

Shri G S Institute of Technology and Science Indore
Department of Electronics and Telecommunication Engineering

15/01/2024

Minutes of Board of Studies

The Board of Studies (BoS) meeting of Department of Electronics and Telecommunication Engineering department was held in the hybrid mode on 15/01/2024 at 4:00 PM. Following members have attended the meeting.

(1)	Prof. (Mrs.) Anjana Jain	Chairman and Head of Dept.
(2)	Prof. S P Mahajan COE,Pune	External Expert
(3)	Prof. Vimal Bhatia, IIT Indore	External Expert
(4)	Prof. Aditya Trivedi, IITM Gwalior	External Expert
(5)	Prof. Shekhar Sharma	Member
(6)	Prof. S K Jain	Member
(7)	Prof. L D Malviya	Member
(8)	Prof. Anjulata Yadav	Member
(9)	Prof. Preeti Trivedi	Member
(10)	Mr. Manish Panchal	Member
(11)	Mr. Amit Naik	Member
(12)	Mrs. Rekha Jain	Member
(13)	Dr. (Mrs.) Jaya Dipti Lal	Member
(14)	Mr. Ashwin Shrivastava	Member
(15)	Mr. Ajay Parmar	Member
(16)	Dr. (Ms.) Vaishali Naik	Member
(17)	Mr. Shubham Shrivastava	Member
(18)	Ms. Deepali Kothari	Member
(19)	Mr. Mohit Khamele	Member
(20)	Mr. Neeraj Malviya	Member
(21)	Mr. Sunil Chouhan	Member
(22)	Mrs. Ritika Nair	Member
(23)	Mrs. Neeta Sharma	Member
(24)	Mrs. Harshita Kushwah	Member
(25)	Mrs. Swati Tiwari	Member

The following members could not attend the meeting:

Prof. (Mrs.) Jyoti Singhai MANIT Bhopal


The following points are discussed and resolved in the meeting:



1. DPAQIC minutes are discussed in the BoS meeting.

2. Department of Information technology requested a new subject "EC---Digital System Design" in place of "EC28006-Analog Electronics" . They have also requested a new subject "EC--- Digital and Data Communication" in place of "EC28553-Communication Engineering". Syllabi of new subjects "EC28----Digital System Design", "EC28----Digital System Design Lab" and "EC28--- Digital and Data Communication" have been discussed and approved in BoS meeting for II Yr Information Technology which will be applicable from July 2024. New syllabi of above mentioned subjects are attached herewith.

3. The schemes of B. Tech. Electronics and Telecommunication Engineering and M. Tech. Electronics and Communication Engineering are unchanged.


20/12/24
Prof. Anjana Jain
Head
Electronics and Telecommunication
Engineering Department

SHRI G. S. INSTITUTE OF TECHNOLOGY AND SCIENCE, INDORE- 452003

DEPT. OF ELECTRONICS AND TELECOMMUNICATION ENGG.

Date-15/01/2024

Board of Studies meeting (BoS)

S. No	Name Of the Faculty Members/ Experts	Signature
<u>1</u>	Prof. S.P Mahajan (COEP Pune)	- ON line -
<u>2</u>	Prof. Aditya Trivedi (IIITM Gwalior)	- ON line -
<u>3</u>	Prof. Vimal Bhatia (IIT Indore)	- ON line -
<u>4</u>	Prof. (Mrs.) Jyoti Singhai (MANIT Bhopal)	-
<u>5</u>	Dr. (Mrs.) Anjana Jain, Professor & Head	Anjana 15/1/24
<u>6</u>	Dr. Shekhar Sharma, Professor	Shekhar Sharma
<u>7</u>	Dr. S.K. Jain, Professor	S.K. Jain 15/1/24
<u>8</u>	Dr. L.D. Malviya, Professor	L.D. Malviya 15/01/2024
<u>9</u>	Dr.(Mrs.) Anjulata Yadav, Professor	Anjulata
<u>10</u>	Dr.(Mrs.) Preeti Trivedi, Profesor	Preeti
<u>11</u>	Mr. Manish Panchal, Associate Professor	Manish
<u>12</u>	Mr. Amit Naik, Associate Professor	Amit 15/1/24
<u>13</u>	Mrs. Rekha Jain Associate Professor	Rekha
<u>14</u>	Dr. (Mrs.) Jaya Dipti Lal, Associate Professor	Jaya Dipti Lal 15/01/24
<u>15</u>	Mr. Ashwin Shrivastava, Assistant Professor	Ashwin 15/1/24
<u>16</u>	Mr. Ajay Parmar, Assistant Professor	Ajay
<u>17</u>	Dr.(Ms.) Vaishali Naik, Assistant Professor	Vaishali
<u>18</u>	Mr. Shubham Shrivastava, Assistant Professor	Shubham
<u>19</u>	Ms. Deepali Kothari, Assisnat Professor	Deepali
<u>20</u>	Mr. Mohit Khamele, Assistant Professor	Mohit
<u>21</u>	Mr. Neeraj Malviya, Assistant Professor	Neeraj
<u>22</u>	Mr. Sunil Chouhan Assistant Professor	Sunil
<u>23</u>	Mrs. Ritika Nair Assistant Professor	Ritika
<u>24</u>	Ms. Neeta Sharma Assistant Professor	Neeta
<u>25</u>	Ms. Harshita Kushwah, Assistant Professor	Harshita
<u>26</u>	Ms. Swati Tiwari, Assistant Professor	Swati

