
18.	Application of Gauss law to surface charge	L+D	BB	1	18	03.03.2025
19.	Application of Gauss law to Volume charge	L+D	BB	1	19	04.03.2025
20.	Problems on Gauss law	L+PS	BB	1	20	05.03.2025
21.	Point form of Gauss law,Divergence	L+D	BB	1	21	06.03.2025
22.	Maxwell's First equation (Electrostatics),	L+D	BB	1	22	08.03.2025
23.	Problems on Maxwell's equations	L+PS	BB	1	23	10.03.2025
24.	Vector Operator and divergence theorem.	L+D	BB	1	24	10.03.2025
25.	Energy expended in moving a point charge in an electric field	L+D	BB	1	25	11.03.2025
26.	Problems on Energy	L+PS	BB	1	26	12.03.2025
27.	The line integral	L+D	BB	1	27	13.03.2025
28.	Current and Current density, Continuity of current.	L+D	BB	1	28	20.03.2025
29.	Problems on Current and current density	L+PS	BB	1	29	24.03.2025
30.	Problems on Work done	L+PS	BB	1	30	24.03.2025
	MODULE 3					
31.	**Poisson's and Laplace's Equation:** Derivation of Poisson's and Laplace's Equations.	L+D	BB	1	31	25.03.2025
32.	Problems on Poisson's equation	L+PS	BB	1	32	26.03.2025
33.	Examples of the solution of Laplace's equation.	L+PS	BB	1	33	27.03.2025
34.	Examples of the solution of Laplace's equation.	L+PS	BB	1	34	29.03.2025
35.	**Steady Magnetic Field :** Biot-Savart Law,	L+D	BB	1	35	29.03.2025
36.	Ampere's circuital law	L+D	BB	1	36	01.04.2025
37.	Curl, Stokes' theorem,	L+D	BB	1	37	02.04.2025
38.	Problems on Biot savarts law	L+PS	BB	1	38	03.04.2025
39.	Problems on applications of Amperes Circuital law	L+PS	BB	1	39	07.04.2025
40.	Problems on Curl, stroke's theorem	L+PS	BB	1	40	07.04.2025
41.	Problems on Curl, stroke's theorem	L+PS	BB	1	41	08.04.2025
42.	Magnetic flux and magnetic flux density	L+D	BB	1	42	09.04.2025

43.	Problems on Magnetic flux and magnetic flux density.	L+PS	BB	1	43	15.04.2025
44.	Problems on Magnetic flux and magnetic flux density.	L+PS	BB	1	44	16.04.2025
	MODULE 4					
45.	**Magnetic Forces** Force on a moving charge	L+D	BB	1	45	17.04.2025
46.	Force on a differential current elements	L+D	BB	1	46	24.04.2025
47.	Force between differential current elements.	L+PS	BB	1	47	26.04.2025
48.	Numerical Problems on force on a moving charge, force between differential current elements.	L+PS	BB	1	48	28.04.2025
49.	Numerical Problems on force on a moving charge, force between differential current elements.	L+PS	BB	1	49	28.04.2025
50.	**Magnetic Materials** Magnetization and permeability,	L+D	BB	1	50	29.04.2025
51.	Numerical Problems on magnetization and permeability	L+PS	BB	1	51	02.05.2025
52.	Magnetic boundary conditions, Magnetic circuit.	L+PS	BB	1	52	05.05.2025
53.	Numerical Problems on magnetization and permeability	L+PS	BB	1	53	05.05.2025
54.	Numerical Problems on Magnetic boundary conditions	L+PS	BB	1	54	06.05.2025
	MODULE 5					
55.	Faraday's law of Electromagnetic Induction-Integral form and point form, Problems on Faraday's law	L+D	BB	1	55	07.05.2025
56.	Inconsistency of Ampere's law with continuity equation, displacement current, conduction current`	L+PS	BB	1	56	08.05.2025
57.	Problems on displacement current, conduction current	L+D	BB	1	57	10.05.2025
58.	Derivation of Maxwell's equations in point form and integral form.	L+PS	BB	1	58	12.05.2025
59.	Maxwell's equations for different media	L+D	BB	1	59	12.05.2025
60.	Problems on Maxwell's equations	L+D	BB	1	60	13.05.2025
61.	**Uniform Plane Wave:** Wave propagation in free space	L+PS	BB	1	61	14.05.2025

62.	Uniform plane wave, Derivation of plane wave equations from Maxwell's equations	L+PS	BB	1	62	15.05.2025
63.	Problems on Uniform plane waves	L+D	BB	1	63	16.05.2025
64.	Poynting's theorem and Wave power	L+PS	BB	1	64	19.05.2025
65.	Skin effect or depth of penetration	L+PS	BB	1	65	19.05.2025
66.	Numerical problems on Poynting theorem.	L+PS	BB	1	66	20.05.2025
67.	Numerical Problems on skin - depth,wave propagation in different media	L+D	BB	1	67	21.05.2025

TEXT BOOK:

1. W.H. Hayt and J.A. Buck, "Engineering Electromagnetics", 8th Edition, Tata McGraw-Hill, 2014, ISBN-978-93-392-0327-6.

REFERENCES:

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

WEB MATERIALS:

1 NPTEL Video lectures : https://youtu.be/pGdr9WLto4A
2 NPTEL Video lectures: https://youtu.be/xn2IpxI991M

Signature of Course In-charge **Signature of Module Coordinator** **Signature of HOD-ECE**

K.S. INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : **Dr. Saleem S Tevaramani**

SUBJECT CODE/NAME : **BEC613B / DATA SECURITY**

SEMESTER/YEAR : **VI/ III/B**

ACADEMIC YEAR : **2024-2025**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: CLASSICAL ENCRYPTION TECHNIQUES:					
1	Classical Encryption Techniques	L+D	BB	1	1	10th Feb 2025
2	Introduction to modular arithmetic	L+D, PS	BB	1	2	11th Feb 2025
3	Substitution techniques	L+ D, PS	BB	3	5	12th to 14th Feb 2025
4	Traditional Block Cipher structure.	L+D	BB	2	7	17th to 18th Feb 2025
5	The AES Cipher	L+D	BB	3	10	19th to 21st Feb 2025
6	Block Cipher Modes of Operation.	L+D	BB	3	13	24th to 27th Feb 2025
7	To solve QP problems & Pedagogy		LCD	1	15	28th Feb 2025
	MODULE 2: BASIC CONCEPTS OF NUMBER THEORY AND FINITE FIELDS:					
6	Divisibility and The Division Algorithm	L+D	BB	1	16	3rd March 2025
7	Euclidean algorithm& Problems Euclidean algorithm	L+D	BB	4	20	4th to 8th March 2025
8	Problems on Modular arithmetic	L+D	BB	2	22	10th to 11th March 2025
9	Groups, Rings and Fields	L+D	BB	1	23	12th March 2025
10	Finite fields of the form GF(p),	L+D	BB	2	25	13th to 14th March 2025
11	Polynomial Arithmetic,	L+D	BB	3	28	19th to 21st March 2025
12	Fields of the Form GF(2_m)	L+D	BB	3	31	24th to 26th March 2025
13	To solve QP problems & Pedagogy activity			1	32	27th March 2025

	MODULE 3: MORE ON NUMBER THEORY & ASYMMETRIC CIPHERS					
14	Prime numbers, Fermat's theorem	L+D	BB	2	34	28th to 29th March 2025
15	Euler's theorem	L+D	BB	2	36	1st to 2nd April 2025
16	Principles of Public-Key Cryptosystems	L+D	BB	1	37	3rd April 2025
17	Diffie – Hellman Key Exchange	L+D	BB	2	39	4th to 7th April 2025
18	The RSA algorithm	L+D	BB	2	41	8th to 9th April 2025
19	Elliptic Curve Arithmetic over Zp	L+D	BB	2	43	11th to 12th April 2025
20	Elliptic Curve Cryptography	L+D	BB	3	46	15th to 17th April 2025
21	Discrete logarithm	L+D	BB	1	47	24th April 2025
22	To solve QP problems & Pedagogy activity		LCD			24th April 2025
	MODULE 4: CRYPTOGRAPHIC HASH FUNCTIONS & MESSAGE AUTHENTICATION CODES					
23	Application of Hash Functions	L+D, PS	BB	1	48	25th April 2025
24	Requirements and Security	L+D, PS	BB	1	49	26th April 2025
25	Two Simple Hash Functions	L+D	BB	1	50	28th April 2025
26	Hash function based on Cipher Block Chaining	L+D	BB	2	52	29th April to 2nd May 2025
27	SHA-512	L+D	BB	1	53	5th May 2025
28	Message Authentication Functions, Security of MACs	L+D	BB	2	55	6th to 7th May 2025
29	MACs based on Hash Functions		LCD	1	56	8th May 2025
	MODULE 5: DIGITAL SIGNATURES & KEY MANAGEMENT AND DISTRIBUTION					
30	Digital Signatures, NIST Digital Signature Algorithm, Algorithm.	L+D, PS	BB	3	59	9th to 12th May 2025
31	Elliptic Curve Digital Signature	L+D	BB	2	61	13th to 14th May 2025
32	Symmetric Key Distribution Using Symmetric Encryption	L+D	BB	2	63	15th to 16th May 2025
33	Symmetric Key Distribution Using Asymmetric Encryption	L+D	BB	2	65	19th to 20th May 2025
34	Distribution of Public Keys	L+D	BB	1	66	30th May 2025
35	To solve QP problems & Pedagogy activity	L+D	BB	1	67	31st May 2025

Text Books:

- William Stallings, "Cryptography and Network Security Principles and Practice", Pearson Education Inc., 6th Edition, 2014, ISBN: 978-93-325-1877-3

Reference Books:

- 1. Bruce Schneier, "Applied Cryptography Protocols, Algorithms, and Source code in C", Wiley Publications, 2nd Edition, ISBN: 9971-51-348-X.
- 2. Cryptography and Network Security, Behrouz A Forouzan, TMH, 2007.

WEB MATERIALS:

- https://archive.nptel.ac.in/courses/106/105/106105162www.cryptolab.us/
- https://cryptopals.com

Details for the teaching Aids

1. BB
2.LCD

Signature of Course In charge **Signature of Module Coordinator** **Signature of HOD**

K. S INSTITUTE OF TECHNOLOGY BANGALORE-560109

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : **Mr. Satish Kumar B**

SUBJECT CODE/NAME : **BEC601 – EMBEDDED SYSTEM DESIGN**

SEMESTER/YEAR/SEC : **VI B**

ACADEMIC YEAR : **2024-25**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (B)
	MODULE 1					
1	**Introduction to Embedded System:** Embedded systems Vs General computing systems	L	BB+P	1	1	10/02/2025
2	History of Embedded Systems, Classification of Embedded systems	L	BB+P	1	2	11/02/2025
3	Major Application Areas of Embedded Systems. Purpose of Embedded Systems	L	BB+P	1	3	13/02/2025
4	The Typical Embedded System, Microprocessor Vs Microcontroller	L	BB+P	1	4	14/02/2025
5	Differences between RISC and CISC, Harvard V/s Von- Neumann, Big-endian V/s Little-endian processors	L	BB+P	1	5	17/02/2025
6	Memory (ROM and RAM types)	L	BB+P	1	6	18/02/2025
7	Sensors & Actuators, The I/O Subsystem – I/O Devices, Light Emitting Diode (LED)	L	BB+P	1	7	20/02/2025
8	7- Segment LED Display, Opt coupler	L	BB+P	1	8	21/02/2025

9	Relay, Piezo buzzer, Push button switch	L	BB+P	1	9	22/02/2025
10	On-board Communication Interface	L	BB+P	1	10	24/02/2025
11	External Communication Interface	L	BB+P	1	11	25/02/2025
12	Embedded Firmware	L	BB+P	1	12	27/02/2025
	MODULE 2					
13	**Embedded System Design Concepts**	L	BB+P	1	13	28/03/2025
14	Characteristics and Quality Attributes of Embedded Systems	L	BB+P	1	14	03/03/2025
15	Operational and non-operational quality attributes	L	BB+P	1	15	04/03/2025
16	Embedded Systems-Application Specific	L	BB+P	1	16	06/03/2025
17	Embedded Systems-Domain Specific	L	BB+P	1	17	07/03/2025
18	Hardware Software Co-Design	L	BB+P	1	18	10/03/2025
19	Program Modeling	L	BB+P	1	19	11/03/2025
20	Embedded firmware design and development	L	BB+P	1	20	13/03/2025
	MODULE – 3					
21	**Operating System basics**	L	BB+P	1	21	14/03/2025
22	Types of operating systems	L	BB+P	1	22	20/03/2025
23	Task, process and threads	L	BB+P	1	23	21/03/2025
24	Thread preemption, Preemptive Task scheduling techniques	L	BB+P	1	24	24/03/2025
25	Task Communication	L	BB+P	1	25	25/03/2025
26	Task synchronization issues – Racing and Deadlock	L	BB+P	1	26	27/03/2025
27	How to choose an RTOS	L	BB+P	1	27	28/03/2025
28	Integration and testing of Embedded hardware	L	BB+P	1	28	29/03/2025
29	Integration and testing of Embedded firmware	L	BB+P	1	29	1/04/2025
30	ESD Environment	L	BB+P	1	30	03/04/2025
	MODULE 4					
31	**ARM Embedded Systems**	L	BB+P	1	31	04/04/2025
32	Introduction, RISC design philosophy	L	BB+P	1	32	08/04/2025
33	Embedded system hardware – AMBA bus	L	BB+P	1	33	08/04/2025

	protocol					
34	ARM bus technology, Memory, Peripherals	L	BB+P	1	34	11/04/2025
35	Embedded system software – Initialization (BOOT) code	L	BB+P	1	35	15/04/2025
36	Operating System, Applications	L	BB+P	1	36	17/04/2025
37	ARM Processor Fundamentals, ARM core dataflow model	L	BB+P	1	37	24/04/2025
38	registers, current program status register	L	BB+P	1	38	25/04/2025
39	Pipeline, Exceptions	L	BB+P	1	39	28/04/2025
40	Interrupts and Vector Table	L	BB+P	1	40	29/04/2025
	MODULE 5					
41	**Introduction to the ARM Instruction set**	L	BB+P	1	41	02/05/2025
42	Introduction	L	BB+P	1	42	05/05/2025
43	Data processing instructions	L	BB+P	1	43	06/05/2025
44	Load – Store instruction	L	BB+P	1	44	08/05/2025
45	Software interrupt instructions	L	BB+P	1	45	8/05/2025
46	Program status register instructions	L	BB+P	1	46	9/05/2025
47	Loading constants	L	BB+P	1	47	10/05/2025
48	ARMv5E extensions	L	BB+P	1	48	12/05/2025
49	Conditional Execution	L	BB+P	1	49	13/05/2025
50	Sample programs	L	BB+P	1	50	15/05/2025
51	Activity	L	BB+P	1	51	16/05/2025
52	Activity	L	BB+P	1	52	19/05/2025
53	Activity	L	BB+P	1	53	20/05/2025
54	Revision	L	BB+P	1	54	30/05/2025
55	Revision	L	BB+P	1	55	31/05/2025

Signature of Course In charge

Signature of Module Coordinator

Signature of HOD

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

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

LESSON PLAN 2024-2025 EVEN Semester

COURSE INCHARGE : Mrs. BHARGAVI ANANTH

SUBJECT CODE/NAME :BEC402/ PRINCIPLES OF COMMUNICATION AND SYSTEMS

SEMESTER/YEAR/SEC :IV/ II/B

ACADEMIC YEAR : 2024-25

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 2: Amplitude Modulation Fundamentals						
1	Amplitude Modulation Fundamentals:	L	BB+P	1	1	10/2/25
2	AM Concepts,	L	BB+P	1	2	11/2/25
3	Modulation index and Percentage of Modulation,	L	BB+P	1	3	13/2/25
4	Sidebands and the frequency domain,	L	BB+P	1	4	14/2/25
5	AM Power, Single Sideband Modulation.	L	BB+P	1	5	17/2/25
6	AM Circuits: Amplitude Modulators:	L	BB+P	1	6	18/2/25
7	Diode Modulator, Transistor Modulator, collector Modulator.	L	BB+P	1	7	20/2/25
8	Amplitude Demodulators: Diode Detector,	L	BB+P	1	8	21/2/25
9	Balanced Modulators: Lattice Modulators.	L	BB+P	1	9	22/2/25
10	Frequency Division Multiplexing:	L	BB+P	1	10	24/2/25
11	Transmitter-Multiplexer, Receiver-Demultiplexer.	L	BB+P	1	11	25/2/25
MODULE 3: Fundamentals of Frequency Modulation						
12	Fundamentals of Frequency Modulation:	L	BB+P	1	12	27/2/25

13	Basic Principles of Frequency Modulation,	L	BB+P	1	13	28/2/25
14	Principles of Phase Modulation,	L	BB+P	1	14	3/3/25
15	Modulation index and sidebands,	L	BB+P	1	15	4/3/25
16	Noise Suppression Effects of FM,	L	BB+P	1	16	6/3/25
17	Frequency Modulation versus Amplitude Modulation.	L	BB+P	1	17	7/3/25
18	FM Circuits: Frequency Modulators:	L	BB+P	1	18	10/3/25
19	Voltage Controlled Oscillators. , Frequency Demodulators: Slope Detectors,	L	BB+P	1	19	11/3/25
20	Phase Locked Loops. Communication Receiver: Super heterodyne receiver,	L	BB+P	1	20	13/3/25
21	Frequency Conversion: Mixing Principles,.	L	BB+P	1	21	14/3/25
22	JFET Mixer	L	BB+P	1	22	20/3/25
MODULE 4: Digital Representation of Analog Signals						
23	Digital Representation of Analog Signals: Introduction, Why Digitize Analog Sources?,	L	BB+P	1	23	21/3/25
24	The Sampling process,.	L	BB+P	1	24	24/3/25
25	Pulse Amplitude Modulation,	L	BB+P	1	25	25/3/25
26	Time-Division Multiplexing, Pulse Position Modulation	L	BB+P	1	26	27/3/25
27	Generation and Detection of PPM wave.	L	BB+P	1	27	28/3/25
28	The Quantization Process. Pulse Code	L	BB+P	1	28	29/3/25
29	Modulation: Sampling, Quantization, Encoding, line Codes, Differential encoding,	L	BB+P	1	29	1/4/25
30	Regeneration, Decoding, filtering, multiplexing	L	BB+P	1	30	3/4/25
31	Revision	L	BB+P	1	31	4/4/25
MODULE 5: Baseband Transmission of Digital signals						
32	Baseband Transmission of Digital signals:	L	BB+P	1	32	7/4/25
33	Introduction, Intersymbol Interference, Eye Pattern,	L	BB+P	1	33	8/4/25
34	Nyquist criterion for distortionless Transmission,	L	BB+P	1	34	11/4/25
35	Baseband M-ary PAM Transmission.	L	BB+P	1	35	15/4/25

36	Noise: Signal to Noise Ratio	L	BB+P	1	36	17/4/25
37	External Noise, Internal Noise,	L	BB+P	1	37	24/4/25
38	Semiconductor Noise, Expressing Noise Levels, Noise in Cascade Stages	L	BB+P	1	38	25/4/25
39	Revision	L	BB+P	1	39	28/4/25
40	Revision	L	BB+P	1	40	29/4/25
41	Revision	L	BB+P	1	41	2/5/25
	MODULE 1 : Random Variables and Processes					
42	Random Variables and Processes: Introduction,	L	BB+P	1	42	5/5/25
43	Probability, Conditional Probability,	L	BB+P	1	43	6/5/25
44	Random variables.	L	BB+P	1	44	8/5/25
45	Statistical Averages: Function of a random variable,	L	BB+P	1	45	9/5/25
46	Moments, Random Processes,	L	BB+P	1	46	10/5/25
47	Mean, Correlation and Covariance function:	L	BB+P	1	47	12/5/25
48	Properties of autocorrelation function,	L	BB+P	1	48	13/5/25
49	Cross–correlation functions,	L	BB+P	1	49	15/5/25
50	Gaussian Process:	L	BB+P	1	50	16/5/25
51	Gaussian Distribution Function.	L	BB+P	1	51	19/5/25
52	Revision	L	BB+P	1	52	20/5/25

TEXTBOOK:

Books 1. Louis E Frenzel, Principles of Electronic Communication Systems, 3rd Edition, Mc Graw Hill Education (India) Private Limited, 2016. ISBN: 978-0-07-066755-6.

2. Simon Haykin & Michael Moher, Communication Systems, 5th Edition, John Wiley, India Pvt. Ltd, 2010, ISBN: 978-81-265-2151-7.