EC28XXX: DIGITAL SYSTEM DESIGN

PREREQUISITE: - Engineering Physics, Electronic Devices

COURSE OUTCOMES:-

Student should be able to:

1. Implement the digital circuits through basic logic gates.
2. Design combinational digital circuit which can perform logical and arithmetic operation.
3. Analyze and design sequential logic circuits.
4. Analyze finite state machine and data storage elements.
5. Analyze and design digital integrated circuits.
6. Analyze and design converters which facilitate the conversion of real world analog signals to digital and vice versa.

Hours/ Week			Maximum Marks				Total Marks	Credits		
			Theory		Practical			Th	Pr	Total
L	T	P	End Sem	CW	SW	End Sem				
3	-	-	70	30	-	-	100	3	-	3

UNIT 1: Introduction to digital logic: Review of logic gates & Boolean Algebra, De Morgan's Theorem, SOP & POS forms, Canonical forms, Karnaugh maps up to 6 variables, Quine-McCluskey method, Implementation of Boolean functions using basic & Universal gates, Multilevel implementation using NAND-NOR gates, Binary codes-Weighted/Non-weighted.

UNIT 2: Combinational Logic: Arithmetic circuits: Adders, Subtractors, Comparators. Multiplexers, De-multiplexers, Encoder, Decoder, Serial and Parallel Adders, BCD Adder, Parity Generators & checkers. Code Converters: Binary-to-Gray, Gray-to-Binary, BCD-to-Excess-3, Excess-3-to-BCD.

UNIT 3: Sequential Logic Design: Reviews of Flip-flops: Circuits, characteristics/excitation table. Triggering levels of Flip-flops, conversions between Flip-flops, Race-around condition and its remedies. Shift registers, Synchronous & Asynchronous counters, Decade counters, Up-Down counters, Johnson & Ring counters. Design of Modulo-N counters.

UNIT 4: Logic Families and Semiconductor Memories: Types: RTL, DTL, TTL, ECL, HTL, IIL. NMOS, PMOS & CMOS families. Specifications : Noise margin, Propagation delay, fan-in, fan-out, Comparisons of logic families. Classification of Memories – Static, Dynamic, DDR, PROM, EPROM, EEPROM. Concept of address lines and data lines Programmable logic devices like PLA, PAL. Logic functions implementation using Programmable Devices.

UNIT 5: Applications of digital circuits: Analog to Digital and Digital to Analog converters: Types, Performance parameters like accuracy, processing time, resolution, linearity. Sample and hold circuits, Multivibrators: Bistable, Monostable, Astable. Transistor/IC based Multivibrator circuits. Schmitt trigger, IC555, IC565 & their applications.

ASSESSMENT: Mid-term test, Assignment, Tutorial, Quiz and End semester exam.

Text/Reference Books:

1. R.P. Jain, "Modern digital Electronics", Tata McGraw Hill, 4th edition, 2009.
2. Douglas Perry, "VHDL", Tata McGraw Hill, 4th edition, 2002.
3. W.H. Gothmann, "Digital Electronics- An introduction to theory and practice", PHI, 2nd edition, 2006.
4. D.V. Hall, "Digital Circuits and Systems", Tata McGraw Hill, 1989.
5. Charles Roth, "Digital System Design using VHDL", Tata McGraw Hill 2nd edition 2012.

EC28XXX: DIGITAL SYSTEM DESIGN LAB

COURSE OUTCOMES:

Student should be able to:

1. Understand the binary, octal, and hexadecimal number systems, and code converters used in digital circuits through basic logic gates.
2. Analyze and design multilevel logic circuits for arithmetic operation like addition, subtraction, and multiplication.
3. Analyze and design multiplexer, comparison, sequential circuits.
4. Analyze and design logic families.
5. Analyze and design real world analog signals to digital and vice versa.

Hours/ Week			Maximum Marks				Total Marks	Credits		
			Theory		Practical			Th	Pr	Total
L	T	P	End Sem	CW	SW	End Sem				
-	-	2	-	-	20	30	50	-	1	1

LIST OF EXPERIMENTS:

S.No.	List of Experiments
1.	To study various logic gates.
2.	To verify properties of NAND and NOR Gates as universal building block.
3.	Simplification & Implementation of boolean functions.
4.	Implementation of basic boolean arithmetic logic circuits.
5.	Implementation of even & odd parity generator & checker.
6.	Conversion from binary to gray and gray to binary code.
7.	To verify 2-bit magnitude comparator for all possible conditions.
8.	Connection of various logical functions using 8-to-1 multiplexer.
9.	Construction of a 4-bit ripple counter & study of its operation.
10.	Design and implement of various types of flip-Flop using JK flip Flop
11.	Design of a 3- bit synchronous counter & study of its operation.
Lab. Project	
1.	To design and develop a IC 555 based Bistable multivibrator.

ASSESSMENT: Internal viva, Continuous evaluation of experiments, Journal write-up, and Additional experiments conducted, Quiz, End semester exam.

EC 28xxx : Digital and Data Communication

Course Outcomes:-

At the end of this course students will demonstrate the ability to:-

1. Investigate Pulse Modulation with different data representation and detection schemes.
2. Analyze different digital modulation and demodulation schemes with comparison of error performance.
3. Apply Information Theory and channel coding techniques with the understanding of trade off using Shannon's theorem.
4. Develop basics of various data communication systems and its components.
5. Analyze different multiple access techniques and different digital system hierarchies.

Hours / Week			Maximum Marks		Total Marks			Credits		
			Theory		Practical					
L	T	P	End Sem	CW	SW	End Sem		Th	Pr	Total
03	-	-	70	30	-	-	100	3	-	3

Course Content

Unit 1: Digital Baseband Modulation: Sampling, Nyquist Sampling theorem, PAM, quantization noise, PCM, DPCM, Line coding, Optimum detection of signals in noise, Optimum receivers using coherent detection for AWGN channels, Inter Symbol Interference, Eye patterns.

Unit 2 : Pass band Digital Modulation: Binary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK), Frequency Shift Keying (FSK), Quadrature Amplitude Modulation (QAM), their generation, detection, PSD and Probability of Error. Comparison of Digital Modulation schemes using a single carrier.

Unit 3: Information Theory & Channel coding : Concept of amount of information, entropy & its types, source encoding, Information rate, Channel capacity, Shannon's theorem, Bandwidth and S/N trade off. Linear Block codes (Systematic codes, Parity check matrix, Syndrome testing), Cyclic codes, Hamming codes.

Unit 4: Data transmission: Networks for data communication (LAN, MAN, WAN), Network models: OSI reference model and TCP/IP model, Transmission terminology, Transmission impairments, Data rate limits, Performance parameters, Modes of digital data flow (simplex, duplex, full duplex), Transmission modes and media, Scrambling.

Unit 5. Multiplexing, Synchronization, Spread Spectrum and Multiple Access: Review of FDM, TDM, WDM, Synchronization, Digital transmission system hierarchy and their frame structure DS0, DS1, T1, E1 etc. Spread Spectrum: Frequency hop spread spectrum (FHSS), Direct sequence spread spectrum (DSSS), Multiple Access Techniques.

Assessment : - Mid-Term test, Assignment, Tutorial, Quiz and End Semester Exam.

Text Books:

1. Behrouz A Forouzan, "Data Communication and Networking", Tata Mc Graw Hill, 4th edition, 2007.
2. Simon Haykins, "Communication Systems", John Wiley Publications, 4th edition, 2000.
3. B.P.Lathi, "Modern Analog and Digital Communication Systems", 4th edition Oxford University Press.

Reference Books:

1. Glover I.A. and [Grant, P.M.](#) (2009) *Digital communications. 3rd ed.* Prentice Hall, Harlow, United Kingdom.
2. Bernard Sklar, "Digital Communication Fundamentals and Applications", Pearson Education, 2nd Edition 2001.