REFERENCES:

1. B P Lathi, Zhi Ding, "Modern Digital and Analog Communication Systems", Oxford University Press., 4th edition, 2010, ISBN: 97801980738002.
2. Herbert Taub, Donald L Schilling, Goutam Saha, "Principles of Communication systems", 4th Edition, Mc Graw Hill Education (India) Private Limited, 2016. ISBN: 978-1-25-902985-1

WEB MATERIALS:

1. Principles of Communication Systems https://nptel.ac.in/courses/108104091
2. Communication Engineering https://nptel.ac.in/courses/117102059

Course Incharge **Module Coordinator** **HOD**

K S INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE STAFF : Bhanumathi A

SUBJECT CODE/NAME : BEC401/Electromagnetic Theory

SEMESTER/YEAR : IV 'A'/ II

ACADEMIC YEAR : 2024-2025

Sl. No.	Topic to be covered	Offline Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1.	Revision of Vector Calculus	L+D	BB	1	1	10.02.2025
2.	**Coulomb's Law, Electric Field Intensity and Flux density:** Introduction	L+D	BB	1	2	11.02.2025
3.	Experimental law of Coulomb	L+D	BB	1	3	13.02.2025
4.	Problems on Coulomb's law	L+PS	BB	1	4	13.02.2025
5.	Electric Field intensity	L+D	BB	1	5	14.02.2025
6.	Problems on Electric field Intensity	L+PS	BB	1	6	17.02.2025
7.	E due to continuous volume charge distribution	L+D	BB	1	7	18.02.2025
8.	E of a line charge	L+D	BB	1	8	20.02.2025
9.	E due to infinite sheet of charge	L+D	BB	1	9	20.02.2025
10.	Problems on distribution of charges	L+PS	BB	1	10	21.02.2025
11.	Problems on distribution of charges	L+PS	BB	1	11	22.02.2025
12.	Problems on distribution of charges	L+PS	BB	1	12	24.02.2025
13.	Electric flux density	L+D	BB	1	13	25.02.2025
14.	Problems on Electric Flux density	L+PS	BB	1	14	27.02.2025
15.	Problems on Electric Flux density	L+PS	BB	1	15	27.02.2025
	MODULE 2					
16.	**Gauss's law and Divergence:** Gauss Law ,	L+ D	BB	1	16	28.02.2025

	Application of Gauss Law to a point charge					
17.	Application of Gauss Law to a Line charge	L+D	BB	1	17	03.03.2025
18.	Application of Gauss law to surface charge	L+D	BB	1	18	04.03.2025
19.	Application of Gauss law to Volume charge	L+D	BB	1	19	06.03.2025
20.	Problems on Gauss law	L+PS	BB	1	20	06.03.2025
21.	Point form of Gauss law,Divergence	L+D	BB	1	21	07.03.2025
22.	Maxwell's First equation (Electrostatics),	L+D	BB	1	22	10.03.2025
23.	Problems on Maxwell's equations	L+PS	BB	1	23	11.03.2025
24.	Vector Operator and divergence theorem.	L+D	BB	1	24	13.03.2025
25.	Energy expended in moving a point charge in an electric field	L+D	BB	1	25	13.03.2025
26.	Problems on Energy	L+PS	BB	1	26	14.03.2025
27.	The line integral	L+D	BB	1	27	20.03.2025
28.	Current and Current density, Continuity of current.	L+D	BB	1	28	20.03.2025
29.	Problems on Current and current density	L+PS	BB	1	29	21.03.2025
30.	Problems on Work done	L+PS	BB	1	30	24.03.2025
	MODULE 3					
31.	**Poisson's and Laplace's Equation:** Derivation of Poisson's and Laplace's Equations.	L+D	BB	1	31	25.03.2025
32.	Problems on Poisson's equation	L+PS	BB	1	32	27.03.2025
33.	Examples of the solution of Laplace's equation.	L+PS	BB	1	33	27.03.2025
34.	Examples of the solution of Laplace's equation.	L+PS	BB	1	34	28.03.2025
35.	**Steady Magnetic Field :** Biot-Savart Law,	L+D	BB	1	35	29.03.2025
36.	Ampere's circuital law	L+D	BB	1	36	01.04.2025
37.	Curl, Stokes' theorem,	L+D	BB	1	37	03.04.2025
38.	Problems on Biot savarts law	L+PS	BB	1	38	03.04.2025
39.	Problems on applications of Amperes Circuital law	L+PS	BB	1	39	04.04.2025
40.	Problems on Curl, stroke's theorem	L+PS	BB	1	40	07.04.2025
41.	Problems on Curl, stroke's theorem	L+PS	BB	1	41	08.04.2025
42.	Magnetic flux and magnetic flux density	L+D	BB	1	42	11.04.2025
43.	Problems on Magnetic flux and magnetic flux density.	L+PS	BB	1	43	15.04.2025

44.	Problems on Magnetic flux and magnetic flux density.	L+PS	BB	1	44	17.04.2025
	MODULE 4					
45.	**Magnetic Forces** Force on a moving charge	L+D	BB	1	45	17.04.2025
46.	Force on a differential current elements	L+D	BB	1	46	24.04.2025
47.	Force between differential current elements.	L+PS	BB	1	47	24.04.2025
48.	Numerical Problems on force on a moving charge, force between differential current elements.	L+PS	BB	1	48	25.04.2025
49.	Numerical Problems on force on a moving charge, force between differential current elements.	L+PS	BB	1	49	28.04.2025
50.	**Magnetic Materials** Magnetization and permeability,	L+D	BB	1	50	29.04.2025
51.	Numerical Problems on magnetization and permeability	L+PS	BB	1	51	02.05.2025
52.	Magnetic boundary conditions, Magnetic circuit.	L+PS	BB	1	52	05.05.2025
53.	Numerical Problems on magnetization and permeability	L+PS	BB	1	53	06.05.2025
54.	Numerical Problems on Magnetic boundary conditions	L+PS	BB	1	54	08.05.2025
	MODULE 5					
55.	Faraday's law of Electromagnetic Induction-Integral form and point form	L+D	BB	1	55	08.05.2025
56.	Problems on Faraday's law	L+PS	BB	1	56	09.05.2025
57.	Inconsistency of Ampere's law with continuity equation, displacement current, conduction current	L+D	BB	1	57	10.05.2025
58.	Problems on displacement current, conduction current	L+PS	BB	1	58	10.05.2025
59.	Derivation of Maxwell's equations in point form and integral form.	L+D	BB	1	59	12.05.2025
60.	Maxwell's equations for different media	L+D	BB	1	60	13.05.2025
61.	Problems on Maxwell's equations	L+PS	BB	1	61	15.05.2025
62.	Problems on Maxwell's equations	L+PS	BB	1	62	15.05.2025
63.	**Uniform Plane Wave:** Wave propagation in free space	L+D	BB	1	63	16.05.2025

64.	Uniform plane wave, Derivation of plane wave equations from Maxwell's equations	L+PS	BB	1	64	19.05.2025
65.	Problems on Uniform plane waves	L+PS	BB	1	65	20.05.2025
66.	Problems on Uniform plane waves	L+PS	BB	1	66	26.05.2025
67.	Poynting's theorem and Wave power	L+D	BB	1	67	27.05.2025
68.	Skin effect or depth of penetration	L+D	BB	1	68	29.05.2025
69.	Numerical problems on Poynting theorem.	L+PS	BB	1	69	29.05.2025
70.	Numerical Problems on skin depth,wave propagation in different media,	L+PS	BB	1	70	30.05.2025
71.	Revision	L	BB	1	71	31.05.2025

TEXT BOOK:

1. W.H. Hayt and J.A. Buck, "Engineering Electromagnetics", 8th Edition, Tata McGraw-Hill, 2014, ISBN-978-93-392-0327-6.

REFERENCES:

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

WEB MATERIALS:

1 NPTEL Video lectures : https://youtu.be/pGdr9WLto4A
2 NPTEL Video lectures: https://youtu.be/xn2ipxl991M

Signature of Course In-charge **Signature of Module Coordinator** **Signature of HOD-ECE**

K S INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

KSIT THE STAFF : Dr. ANITA P
SUBJECT CODE/NAME : BEC602/VLSI Design
SEMESTER/YEAR/SEC : VI /III/A SEC
ACADEMIC YEAR : 2024-2025

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: Introduction to CMOS Circuits:					
1	Introduction	L	BB+P	1	1	10/2/25
2	Introduction	L	BB+P	1	2	11/2/25
3	MOS Transistors	L	BB+P	1	3	12/2/25
4	MOS Transistor switches	L	BB+P	1	4	13/2/25
5	CMOS Logic	L	BB+P	1	5	17/2/25
6	CMOS Logic	L	BB+P	1	6	18/2/25
7	Alternate Circuit representation	L	BB+P	1	7	19/2/25
8	Alternate Circuit representation	L	BB+P	1	8	20/2/25
9	CMOS-nMOS comparison.	L	BB+P	1	9	22/2/25
10	CMOS-nMOS comparison.	L	BB+P	1	10	24/2/25

MODULE 2: MOS Transistor Theory						
11	n-MOS enhancement transistor	L	BB+P	1	11	25/2/25
12	p-MOS transistor	L	BB+P	1	12	27/2/25
13	Threshold Voltage	L	BB+P	1	13	3/3/25
14	Threshold voltage adjustment, Body effect	L	BB+P	1	14	4/3/25
15	MOS device design equations	L	BB+P	1	15	5/3/25
16	V-I characteristics,	L	BB+P	1	16	6/3/25
17	CMOS inverter DC characteristics	L	BB+P	1	17	8/3/25
18	Influence of βn / βp ratio on transfer characteristics,	L	BB+P	1	18	10/3/25
19	Noise margin,	L	BB+P	1	19	11/3/25
20	Alternate CMOS inverters.	L	BB+P	1	20	12/3/25
21	Transmission gate DC characteristics	L	BB+P	1	21	13/3/25
22	Latch-up in CMOS.	L	BB+P	1	22	20/3/25
MODULE 3: CMOS Process Technology						
23	Silicon Semiconductor Technology	L	BB+P	1	23	20/3/25
24	CMOS Technologies, Layout Design Rules	L	BB+P	1	24	24/3/25
25	Circuit Characterization and Performance Estimation :Introduction, Resistance Estimation	L	BB+P	1	25	25/3/25
26	Capacitance Estimation, Switching Characteristics,	L	BB+P	1	26	26/3/25
27	CMOS gate transistor sizing, Determination of conductor size,	L	BB+P	1	27	27/3/25
28	Determination of conductor size,	L	BB+P	1	28	29/3/25
29	Power consumption,	L	BB+P	1	29	1/4/25
30	Charge sharing,	L	BB+P	1	30	2/4/25
31	Scaling of MOS transistor sizing,	L	BB+P	1	31	3/4/25
32	Scaling of MOS transistor sizing,	L	BB+P	1	32	7/4/25
33	Yield	L	BB+P	1	33	8/4/25
34	Yield	L	BB+P	1	34	9/4/25
35	Yield	L	BB+P	1	35	12/4/25

MODULE4:CMOS Circuit and Logic Design						
36	Introductiontosequentialcircuitdesign	L	BB+P	1	36	15/4/25
37	Pseudo n-MOS logic,,	L	BB+P	1	37	16/4/25
38	Dynamic CMOS logic	L	BB+P	1	38	17/4/25
39	Clocked CMOS Logic, Cascade Voltage Switch logic,	L	BB+P	1	39	26/4/25
40	Pass transistor Logic	L	BB+P	1	40	28/4/25
41	Electrical and Physical design of Logic gates,	L	BB+P	1	41	29/4/25
42	The inverter, NAND and NOR gates,	L	BB+P	1	42	5/5/25
43	Body effect,	L	BB+P	1	43	1/525
44	Physical Layout of Logic gates, Input output Pads.	L	BB+P	1	44	6/5/25
45	Physical Layout of Logic gates, Input output Pads.	L	BB+P	1	45	7/5/25
MODULE5:Sequential MOS Logic Circuits:						
46	Introduction,	L	BB+P	1	46	8/5/25
47	Behaviour of Bistable Elements (Excluding Mathematical analysis) SR Latch Circuit	L	BB+P	1	47	10/5/25
48	Behaviour of Bistable Elements (Excluding Mathematical analysis) SR Latch Circuit	L	BB+P	1	48	12/5/25
49	Clocked Latch and Flip-Flop Circuits	L	BB+P	1	49	13/5/25
50	Clocked SR Latch,	L	BB+P	1	50	14/5/25
51	Clocked JK Latch.	L	BB+P	1	51	15/5/25
52	Clocked JK Latch.	L	BB+P	1	52	19/5/25
53	Revision	L	BB+P	1	53	20/5/25