Bachelor of Technology in Electronics and Telecommunication Engineering

Semester: I															
S. No.	Subject Code	Category	Subject Name	Hours /Week				Maximum Marks allotted				Total Marks		Credits	Total Credits
				L	T	P		Th.	CW	SW	Pr.				
1	MA 10001	BSC	Mathematics - I	3	1	-		70	30	0	0	100	4	-	4
2	PH 10016	BSC	Physics	2	1	-		70	30	0	0	100	3	-	3
3	EE 10015	ESC	Fundamentals of Electrical Engineering	2	1	-		70	30	0	0	100	3	-	3
4	CE 10013	ESC	Fundamentals of Civil Engineering & Applied Mechanics	2	1	-		70	30	0	0	100	3	-	3
5	ME 10049	ESC	Engineering Graphics	2	-	-		70	30	0	0	100	2	-	2
6	PH 10151	BSC(LC)	Applied Physics Lab	-	-	2		0	0	20	30	50	-	1	1
7	EE 10152	ESC(LC)	Electrical Engineering Lab	-	-	2		0	0	20	30	50	-	1	1
8	ME 10153	ESC(LC)	Engineering Drawing/ Auto CAD Lab	-	-	4		0	0	40	60	100	-	2	2
9	HU10191	HSMC	Extra/Cocurricular Activity	-	-	2		0	0	50	0	50	-	1	1
10		MC	Induction Program & Universal Human Values												
			Total	11	4	10		350	150	130	120	750	15	5	20
2-3 Weeks in the beginning of I Year & 1 Hour per Week during Semester															
Semester: II															
S. No.	Subject Code	Category	Subject Name	Hours /Week				Maximum Marks allotted				Total Marks		Credits	Total Credits
				L	T	P		Th.	CW	SW	Pr.				
1	MA 10501	BSC	Mathematics - II	3	1	-		70	30	0	0	100	4	-	4
2	CH 10516	BSC	Chemistry	3	-	-		70	30	0	0	100	3	-	3
3	HU 10551	HSMC	Technical English	2	-	-		70	30	0	0	100	2	-	2
4	CO 10507	ESC	Programming for Problem Solving	2	1	-		70	30	0	0	100	3	-	3
5	EC 10508	ESC	Basic electronics Engineering	2	-	-		70	30	0	0	100	2	-	2
6	CH 10652	BSC(LC)	Chemistry Lab	-	-	2		0	0	20	30	50	-	1	1
7	HU 10653	HSMC(LC)	Language Lab	-	-	2		0	0	20	30	50	-	1	1
8	CO 10654	ESC(LC)	Computer Programming Lab	-	-	2		0	0	20	30	50	-	1	1
9	IP 10655	ESC(LC)	Manufacturing Practices	-	-	4		0	0	40	60	100	-	2	2
10	HU 10691	HSMC	Extra/Cocurricular Activity	-	-	2		0	0	50	0	50	-	1	1
11		MC	Induction Program & Universal Human Values												
			TOTAL	12	2	12		350	150	150	150	800	14	6	20
2-3 Weeks in the beginning of I Year & 1 Hour per Week during Semester															

Engineering Certificate shall be awarded after accruing additional 10 credits out of which 6 credits as 2 Months industrial training within 5 years.

Shri G.S. Institute of Technology & Science
Scheme of Examination
Bachelor of Technology in Electronics and Telecommunication Engineering

Semester: III

S. No.	Subject Code	Category	Subject Name	Hours /Week			Maximum Marks allotted				Total Marks	Credits		Total Credits
				L	T	P	Th.	CW	SW	Pr.		Th	P	
1	MA25014	BSC	Mathematics-III	3	1	-	70	30	0	0	100	4	-	4
2	EC25016	PCC	Electronics Devices	3	-	2	70	30	40	60	200	3	1	4
3	EC25017	PCC	Signals and Systems	3	-	-	70	30	0	0	100	3	-	3
4	EE 25004	PCC	Network Theory & Analysis	3	-	2	70	30	40	60	200	3	1	4
5	EC25018	PCC	Digital System Design	3	-	2	70	30	40	60	200	3	1	4
6	HU25005	HSMC	Economics for Engineers	3	-	-	70	30	0	0	100	3	-	3
7	CHM 2002	MC	Environmental Science	2	-	-	0	50	0	0	50	-	-	-
Total				20	1	6	420	230	120	180	950	19	3	22

Semester: IV

S. No.	Subject Code	Category	Subject Name	Hours /Week			Maximum Marks allotted				Total Marks	Credits		Total Credits
				L	T	P	Th.	CW	SW	Pr.		Th	P	
1	MA25563	BSC	Mathematics-IV	3	1	-	70	30	0	0	100	4	-	4
2	EC25564	PCC	Electromagnetic Waves	3	-	-	70	30	0	0	100	3	-	3
3	EC25565	PCC	Analog Circuits	3	-	2	70	30	40	60	200	3	1	4
4	EC25566	BSC	Probability Theory and Stochastic	3	-	-	70	30	0	0	100	3	-	3
5	EC25567	PCC	Analog and Digital Communication	3	-	2	70	30	40	60	200	3	1	4
6	EC25568	ESC	Electronics Workshop	-	-	4	0	0	40	60	100	-	2	2
7	HU25881	HSMC	Values, Humanities and professional	-	2	-	0	100	0	0	100	2	-	2
8	HU25--	MC	Constitution of India	2	-	-	0	50	0	0	50	-	-	-
Total				17	3	8	350	300	120	180	950	18	4	22

Internship 1**2-4 Weeks**

Shri G.S. Institute of Technology & Science
Scheme of Examination

Bachelor of Engineering in Electronics and Telecommunication Engineering

Semester- VII		Subject Code	Subject Name	Category	Hours /Week				Maximum Marks allotted			Total Marks	Credits		Total Credits
S. No.	Subject				L	T	P	Theory	Practical	Th.	CW		SW	Pr.	
1	EC45009		Wireless and Mobile Networks	PCC	3	-	-	70	30	0	0	100	3	-	3
2			Program Elective (PEC-3)	PEC-3	3	-	2	70	30	40	60	200	3	1	4
3			Program Elective (PEC-4)	PEC-4	3	-	-	70	30	0	0	100	3	-	3
4			Open Elective (OEC-1)	OEC-1	3	-	-	70	30	0	0	100	3	-	3
5	IP45010		Industrial Engineering and Management	HSMC	3	-	-	70	30	0	0	100	3	-	3
6	EC45481		Evaluation of Internship-2		-	-	4	0	0	100	0	100	-	2	2
7	EC45498		Major Project Phase - I (AB group)		-	-	8	0	0	40	60	100	-	4	4
8	EC45998		Major Project Phase -II (BA group)		-	-	8	0	0	40	60	100	-	4	4
Total			For AB Group		15	0	14	350	150	140	60	700	15	7	22
			For BA Group		15	0	14	350	150	140	60	700	15	7	22

Internship 3

4-8 Weeks

Semester- VIII

S. No.	Subject Code	Category	Subject Name	Hours /Week				Maximum Marks allotted			Total Marks	Credits		Total Credits	
				L	T	P	Theory	Practical	Th.	CW		SW	Pr.		T
1		PEC-5	Program Elective (PEC-5)	3	-	-	70	30	0	0	0	100	3	-	3
2		OEC-2	Open Elective (OEC-2)	3	-	-	70	30	0	0	0	100	3	-	3
3	EC45882		Evaluation of Internship-3	-	2	4	0	0	100	0	0	100	-	4	4
4	EC45998	PROJ	Major Project Stage II (AB GROUP)	-	-	8	0	0	40	60	60	100	-	4	4
5	EC45498	PROJ	Major Project Stage I (BA GROUP)	-	-	8	0	0	40	60	60	100	-	4	4
Total			For AB Group	6	0	12	140	60	140	60	60	400	6	8	14
			For BA Group	6	0	12	140	60	140	60	60	400	6	8	14

*OEC/PEC --> Can be replaced by Moocs/Swayam Course in consultation with mentor

S. No.	Subject Code	PEC 3	S. No.	Subject Code	PEC 4
1	EC45207	Microwave Device and Circuits	1	CO45251	Data Science
2	EC45-----	Advance Antenna Design	2	EI45252	VLSI Technology
3	EC45208	Optical Communication	3		Moocs/ Swayam Online Courses
S. No.	Subject Code	PEC 5			
1	EE45-----	Industrial and Power Electronics			
2	EC45-----	Information theory and coding			
3	EC45602	Optical Networks			
4	EC45-----	Advanced Mobile Communication			
5		Mooc/ Swayam Online Courses			

*OEC/PEC --> Can be replaced by Moocs/Swayam Course in consultation with mentor

S. No.	Subject Code	OEC 1
1	EC45301	Internet of Things
2	EC45302	Advanced Digital Signal Processing
3	BM45---	Digital Image Processing
4		Moocs/ Swayam Online Courses
S. No.	Subject Code	OEC 2
1	EC45759	Satellite and Radar Communication
2	EC45-----	Game Theory in Wireless Communication
3	EC45-----	Introduction to Cryptography
4		Moocs/ Swayam Online Courses