Signature of CourseIncharge **Signature of Module Coordinator** **Signature of HOD ECE**

K S INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **SUMA SANTOSH**

COURSE TYPE / CODE / TITLE : **Theory/ BBEE203 / BASIC ELECTRONICS**

YEAR/ SEMESTER/SECTION : **I/II/G**

BRANCH : **ELECTRONICS AND COMMUNICATION ENGG**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: Boolean Algebra and Logic Circuits					
1	**Boolean Algebra and Logic Circuits:** Binary numbers,	L+D	BB	1	1	18/3/25
2	Number Base Conversion, octal & Hexa Decimal Numbers,	L+D	BB	1	2	19/3/25
3	Complements, Basic definitions,	L+ D	BB	1	3	20/3/25
4	Axiomatic Definition of Boolean Algebra,	L+ D	BB	1	4	21/3/25
5	Basic Theorems and Properties of Boolean Algebra,	L+ D	BB	1	5	25/3/25
6	Boolean Functions,	L+D	BB	1	6	26/3/25
7	Canonical and Standard Forms,	L+D	BB	1	7	27/3/25
8	Other Logic Operations,	L+D	BB	1	8	28/3/25
9	Digital Logic Gates	L+D	BB	1	9	1/4/25
10	**Combinational logic**: Introduction	L+D	BB	1	10	2/4/25
11	Design procedure, Adders- Half adder,	L+D	BB	1	11	3/4/25
12	Full adder	L+D	LCD	1	12	4/4/25

	MODULE 2: Semiconductor Diodes					
13	Introduction, PN Junction diode	L+D	BB	1	13	8/4/25
14	Characteristics and Parameters	L+D	BB	1	14	9/4/25
15	Diode Approximation	L+D	BB	1	15	11/4/25
	IA-1(15/4/25)					
16	DC Load Line analysis	L+ D	BB	1	16	22/4/25
17	**Diode Applications:** Introduction, Half Wave Rectification,	L+D	BB	1	17	23/4/25
18	Full Wave Rectification,	L+D	BB	1	18	24/4/25
19	Full Wave Rectifier Power Supply:	L+D	BB	1	19	25/4/25
20	Capacitor Filter Circuit,	L+D	BB	1	20	26/4/25
21	RC π Filter (includes numerical)	L+D	BB	1	21	29/4/25
22	**Zener Diodes:** Junction Breakdown, Circuit Symbol and Package,	L+D	LCD	2	23	29/4/25, 2/5/25
23	Characteristics and Parameters, Equivalent Circuit,	L+D	BB	1	24	6/5/25
24	Zener Diode Voltage Regulator.	L+D	BB	1	25	7/5/25
	MODULE 3: Operational Amplifiers					
25	Introduction, The Operational Amplifier	L+D	BB	1	26	8/5/25
26	Block Diagram Representation of Typical Op-Amp	L+D	BB	1	27	9/5/25
27	Schematic Symbol, Op-Amp parameters - Gain,	L+D	BB	1	28	10/5/25
28	The Ideal Op-Amp , Equivalent Circuit of Op-Amp,	L+D	BB	1	29	14/5/25
29	**Op-Amp Applications:** Inverting Configuration, Non-Inverting Configuration, Differential Configuration,	L+D	BB	1	30	16/5/25
30	Voltage follower,	L+D	L+D	1	31	20/5/25
31	Integrator, Differentiator	L+D		1	32	21/5/25
	MODULE 4:Introduction to Transducers					
32	Introduction,	L+D	BB	1	33	19/5/25
33	**Transducers**	L+D	BB	1	34	20/5/25
34	Resistive Transducers, Inductive Transducers,	L+ D	BB	1	35	21/5/25

	IA-2(22/5/25)					
35	Capacitive Transducers,	L+D	BB	1	36	27/5/25
36	Thermal transducers,	L+D	BB	1	37	28/5/25
37	Optoelectronic transducer	L+D	BB	1	38	29/5/25
38	Piezoelectric transducers	L+D	BB	1	39	30/5/25
39	**Communications:**	L+D	BB	1	40	31/5/25
40	Introduction to communication,	L+D	LCD	2	42	3/6/25,4/6/25
41	Communication System,	L+D	BB	1	43	5/6/25
42	Modulation	L+D	BB	1	44	6/6/25
	MODULE 5: Bipolar Junction Transistor & FET					
43	Introduction	L+D	BB	1	45	10/6/25
44	Common Collector Characteristics,	L+D	LCD	1	46	11/6/25
45	BJT Biasing:	L+D	BB	1	47	12/6/25
46	Introduction, DC Load line and Bias point	L+D	BB	1	48	13/6/25
47	**Field Effect Transistor:** JFET Characteristics,	L+D	BB	1	49	14/6/25
48	MOSFETs: Enhancement MOSFETs, Depletion Enhancement MOSFETs	L+D	BB	1	50	17/6/25
	IA-3 (18/6/25)					
49	Activity					27/6/25
50	Activity					28/6/25

Text Books:

1. Electronic Devices and Circuits, David A Bell, 5th Edition, Oxford, 2016
2. Op-amps and Linear Integrated Circuits, Ramakanth A Gayakwad, Pearson Education, 4th Edition
3. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-203-0417-8
4. Electronic Instrumentation and Measurements (3rd Edition) – David A. Bell, Oxford University Press, 2013
5. Electronic Communication Systems, George Kennedy, 4th Edition, TMH

Web Materials:

https://www.youtube.com/watch?v=CWulQ1ZSE3c -Basics of Magnet and motor
https://www.youtube.com/watch?v=mj2uoTztDl8

Details for the teaching Aids

Black Board and LCD

Signature of Course In-Charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

NAME OF THE STAFF : Naveen Kumar S

SUBJECT CODE/NAME : BEC405A/MICOCONTROLLER

SEMESTER/YEAR/SEC : IV/ II/B

ACADEMIC YEAR : 2024-25

Module-1: Microcontroller

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date (B)
1	Microprocessor Vs Microcontroller	L	BB+P	1	1	10/2/2025
2	Micro controller & Embedded Processors,	L	BB+P	1	2	12/2/2025
3	Processor Architectures-Harvard Vs Princeton & RiSC Vs CISC	L	BB+P	1	3	13/2/2025
4	8051 Architecture- Registers,	L	BB+P	1	4	14/2/2025
5	8051 Architecture- Registers,	L	BB+P	1	5	17/2/2025
6	Pin diagram	L	BB+P	1	6	19/2/2025
7	I/O ports functions,	L	BB+P	1	7	20/2/2025
8	Internal Memory organization	L	BB+P	1	8	21/2/2025
9	External Memory (ROM & RAM) interfacing.	L	BB+P	1	9	22/2/2025
	MODULE 2: Instruction Set					
10	8051 Addressing Modes	L	BB+P	1	10	24/2/2025
11	8051 Addressing Modes	L	BB+P	1	11	27/2/2025
12	Data Transfer Instructions	L	BB+P	1	12	28/2/2025
13	Arithmetic instructions	L	BB+P	1	13	03/3/2025

14	Logical Instructions	L	BB+P	1	14	05/3/2025
15	Jump & Call Instructions	L	BB+P	1	15	06/3/2025
16	Stack & Subroutine Instructions of 8051	L	BB+P	1	16	07/3/2025
17	Stack & Subroutine Instructions of 8051	L	BB+P	1	17	08/3/2025
18	Additional Examples	L	BB+P	1	18	10/3/2025
	MODULE 3:Timers/Counters & Serial port programming					
19	Basics of Timers & Counters	L	BB+P	1	19	12/3/2025
20	Data types & Time delay in the 8051 using C	L	BB+P	1	20	13/3/2025
21	Programming 8051 Timers, Mode 1 & Mode 2 Programming	L	BB+P	1	21	14/3/2025
22	Programming 8051 Timers, Mode 1 & Mode 2 Programming	L	BB+P	1	22	20/3/2025
23	Counter Programming (Assembly Language only)	L	BB+P	1	23	21/3/2025
24	Counter Programming (Assembly Language only)	L	BB+P	1	24	24/3/2025
25	Basics of Serial Communication	L	BB+P	1	25	26/3/2025
26	Programming the 8051 to transfer data serially	L	BB+P	1	26	27/3/2025
27	Programming the 8051 to receive data	L	BB+P	1	27	28/3/2025
	MODULE 4: Interrupt Programming:					
28	Basics of Interrupts,	L	BB+P	1	28	29/3/2025
29	8051 Interrupts,	L	BB+P	1	29	02/4/2025
30	8051 Interrupts,	L	BB+P	1	30	03/4/2025
31	Programming Timer Interrupts	L	BB+P	1	31	04/4/2025
32	Programming Timer Interrupts	L	BB+P	1	32	07/4/2025
33	Programming Serial	L	BB+P	1	33	09/4/2025

	Communication Interrupts					
34	Programming Serial Communication Interrupts	L	BB+P	1	34	11/4/2025
35	Interrupt Priority in 8051(Assembly Language only)	L	BB+P	1	35	16/4/2025
36	Interrupt Priority in 8051(Assembly Language only)	L	BB+P	1	36	17/4/2025
MODULE 5: I/O Port Interfacing & Programming:						
37	I/O Programming in 8051 C	L	BB+P	1	37	24/4/2025
38	LCD interfacing,	L	BB+P	1	38	25/4/2025
39	LCD interfacing,	L	BB+P	1	39	26/4/2025
40	DAC 0808 Interfacing	L	BB+P	1	40	28/4/2025
41	ADC 0804 interfacing	L	BB+P	1	41	02/5/2025
42	Stepper motor interfacing,	L	BB+P	1	42	05/5/2025
43	DC motor control	L	BB+P	1	43	07/5/2025
44	Pulse Width Modulation (PWM) using C only	L	BB+P	1	44	08/5/2025
45	Revision	L	BB+P	1	45	09/5/2025 to last working day

Signature of Course Incharge

Signature of Module Coordinator

Signature of HOD

K S INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **PRIYADHARSHINI V**

COURSE TYPE / CODE / TITLE : **Theory/ BBEE203 / BASIC ELECTRONICS**

YEAR/ SEMESTER/SECTION : **I/II/H**

BRANCH : **ELECTRONICS AND COMMUNICATION ENGG**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: Boolean Algebra and Logic Circuits					
1	**Boolean Algebra and Logic Circuits:** Binary numbers,	L+D	BB	1	1	17/3/25
2	Number Base Conversion, octal & Hexa Decimal Numbers,	L+D	BB	1	2	18/3/25
3	Complements, Basic definitions,	L+D	BB	1	3	19/3/25
4	Axiomatic Definition of Boolean Algebra,	L+D	BB	1	4	20/3/25
5	Basic Theorems and Properties of Boolean Algebra,	L+D	BB	1	5	24/3/25
6	Boolean Functions,	L+D	BB	1	6	25/3/25
7	Canonical and Standard Forms,	L+D	BB	1	7	26/3/25
8	Other Logic Operations,	L+D	BB	1	8	27/3/25
9	Digital Logic Gates	L+D	BB	1	9	29/3/25
10	**Combinational logic:** Introduction	L+D	BB	1	10	1/4/25
11	Design procedure, Adders- Half adder,	L+D	BB	1	11	2/4/25
12	Full adder	L+D	LCD	1	12	3/4/25

MODULE 2: Semiconductor Diodes						
13	Introduction, PN Junction diode,	L+D	BB	1	13	7/4/25
14	Characteristics and Parameters, Diode Approximation	L+D	BB	1	14	8/4/25
15	DC Load Line analysis	L+ D	BB	1	15	9/4/25
IA-1(15/4/25)						
16	**Diode Applications:** Introduction, Half Wave Rectification,	L+D	BB	1	16	21/4/25
17	Full Wave Rectification,	L+D	BB	1	17	22/4/25
18	Full Wave Rectifier Power Supply:	L+D	BB	1	18	23/4/25
19	Capacitor Filter Circuit,	L+D	BB	1	19	24/4/25
20	RC π Filter (includes numerical)	L+D	BB	1	20	26/4/25
21	**Zener Diodes:** Junction Breakdown, Circuit Symbol and Package,	L+D	LCD	2	22	28/4/25,29/4/25
22	Characteristics and Parameters, Equivalent Circuit,	L+D	BB	1	23	5/5/25
23	Zener Diode Voltage Regulator.	L+D	BB	1	24	6/5/25
MODULE 3: Operational Amplifiers						
24	Introduction, The Operational Amplifier	L+D	BB	1	25	7/5/25
25	Block Diagram Representation of Typical Op-Amp	L+D	BB	1	26	8/5/25
26	Schematic Symbol, Op-Amp parameters - Gain,input resistance, Output resistance, CMRR, Slew rate, Bandwidth, input offset voltage, Input bias Current and Input offset Current	L+D	BB	1	27	10/5/25
28	The Ideal Op-Amp , Equivalent Circuit of Op-Amp,	L+D	BB	1	28	12/5/25
29	Open Loop Op-Amp configurations, Differential Amplifier, Inverting & Non Inverting Amplifier	L+D	LCD	1	29	13/5/25
30	**Op-Amp Applications:** Inverting Configuration, Non-Inverting Configuration, Differential Configuration,	L+D	BB	1	30	14/5/25
31	Voltage follower,	L+D	L+D	1	31	15/5/25
32	Integrator, Differentiator	L+D		1	32	16/5/25

	MODULE 4:Introduction to Transducers					
33	Introduction,	L+D	BB	1	33	19/5/25
34	**Transducers**	L+D	BB	1	34	20/5/25
35	Resistive Transducers, Inductive Transducers,	L+ D	BB	1	35	21/5/25
	IA-2(22/5/25)					
36	Capacitive Transducers,	L+D	BB	1	36	26/5/25
37	Thermal transducers,	L+D	BB	1	37	27/5/25
38	Optcelectronic transducer	L+D	BB	1	38	28/5/25
39	Piezoelectric transducers	L+D	BB	1	39	29/5/25
40	**Communications:**	L+D	BB	1	40	31/5/25
41	Introduction to communication,	L+D	LCD	2	41	2/6/25,3/6/25
42	Communication System,	L+D	BB	1	42	4/6/25
43	Modulation	L+D	BB	1	43	5/6/25
	MODULE 5: Bipolar Junction Transistor & FET					
44	Introduction	L+D	BB	1	44	9/6/25
45	Common Collector Characteristics,	L+D	LCD	1	45	10/6/25
46	BJT Biasing:	L+D	BB	1	46	11/6/25
47	Introduction,	L+D	BB	1	47	12/6/25
48	DC Load line and Bias point	L+D	BB	1	48	13/6/25
49	**Field Effect Transistor:** Junction Field Effect	L+D	BB	1	49	14/6/25
50	Transistor, JFET Characteristics,	L+D	BB	1	50	16/6/25
51	MOSFETs: Enhancement MOSFETs, Depletion Enhancement MOSFETs	L+D	BB	1	51	17/6/25
	IA-3 (18/6/25)					
52	Activity					27/6/25
53	Activity					28/6/25

Text Books:

1. Electronic Devices and Circuits, David A Bell, 5th Edition, Oxford, 2016
2. Op-amps and Linear Integrated Circuits, Ramakanth A Gayakwad, Pearson Education, 4th Edition
3. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-203-0417-8
4. Electronic Instrumentation and Measurements {3rd Edition} – David A. Bell, Oxford University Press, 2013
5. Electronic Communication Systems, George Kennedy, 4th Edition, TMH

Web Materials:

https://www.youtube.com/watch?v=CWulQ1ZSE3c -Basics of Magnet and motor
https://www.youtube.com/watch?v=mj2uoTztDl8

Details for the teaching Aids

Black Board and LCD

Signature of Course In-Charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

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K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : PREETHA KAMATH B

COURSE TYPE / CODE/TITLE : Theory/BIDTK258/Innovation and Design Thinking

YEAR/ SEMESTER/SECTION : I/II /G

BRANCH : ECE

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE-I					
1	**Process of Design:** Introduction to Design thinking and Understanding Design thinking.	L+ PPT	BB	1	1	21/3/2025
2	Shared model in team-based design	L+ PPT	BB	1	2	28/3/2025
3	Theory and practice in Design thinking, Explore presentation signers across globe, MVP or Prototyping.	L+ PPT	BB	1	3	04/4/2025
	MODULE-II					
4	**Tools for Design Thinking:** Introduction , Real-Time design interaction	L+ PPT	BB	1	4	04/4/2025
5	Real-Time design interaction capture and analysis	L+ PPT	BB	1	5	11/4/2025
6	Enabling efficient collaboration in digital space	L+ PPT	BB	1	6	11/4/2025
	IA– I (17/4/2025)					
7	Empathy for design, Collaboration in distributed Design	L+ PPT	BB	1	7	25/4/2025
	MODULE-III					

8	**Design Thinking in IT:** Design Thinking to Business Process modelling(BPM) ,Scenario based Prototyping	L+ PPT	BB	1	8	02/4/2025
9	Agile in Virtual collaboration environment	L+ PPT	BB	1	9	09/5/2025
	MODULE-IV					
10	**DT For strategic innovations:** Growth – Story telling representation	L+ PPT	BB	1	10	16/5/2025
	IA– II (22/5/2025)					
11	Strategic Foresight - Change -Sense Making - Maintenance Relevance – Value redefinition	L+PPT	PPT	1	11	30/5/2025
	MODULE-V					
12	**Design thinking workshop:** Extreme Competition – experience design - Standardization –Humanization, Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	L+PPT	PPT	1	12	06/6/2025
13	Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test	L+PPT	BB	1	13	13/6/2025
14	Revision-IA3			1	14	13/6/2025
	IA– III (18/6/2025)					

Text Books:

- John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage learning (International edition) second Edition, 2013.
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- www.bizfilings.com › Home › Marketing › Product Development
- https://www.mindtools.com/brainstm.html
- https://www.quicksprout.com
- https://support.google.com/docs/answer/179740?hl=en
- https://www.interactiondesign.org/literature/article/5-stages-in-the-design-thinking-process
- https://designthinkingforeducators.com/design-thinking/

Details of the teaching aids:

- BB – Black Board
- PPT- Power Point Presentation
- LCD – Liquid Crystal Display

Signature of the Course In-Charge	Signature of the Module Co-ordinator	Signature of the HOD	Signature of the PRINCIPAL
		HEAD OF THE DEPARTMENT Dept. of Electronics & Communication Engg K.S. Institute of Technology Bengaluru - 560 109	PRINCIPAL K.S. INSTITUTE OF TECHNOLOGY BENGALURU - 560 109.

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : PREETHA KAMATH B

COURSE TYPE / CODE/TITLE : Theory/BIDTK258/Innovation and Design Thinking

YEAR/ SEMESTER/SECTION : I/II /H

BRANCH : ECE

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE-I					
1	**Process of Design:** Introduction to Design thinking and Understanding Design thinking.	L+ PPT	BB	1	1	19/3/2025
2	Shared model in team-based design	L+ PPT	BB	1	2	26/3/2025
3	Theory and practice in Design thinking, Explore presentation signers across globe, MVP or Prototyping.	L+ PPT	BB	1	3	02/4/2025
	MODULE-II					
4	**Tools for Design Thinking:** Introduction , Real-Time design interaction	L+ PPT	BB	1	4	02/4/2025
5	Real-Time design interaction capture and analysis	L+ PPT	BB	1	5	09/4/2025
6	Enabling efficient collaboration in digital space	L+ PPT	BB	1	6	09/4/2025
	IA– I (17/4/2025)					
7	Empathy for design, Collaboration in distributed Design	L+ PPT	BB	1	7	23/4/2025
	MODULE-III					

8	**Design Thinking in IT:** Design Thinking to Business Process modelling(BPM) ,Scenario based Prototyping	L+ PPT	BB	1	8	07/5/2025
9	Agile in Virtual collaboration environment	L+ PPT	BB	1	9	14/5/2025
	MODULE-IV					
10	**DT For strategic innovations:** Growth – Story telling representation	L+ PPT	BB	1	10	21/5/2025
	IA– II (22/5/2025)					
11	Strategic Foresight - Change -Sense Making - Maintenance Relevance – Value redefinition	L+PPT	PPT	1	11	28/5/2025
	MODULE-V					
12	**Design thinking workshop:** Extreme Competition – experience design - Standardization –Humanization, Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	L+PPT	PPT	1	12	04/6/2025
13	Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test	L+PPT	BB	1	13	11/6/2025
14	Revision-IA3			1	14	11/6/2025
	IA– III (18/6/2025)					

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- https://www.quicksprout.com
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LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **PREETHA KAMATH B**

COURSE TYPE / CODE/TITLE : **Theory/BIDTK258/Innovation and Design Thinking**

YEAR/ SEMESTER/SECTION : **I/II /I**

BRANCH : **CSE - ICB**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE-I					
1	**Process of Design:** Introduction to Design thinking and Understanding Design thinking.	L+ PPT	BB	1	1	20/3/2025
2	Shared model in team-based design	L+ PPT	BB	1	2	20/3/2025
3	Theory and practice in Design thinking, Explore presentation signers across globe, MVP or Prototyping.	L+ PPT	BB	1	3	27/3/2025
	MODULE-II					
4	**Tools for Design Thinking:** Introduction , Real-Time design interaction	L+ PPT	BB	1	4	27/3/2025
5	Real-Time design interaction capture and analysis	L+ PPT	BB	1	5	03/4/2025
6	Enabling efficient collaboration in digital space	L+ PPT	BB	1	6	03/4/2025
	IA– I (17/4/2025)					
7	Empathy for design, Collaboration in distributed Design	L+ PPT	BB	1	7	24/4/2025
	MODULE-III					

8	**Design Thinking in IT:** Design Thinking to Business Process modelling(BPM) ,Scenario based Prototyping	L+ PPT	BB	1	8	08/5/2025
9	Agile in Virtual collaboration environment	L+ PPT	BB	1	9	10/5/2025
	MODULE-IV					
10	**DT For strategic innovations:** Growth – Story telling representation	L+ PPT	BB	1	10	15/5/2025
	IA– II (22/5/2025)					
11	Strategic Foresight - Change -Sense Making - Maintenance Relevance – Value redefinition	L+PPT	PPT	1	11	29/5/2025
	MODULE-V					
12	**Design thinking workshop:** Extreme Competition – experience design - Standardization –Humanization, Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	L+PPT	PPT	1	12	31/5/2025
13	Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test	L+PPT	BB	1	13	05/6/2025
14	Revision-IA3			1	14	12/6/2025
	IA– III (18/6/2025)					

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Signature of the HOD

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Bengaluru - 560 109

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **PREETHA KAMATH B**

COURSE TYPE / CODE/TITLE : **Theory/BIDTK258/Innovation and Design Thinking**

YEAR/ SEMESTER/SECTION : **I/II /J**

BRANCH : **CCE**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE-I					
1	**Process of Design:** Introduction to Design thinking and Understanding Design thinking.	L+ PPT	BB	1	1	20/3/2025
2	Shared model in team-based design	L+ PPT	BB	1	2	20/3/2025
3	Theory and practice in Design thinking, Explore presentation signers across globe, MVP or Prototyping.	L+ PPT	BB	1	3	27/3/2025
	MODULE-II					
4	**Tools for Design Thinking:** Introduction , Real-Time design interaction	L+ PPT	BB	1	4	27/3/2025
5	Real-Time design interaction capture and analysis	L+ PPT	BB	1	5	03/4/2025
6	Enabling efficient collaboration in digital space	L+ PPT	BB	1	6	03/4/2025
	IA– I (17/4/2025)					
7	Empathy for design, Collaboration in distributed Design	L+ PPT	BB	1	7	24/4/2025
	MODULE-III					

8	**Design Thinking in IT:** Design Thinking to Business Process modelling(BPM) ,Scenario based Prototyping	L+ PPT	BB	1	8	08/5/2025
9	Agile in Virtual collaboration environment	L+ PPT	BB	1	9	10/5/2025
	MODULE-IV					
10	**DT For strategic innovations:** Growth – Story telling representation	L+ PPT	BB	1	10	15/5/2025
	IA– II (22/5/2025)					
11	Strategic Foresight - Change -Sense Making - Maintenance Relevance – Value redefinition	L+PPT	PPT	1	11	29/5/2025
	MODULE-V					
12	**Design thinking workshop:** Extreme Competition – experience design - Standardization –Humanization, Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	L+PPT	PPT	1	12	31/5/2025
13	Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test	L+PPT	BB	1	13	05/6/2025
14	Revision-IA3			1	14	12/6/2025
	IA– III (18/6/2025)					

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- www.bizfilings.com › Home › Marketing › Product Development
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- https://support.google.com/docs/answer/179740?hl=en
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LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : **PREETHA KAMATH B**

COURSE TYPE / CODE/TITLE : **Theory/BIDTK258/Innovation and Design Thinking**

YEAR/ SEMESTER/SECTION : **I/II /K**

BRANCH : **ME**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE-I					
1	**Process of Design:** Introduction to Design thinking and Understanding Design thinking.	L+ PPT	BB	1	1	17/3/2025
2	Shared model in team-based design	L+ PPT	BB	1	2	17/3/2025
3	Theory and practice in Design thinking, Explore presentation signers across globe, MVP or Prototyping.	L+ PPT	BB	1	3	24/3/2025
	MODULE-II					
4	**Tools for Design Thinking:** Introduction , Real-Time design interaction	L+ PPT	BB	1	4	29/3/2025
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	IA– I (17/4/2025)					
7	Empathy for design, Collaboration in distributed Design	L+ PPT	BB	1	7	21/4/2025
	MODULE-III					

8	**Design Thinking in IT:** Design Thinking to Business Process modelling(BPM) ,Scenario based Prototyping	L+ PPT	BB	1	8	28/4/2025
9	Agile in Virtual collaboration environment	L+ PPT	BB	1	9	05/5/2025
	MODULE-IV					
10	**DT For strategic innovations:** Growth – Story telling representation	L+ PPT	BB	1	10	12/5/2025
	IA– II (22/5/2025)					
11	Strategic Foresight - Change -Sense Making - Maintenance Relevance – Value redefinition	L+PPT	PPT	1	11	19/5/2025
	MODULE-V					
12	**Design thinking workshop:** Extreme Competition – experience design - Standardization –Humanization, Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	L+PPT	PPT	1	12	26/5/2025
13	Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test	L+PPT	BB	1	13	02/6/2025
14	Revision-IA3			1	14	16/6/2025
	IA– III (18/6/2025)					

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- Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011.
- Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

Web Materials: Weblinks and Video Lectures (e-Resources):

- www.tutor2u.net/business/presentations/. /productlifecycle/default.html
- https://nptel.ac.in/courses/110106124
- https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf
- www.bizfilings.com › Home › Marketing › Product Development
- https://www.mindtools.com/brainstm.html
- https://www.quicksprout.com
- https://support.google.com/docs/answer/179740?hl=en
- https://www.interactiondesign.org/literature/article/5-stages-in-the-design-thinking-process
- https://designthinkingforeducators.com/design-thinking/

Details of the teaching aids:

- BB – Black Board
- PPT- Power Point Presentation
- LCD – Liquid Crystal Display

Signature of the Course In-Charge	Signature of the Module Co-ordinator	Signature of the HOD	Signature of the PRINCIPAL
		HEAD OF THE DEPARTMENT Dept. of Electronics & Communication En K.S. Institute of Technology Bengaluru - 560 109	PRINCIPAL K.S. INSTITUTE OF TECHNOLOGY BENGALURU - 560 109.

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Sapna patil

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II/ C

BRANCH : Computer Science and Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	1	17/03/2025
2	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	2	19/03/2025
3	Power Generation: Hydel, Nuclear	L+D	BB	1	3	20/03/2025
4	Power Generation: Solar, wind	L+D	BB	1	4	21/03/2025
5	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	5	22/03/2025
6	Problems	L+PS	BB	1	6	24/03/2025
7	series, parallel circuits	L+D	BB	1	7	26/03/2025
8	Problems	L+PS	BB	1	8	27/03/2025
9	series, parallel circuits	L+D	BB	1	9	28/03/2025
10	Problems	L+PS	BB	1	10	29/03/2025

Module2: A.C. Fundamentals and Three phase Circuits						
11	Equation of AC Voltage and current.	I +D	BB	1	11	1/04/2025
12	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	12	2/04/2025
13	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	13	3/04/2025
14	Problems, Concept of Impedance.	L+PS	BB	1	14	4/04/2025
15	Analysis of R-L, R-C Series circuits, concept of power factor	L+D	BB	1	15	7/04/2025
16	problems	L+PS	BB	1	16	8/04/2025
Internal Test -1 (17-04-2025)						
17	Analysis of R-L-C Series circuits	L+D	BB	1	17	9/04/2025
18	Problems	L+PS	BB	1	18	11/04/2025
19	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	2	20	12/04/2025
20	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	2	22	21/04/2025
Module 4-Transformers and Three-phase induction Motors						
21	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	23	22/04/2025
22	Types and construction of single-phase transformers	L+D	PPT	1	24	23/04/2025
23	EMF equation, losses	L+D	BB	1	25	25/04/2025
24	Problems	L+PS	BB	2	27	26/04/2025
25	variation of losses with respect to load, Efficiency	L+D	BB	1	28	28/04/2025
26	Problems	L+PS	BB	2	30	2/05/2025
27	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	31	7/05/2025
28	Principle of operation, constructional features of motor types – squirrel cage and wound rotor	L+D	PPT	1	32	5/05/2025

29	Slip and its significance	L+D	BB	1	33	9/05/2025
30	Problems	L+PS	BB	2	34	10/05/2025
	Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures					
31	**Domestic Wiring**: Requirements, Types of wiring: casing, capping	L+D	BB	1	35	12/05/2025
32	Two way and three-way control of load.	L+D	PPT	1	36	13/05/2025
33	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	37	15/05/2025
34	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	38	16/05/2025
	Internal Test -2 (24-05-2025)					
35	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	39	19/05/2025
36	problems	L+PS	BB	2	41	21/05/2025
37	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	42	28/05/2025
38	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	43	30/05/2025
39	Earthing and its types,	L+D	PPT	1	44	2/06/2025
	Module 3- DC Machines					
40	**DC Machines**: Generator- constructional details	L+D	PPT	1	45	4/06/2025
41	Principle of operation, induced emf expression.	L+D	PPT	1	46	5/06/2025
42	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	47	6/06/2025
43	Problems.	L+PS	BB	2	49	9/06/2025
44	Motor-Principle of operation, back emf and torque equations	L+D	BB	1	50	11/06/2025
45	Types of motors	L+D	BB	1	51	12/06/2025
46	Problems.	L+PS	BB	2	53	13/06/2025

47	Characteristics (shunt and series only), Problems.	L+D	BB	1	54	16/06/2025
48	Speed control (armature & field) of DC motors (series & shunt only), Problems, Applications of DC motors.	L+D	BB	1	55	27/06/2025
Internal Test -3 (20-06-2025)						
49	Activity / Pedagogy		PPT	1	58	28/06/2025

Text Books:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill 4th edition, 2019.
2. Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge **Module Coordinator** **HOD** **PRINCIPAL**

HEAD OF THE DEPARTMENT
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K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Sapna patil

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II/ D

BRANCH : Computer Science and Design Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module1: Introduction, Power Generation, DC Circuits						
1	Introduction: Conventional and non-conventional energy resources	L+D	BB	1	1	17/03/2025
2	General structure of electrical power systems using single line diagram approach.	L+D	BB	1	2	19/03/2025
3	Power Generation: Hydel, Nuclear	L+D	BB	1	3	20/03/2025
4	Power Generation: Solar, wind	L+D	BB	1	4	21/03/2025
5	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	5	22/03/2025
6	Problems	L+PS	BB	1	6	24/03/2025
7	series, parallel circuits	L+D	BB	1	7	26/03/2025
8	Problems	L+PS	BB	1	8	27/03/2025
9	series, parallel circuits	L+D	BB	1	9	28/03/2025
10	Problems	L+PS	BB	1	10	29/03/2025

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Sapna patil

COURSE TYPE / CODE/TITLE: Theory/BESCK204B /Introduction to Electrical Engineering

YEAR/ SEMESTER/SECTION : I / II/ D

BRANCH : Computer Science and Design Engineering

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
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3	Power Generation: Hydel, Nuclear	L+D	BB	1	3	20/03/2025
4	Power Generation: Solar, wind	L+D	BB	1	4	21/03/2025
5	DC Circuits: Ohm's Law and its limitations. KCL & KVL	L+PS	BB	1	5	22/03/2025
6	Problems	L+PS	BB	1	6	24/03/2025
7	series, parallel circuits	L+D	BB	1	7	26/03/2025
8	Problems	L+PS	BB	1	8	27/03/2025
9	series, parallel circuits	L+D	BB	1	9	28/03/2025
10	Problems	L+PS	BB	1	10	29/03/2025

Module2: A.C. Fundamentals and Three phase Circuits						
11	Equation of AC Voltage and current.	L+D	BB	1	11	1/04/2025
12	Definition of waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor.	L+D	BB	1	12	2/04/2025
13	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	L+D	BB	1	13	3/04/2025
14	Problems, Concept of Impedance.	L+PS	BB	1	14	4/04/2025
15	Analysis of R-L, R-C Series circuits, concept of power factor	L+D	BB	1	15	7/04/2025
16	problems	L+PS	BB	1	16	8/04/2025
Internal Test -1 (17-04-2025)						
17	Analysis of R-L-C Series circuits	L+D	BB	1	17	9/04/2025
18	Problems	L+PS	BB	1	18	11/04/2025
19	Generation of Three phase AC quantity, advantages and limitations	L+D	PPT	2	20	12/04/2025
20	star and delta connection, relationship between line and phase quantities (excluding proof), Problems	L+D+PS	BB	2	22	21/04/2025
Module 4-Transformers and Three-phase induction Motors						
21	Transformers: Necessity of transformer, principle of operation	L+D	BB	1	23	22/04/2025
22	Types and construction of single-phase transformers	L+D	PPT	1	24	23/04/2025
23	EMF equation, losses	L+D	BB	1	25	25/04/2025
24	Problems	L+PS	BB	2	27	26/04/2025
25	variation of losses with respect to load, Efficiency	L+D	BB	1	28	28/04/2025
26	Problems	L+PS	BB	2	30	2/05/2025
27	**Three-phase induction Motors:** Concept of rotating magnetic field	L+D	BB	1	31	7/05/2025
28	Principle of operation, constructional features of motor types – squirrel cage and wound rotor	L+D	PPT	1	32	5/05/2025

29	Slip and its significance	L+D	BB	1	33	9/05/2025
30	Problems	L+PS	BB	2	34	10/05/2025
	Module 5- Domestic Wiring, Electricity bill, Equipment Safety measures and Personal safety measures					
31	**Domestic Wiring**: Requirements, Types of wiring: casing, capping	L+D	BB	1	35	12/05/2025
32	Two way and three-way control of load.	L+D	PPT	1	36	13/05/2025
33	**Electricity bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc.	L+D	BB	1	37	15/05/2025
34	Definition of "unit" used for consumption of electrical energy	L+D	BB	1	38	16/05/2025
	Internal Test -2 (24-05-2025)					
35	Two-part electricity tariff, calculation of electricity bill for domestic consumers	L+D	BB	1	39	19/05/2025
36	problems	L+PS	BB	2	41	21/05/2025
37	Equipment Safety measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits.	L+D	BB	1	42	28/05/2025
38	Personal safety measures: Electric Shock, Safety Precautions to avoid shock	L+D	PPT	1	43	30/05/2025
39	Earthing and its types,	L+D	PPT	1	44	2/05/2025
	Module 3- DC Machines					
40	**DC Machines**: Generator- constructional details	L+D	PPT	1	45	4/06/2025
41	Principle of operation, induced emf expression.	L+D	PPT	1	46	5/06/2025
42	Types of generators, and the relation between induced emf and terminal voltage.	L+D	BB	1	47	6/06/2025
43	Problems.	L+PS	BB	2	49	9/06/2025
44	Motor-Principle of operation, back emf and torque equations	L+D	BB	1	50	11/06/2025
45	Types of motors	L+D	BB	1	51	12/06/2025
46	Problems.	L+PS	BB	2	53	13/06/2025

47	Characteristics (shunt d series only), Problems.	L+D	BB	1	54	16/06/2025
48	Speed control (armature & field) of DC motors (series & shunt only), Problems, Applications of DC motors.	L+D	BB	1	55	27/06/2025
Internal Test -3 (20-06-2025)						
49	Activity / Pedagogy		PPT	1	58	28/06/2025

Text Books:

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Reference Books:

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3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI, 3rd edition, 2014.

Details of the teaching aids:

1. **BB – Black Board**
2. **PPT Power Point Presentation**

Course Incharge **Module Coordinator** **HOD** **PRINCIPAL**

HEAD OF THE DEPARTMENT
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K S INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF ELECRONICS & COMMUNICATION ENGINEERING

KSIT THE STAFF : Mrs. DIVYA.D
SUBJECT CODE/NAME : BEC602/VLSI Design
SEMESTER/YEAR/SEC : VI B section
ACADEMIC YEAR : 2024-2025

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: Introduction to CMOS Circuits:						
1	Introduction	L	BB+P	1	1	10/2/25
2	Introduction	L	BB+P	1	2	10/2/25
3	MOS Transistors	L	BB+P	1	3	11/2/25
4	MOS Transistor switches	L	BB+P	1	4	11/2/25
5	CMOS Logic	L	BB+P	1	5	13/2/25
6	CMOS Logic	L	BB+P	1	6	13/2/25
7	Alternate Circuit representation	L	BB+P	1	7	14/2/25
8	Alternate Circuit representation	L	BB+P	1	8	14/2/25
9	CMOS-nMOS comparison.	L	BB+P	1	9	17/2/25
10	CMOS-nMOS comparison.	L	BB+P	1	10	17/2/25

MODULE 2: MOS Transistor Theory						
11	n-MOS enhancement transistor	L	BB+P	1	11	18/2/25
12	p-MOS transistor	L	BB+P	1	12	20/2/25
13	Threshold Voltage	L	BB+P	1	13	21/2/25
14	Threshold voltage adjustment, Body effect	L	BB+P	1	14	22/2/25
15	MOS device design equations	L	BB+P	1	15	24/2/25
16	V-I characteristics,	L	BB+P	1	16	3/3/25
17	CMOS inverter DC characteristics	L	BB+P	1	17	4/3/25
18	Influence of βn / βp ratio on transfer characteristics,	L	BB+P	1	18	4/3/25
19	Noise margin,	L	BB+P	1	19	5/3/25
20	Alternate CMOS inverters.	L	BB+P	1	20	6/3/25
21	Transmission gate DC characteristics	L	BB+P	1	21	7/3/25
22	Latch-up in CMOS.	L	BB+P	1	22	8/3/25
MODULE 3: CMOS Process Technology						
23	Silicon Semiconductor Technology	L	BB+P	1	23	10/3/25
24	CMOS Technologies, Layout Design Rules	L	BB+P	1	24	11/3/25 12/3/25 13/3/25
25	Circuit Characterization and Performance Estimation :Introduction, Resistance Estimation	L	BB+P	1	25	20/3/25 21/3/25
26	Capacitance Estimation, Switching Characteristics,	L	BB+P	1	26	22/3/25 24/3/25
27	CMOS gate transistor sizing, Determination of conductor size,	L	BB+P	1	27	25/3/25 27/3/25
28	Determination of conductor size,	L	BB+P	1	28	28/3/25 29/3/25
29	Power consumption,	L	BB+P	1	29	1/4/25
30	Charge sharing,	L	BB+P	1	30	3/4/25
31	Scaling of MOS transistor sizing,	L	BB+P	1	31	4/4/25
32	Scaling of MOS transistor sizing,	L	BB+P	1	32	7/4/25
33	Yield	L	BB+P	1	33	8/4/25
34	Yield	L	BB+P	1	34	9/4/25
35	Yield	L	BB+P	1	35	11/4/25

MODULE 4: CMOS Circuit and Logic Design						
36	Introduction to sequential circuit design	L	BB+P	1	36	15/4/25
37	Pseudo n-MOS logic,,	L	BB+P	1	37	16/4/25
38	Dynamic CMOS logic	L	BB+P	1	38	17/4/25
39	Clocked CMOS Logic, Cascade Voltage Switch logic,	L	BB+P	1	39	24/4/25
40	Pass transistor Logic	L	BB+P	1	40	25/4/25
41	Electrical and Physical design of Logic gates,	L	BB+P	1	41	26/4/25
42	The inverter, NAND and NOR gates,	L	BB+P	1	42	28/4/25
43	Body effect,	L	BB+P	1	43	29/4/25
44	Physical Layout of Logic gates, Input output Pads.	L	BB+P	1	44	2/5/25
45	Physical Layout of Logic gates, Input output Pads.	L	BB+P	1	45	5/5/25
MODULE 5: Sequential MOS Logic Circuits:						
46	Introduction,	L	BB+P	1	46	6/5/25
47	Behaviour of Bistable Elements (Excluding Mathematical analysis) SR Latch Circuit	L	BB+P	1	47	7/5/25
48	Behaviour of Bistable Elements (Excluding Mathematical analysis) SR Latch Circuit	L	BB+P	1	48	8/5/25 9/5/25
49	Clocked Latch and Flip-Flop Circuits	L	BB+P	1	49	10/5/25 12/5/25
50	Clocked SR Latch,	L	BB+P	1	50	13/5/25 14/5/25 15/5/25
51	Clocked JK Latch.	L	BB+P	1	51	16/5/25
52	Clocked JK Latch.	L	BB+P	1	52	19/5/25
53	Revision	L	BB+P	1	53	20/5/25 30/5/25 31/5/25

Signature of Course In charge **Signature of Module Coordinator** **Signature of HOD ECE**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
ELECTRONICA AND COMMUNICATION ENGINEERING
LESSON PLAN 2023-24 EVEN SEMESTER

COURSE INCHARGE : Dr SHOBHA G
COURSE TYPE / CODE / TITLE : Theory / BBOK407 / BIOLOGY FOR ENGINEERS
YEAR/ SEMESTER/SECTION : II/IV/A
BRANCH : ELECTRONICA AND COMMUNICATION ENGINEERING

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module I: INTRODUCTION TO BIOLOGY					
1	The cell: the basic unit of life, Structure and functions of a cell	L+D	LCD+BB	1	1	10/2/2025
2	The Plant Cell and animal cell, Prokaryotic and Eukaryotic cell, Stem cells and their application	L+D	LCD+BB	1	2	12/2/2025
3	Biomolecules: Properties and functions of Carbohydrates, Nucleic acids	L+D	LCD+BB	1	3	17/2/2025
4	Biomolecules: Properties and functions of proteins, lipids	L+D	LCD+BB	1	4	19/2/2025
5	Importance of special biomolecules, Enzymes (Classification (with one example each), Properties and functions), vitamins and hormones	L+D	LCD+BB	1	5	22/2/2025
	Module II: BIOMOLECULES AND THEIR APPLICATIONS (QUALITATIVE)					
6	Carbohydrates (cellulose-based water filters, PHA and PLA as bioplastics)	L+D	LCD+BB	1	6	24/2/2025
7	Nucleic acids (DNA Vaccine for Rabies and RNA vaccines for Covid19, Nucleic acids (Forensics – DNA fingerprinting)	L+D	LCD+BB	1	7	03/3/2025

8	Proteins (Proteins as food – v y protein and meat analogs), Plant based proteins	L+D	LCD+BB	1	8	05/3/2025
9	Lipids (biodiesel, cleaning agents/detergents),	L+D	LCD+BB	1	9	08/3/2025
10	Enzymes (glucose-oxidase in biosensors, lignolytic enzyme in bio-bleaching)	L+D	LCD+BB	1	10	10/3/2025
Module III: HUMAN ORGAN SYSTEMS AND BIO DESIGNS (QUALITATIVE)						
11	Brain as a CPU system (architecture, CNS and Peripheral Nervous System, signal transmission, EEG, Robotic arms for prosthetics. Engineering solutions for Parkinson's disease).	L+D	LCD+BB	1	11	12/3/2025
	I-IA 18/3/25					
12	Eye as a Camera system (architecture of rod and cone cells, optical corrections, cataract, lens materials, bionic eye).	L+D	LCD+BB	1	12	24/3/2025
13	Heart as a pump system (architecture, electrical signalling - ECG monitoring and heart related issues), Reasons for blockages of blood vessels, design of stents, pace makers, defibrillators	L+D	LCD+BB	1	13	26/3/2025
14	Lungs as purification system (architecture, gas exchange mechanisms, spirometry, Abnormal lung physiology - COPD, Ventilators, Heart-lung machine).	L+D	LCD+BB	1	14	29/3/2025
15	Kidney as a filtration system (architecture, mechanism of filtration), CKD, dialysis systems	L+D	LCD+BB	1	15	02/4/2025
Module IV: NATURE-BIOINSPIRED MATERIALS AND MECHANISMS(QUALITATIVE)						
16	Human Blood substitutes - hemoglobin-based oxygen carriers (HBOCs) and perflourocarbons (PFCs)	L+D	LCD+BB	1	16	07/4/2025
17	Lotus leaf effect, Plant burrs, Shark skin	L+D	LCD+BB	1	17	09/4/2025
18	Photosynthesis, Bird flying	L+D	LCD+BB	1	18	16/4/2025
	II-IA 22/4/25					
19	Kingfisher beak	L+D	LCD+BB	1	19	26/4/2025
20	Echolocation	L+D	LCD+BB	1	20	28/4/2025

Module V: TRENDS IN BIOENGINEERING (QUALITATIVE)						
21	Muscular and Skeletal Systems as scaffolds (architecture, mechanisms, bioengineering solutions for muscular dystrophy and osteoporosis),	L+D	LCD+BB	1	21	05/5/2025
22	Scaffolds and tissue engineering, Bioprinting techniques and materials	L+D	LCD+BB	1	22	07/5/2025
23	3D printing of ear, bone and skin.3D printed foods.,	L+D	LCD+BB	1	23	12/5/2025
24	Electrical tongue and electrical nose in food science, DNA origami and Biocomputing	L+D	LCD+BB	1	24	14/5/2025
25	Bioimaging and Artificial Intelligence for disease diagnosis, Self healing Bioconcrete (based on bacillus spores, calcium lactate nutrients and biomineralization processes), Bioremediation and Biomining via microbial surface adsorption (removal of heavy metals like Lead, Cadmium, Mercury, Arsenic).	L+D	LCD+BB	1	25	19/5/2025
26	Revision	L+D	LCD+BB	1	26	21/5/2025
	III-IA 23/5/2025					

Text Books:

1. Biology for Engineers, Rajendra Singh C and Rathnakar Rao N, Rajendra Singh C and Rathnakar Rao N Publishing, Bengaluru, 2023. Human Physiology, Stuart Fox, Krista Rompolski, McGraw-Hill eBook. 16th Edition, 2022
2. Biology for Engineers, Thyagarajan S., Selvamurugan N., Rajesh M.P., Nazeer R.A., Thilagaraj W., Barathi S., and Jaganthan M.K., Tata McGraw-Hill, New Delhi, 2012.
3. Biology for Engineers, Arthur T. Johnson, CRC Press, Taylor and Francis, 2011
4. Biomedical Instrumentation, Leslie Cromwell, Prentice Hall 2011.
5. Biology for Engineers, Sohini Singh and Tanu Allen, Vayu Education of India, New Delhi, 2014.
6. Biomimetics: Nature-Based Innovation, Yoseph Bar-Cohen, 1st edition, 2012, CRC Press.
7. Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, D. Floreano and C. Mattiussi, MIT Press, 2008.
8. Bioremediation of heavy metals: bacterial participation, by C R Sunilkumar, N Geetha A C Udayashankar Lambert Academic Publishing, 2019.

Reference Books:

1. 3D Bioprinting: Fundamentals, Principles and Applications by Ibrahim Ozbolat, Academic Press, 2016.
2. Electronic Noses and Tongues in Food Science, Maria Rodriguez Mende, Academic Press, 2016
3. Blood Substitutes, Robert Winslow, Elsevier, 2005

Details of the teaching aids:

1. BB – Black Board
2. PPT Power Point Presentation
3. LCD Liquid Crystal Display

Web links and Video Lectures (e-Resources):

1. VTU EDUSAT / SWAYAM / NPTEL / MOOCS / Coursera / MIT-open learning resource
2. https://nptel.ac.in/courses/121106008
3. https://freevideolectures.com/course/4877/nptel-biology-engineers-other-non-biologists
4. https://ocw.mit.edu/courses/20-020-introduction-to-biological-engineering-design-spring-2009
5. https://ocw.mit.edu/courses/20-010j-introduction-to-bioengineering-be-010j-spring-2006
6. https://www.coursera.org/courses?query=biology
7. https://onlinecourses.nptel.ac.in/noc19_ge31/preview
8. https://www.classcentral.com/subject/biology
9. https://www.futurelearn.com/courses/biology-basic-concepts

Course In-Charge **Module Coordinator** **HOD** **Principal**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES
LESSON PLAN 2024-25 EVEN SEMESTER

COURSE INCHARGE : Dr SHOBHA G
COURSE TYPE / CODE / TITLE : Theory / BBOK407 / BIOLOGY FOR ENGINEERS
YEAR/ SEMESTER/SECTION : II/IV/B
BRANCH : ELECTRONICA AND COMMUNICATION ENGINEERING

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module I: INTRODUCTION TO BIOLOGY						
1	The cell: the basic unit of life, Structure and functions of a cell	L+D	LCD+BB	1	1	11/2/2025
2	The Plant Cell and animal cell, Prokaryotic and Eukaryotic cell, Stem cells and their application	L+D	LCD+BB	1	2	14/2/2025
3	Biomolecules: Properties and functions of Carbohydrates, Nucleic acids	L+D	LCD+BB	1	3	18/2/2025
4	Biomolecules: Properties and functions of proteins, lipids	L+D	LCD+BB	1	4	21/2/2025
5	Importance of special biomolecules, Enzymes (Classification (with one example each), Properties and functions), vitamins and hormones	L+D	LCD+BB	1	5	25/2/2025
Module II: BIOMOLECULES AND THEIR APPLICATIONS (QUALITATIVE)						
6	Carbohydrates (cellulose-based water filters, PHA and PLA as bioplastics)	L+D	LCD+BB	1	6	28/2/2025
7	Nucleic acids (DNA Vaccine for Rabies and RNA vaccines for Covid19, Nucleic acids (Forensics – DNA fingerprinting)	L+D	LCD+BB	1	7	04/3/2025

8	Proteins (Proteins as food – ney protein and meat analogs), Plant based proteins	L+D	LCD+BB	1	8	07/3/2025
9	Lipids (biodiesel, cleaning agents/detergents),	L+D	LCD+BB	1	9	11/3/2025
10	Enzymes (glucose-oxidase in biosensors, lignolytic enzyme in bio-bleaching)	L+D	LCD+BB	1	10	14/3/2025
	I-IA 18/3/25					
Module III: HUMAN ORGAN SYSTEMS AND BIO DESIGNS (QUALITATIVE)						
11	Brain as a CPU system (architecture, CNS and Peripheral Nervous System, signal transmission, EEG, Robotic arms for prosthetics. Engineering solutions for Parkinson's disease).	L+D	LCD+BB	1	11	21/3/2025
12	Eye as a Camera system (architecture of rod and cone cells, optical corrections, cataract, lens materials, bionic eye).	L+D	LCD+BB	1	12	25/3/2025
13	Heart as a pump system (architecture, electrical signalling - ECG monitoring and heart related issues), Reasons for blockages of blood vessels, design of stents, pace makers, defibrillators	L+D	LCD+BB	1	13	28/3/2025
14	Lungs as purification system (architecture, gas exchange mechanisms, spirometry, Abnormal lung physiology - COPD, Ventilators, Heart-lung machine).	L+D	LCD+BB	1	14	01/4/2025
15	Kidney as a filtration system (architecture, mechanism of filtration), CKD, dialysis systems	L+D	LCD+BB	1	15	04/4/2025
Module IV: NATURE-BIOINSPIRED MATERIALS AND MECHANISMS(QUALITATIVE)						
16	Human Blood substitutes - hemoglobin-based oxygen carriers (HBOCs) and perflourocarbons (PFCs)	L+D	LCD+BB	1	16	08/4/2025
17	Lotus leaf effect, Plant burrs, Shark skin	L+D	LCD+BB	1	17	11/4/2025
18	Photosynthesis, Bird flying	L+D	LCD+BB	1	18	15/4/2025
	II-IA 22/4/25					
19	Kingfisher beak	L+D	LCD+BB	1	19	25/4/2025
20	Echolocation	L+D	LCD+BB	1	20	29/4/2025

Modu. V: TRENDS IN BIOENGINEERING (QU LITATIVE)						
21	Muscular and Skeletal Systems as scaffolds (architecture, mechanisms, bioengineering solutions for muscular dystrophy and osteoporosis),	L+D	LCD+BB	1	21	02/5/2025
22	Scaffolds and tissue engineering, Bioprinting techniques and materials	L+D	LCD+BB	1	22	06/5/2025
23	3D printing of ear, bone and skin.3D printed foods.,	L+D	LCD+BB	1	23	09/5/2025
24	Electrical tongue and electrical nose in food science, DNA origami and Biocomputing	L+D	LCD+BB	1	24	13/5/2025
25	Bioimaging and Artificial Intelligence for disease diagnosis, Self healing Bioconcrete (based on bacillus spores, calcium lactate nutrients and biomineralization processes), Bioremediation and Biomining via microbial surface adsorption (removal of heavy metals like Lead, Cadmium, Mercury, Arsenic).	L+D	LCD+BB	1	25	16/5/2025
26	Revision	L+D	LCD+BB	1	26	20/5/2025
27	Revision	L+D	LCD+BB	1	27	30/5/2025
	III-IA 23/5/2025					