MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(Deemed University)
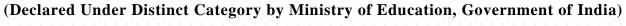### (Declared Under Distinct Category by Ministry of Education, Government of India)
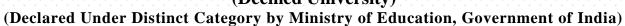### NAAC Accredited with A++ Grade
Department of Electronics Engineering

Online Board of Studies Meeting
of
Electronics Engineering
held on 6 December 2024

Department of Electronics Engineering

Agenda of the BoS Meeting

Courses where revision was carried out*						
(Course name)	Course Code	Year/Date of introduction	Year/Date of revision	Percentage of content added or replaced	Agenda Item No.	Page No.	Link of relevant documents/minutes
Data Communication	14241201	2022	6-12-2024	15%	Item 3	7	**Annexure II**

New Courses added*					
(Course name)	Course Code	Activities/contents which have a bearing on increasing skill and employability	Agenda Item No.	Page No.	Link of relevant documents/minutes

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Department of Electronics Engineering

	BoS Agenda Items
Item 1	To confirm the minutes of previous BoS meeting held in the month of September 2024. **The minutes of previous BOS held on 11th Sept 2024 has been finalized.**
Item 2	To review the scheme structure for the Batch admitted in 2024-25 academic session under the Madhav Institute of Technology & Science-Deemed University (MITS-DU) structure. **The scheme structure of B.Tech. IInd semester for the Batch admitted in 2024-25 under the Madhav Institute of Technology & Science-Deemed University (MITS-DU) has been discussed and finalized. Annexure I**
Item 3	To review and finalize the syllabi of all courses of **B. Tech. II Semester (for batch admitted in 2024-25)** under the flexible curriculum along with their COs. **The syllabi for all courses of B. Tech IInd Semester (for batch admitted in 2024-25) under the flexible curriculum along with their COs has been discussed and finalized.** **Annexure II**
Item 4	To review and finalize the **Experiment list/ Lab manual and Micro Project-II** for all the Laboratory Courses to be offered in **B. Tech. II Semester (for batch admitted in 2024-25)**. **The Experiment list/ Lab manual for all the Laboratory Courses and Micro Project-II to be offered in B.Tech. IInd semester has been discussed and finalized. Annexure III**
Item 5	To review and finalize the syllabi of II semester PG Programme under the Madhav Institute of Technology & Science-Deemed University (MITS-DU) (M.E./M.Tech./MCA/MBA/MUP) along with their Course Outcomes (COs). **NA**
Item 6	To review and finalize the syllabus/module of Classified Novel Engaging Course to be offered in II semester of PG programme. **NA**
Item 7	Any other Matter

The following suggestions were provided by the external BOS members:
1. As per the suggestion given by external members, Communication Networks has been removed.
2. To increase the admissions in PG programs, name of the programs can be updated as per the current trend.

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
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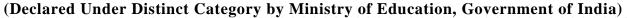### NAAC Accredited with A++ Grade
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The Board of Studies (BoS) meeting of the Electronics Engineering department was held on 6th Dec 2024 at 1:00 PM onwards. Following external and internal members have attended online meeting through google link : https://meet.google.com/ozm-ehzm-mfn

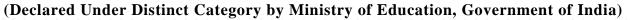Following members of BoS Electronics Engineering department have attended the meeting
1. Dr.Vandana Vikas Thakare, Professor & Head(Chairperson)
2. Dr. Aditya Trivedi, Professor, Department of Information Technology, ABV-IIITM , Gwalior
3. Dr. Urmila Patil, Professor, Department of Electronics and Communication, Dr. D.Y.Patil Institute of Technology, Pune
4. Dr. P.K Singhal, Professor, Member
5. Dr. Laxmi Shrivastava, Professor, Member
6. Dr. R. P. Narwaria, Assistant Professor, Member
7. Dr. Karuna Markam, Associate Professor, Member
8. Prof Madhav Singh, Assistant Professor, Member
9. Prof Pooja Sahoo, Assistant Professor, Member

Invited Members of the Department have also attended the BoS meeting
1. Prof D. K. Parsedia, Assistant Professor
2. Dr.Vikas Mahor, Assistant Professor
3. Dr. Rahul Dubey, Assistant Professor
4. Dr. Hemant Choubey, Assistant Professor
5. Dr. Deepak Batham, Assistant Professor
6. Dr. Varun Sharma, Assistant Professor
7. Dr.Shubhi Kansal, Assistant Professor
8. Dr.Himanshu Singh, Assistant Professor
9. Dr. Varun Mishra, Assistant Professor
10. Dr. Mukesh Kumar Mishra, Assistant Professor
11. Dr. Dablu Kumar, Assistant Professor
12. Prof. Prateek Bhadauria, Assistant Professor
13. Dr. R. Jenkin Suji, Assistant Professor
14. Dr. Jaydeep Parmar, Assistant Professor
15. Dr. Pawan Dubey, Assistant Professor
16. Dr. Tej Singh, Assistant Professor

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Department of Electronics Engineering

17. Dr. Vikram, Assistant Professor
18. Dr. Vibha Tiwari, Assistant Professor
19. Dr. Priyanka Garg, Assistant Professor
20. Dr. Nookala Venu, Assistant Professor
21. Mr. Manoj Kumar, Assistant Professor

Dr. Aditya Trivedi   **Dr. Urmila Patil**

Professor, ABV-IITM, Gwalior   **Professor, Dr. D.Y.Patil Institute of Technology, Pune**

External Member   **External Member**

Dr. P. K. Singhal   **Dr. Laxmi Shrivastava**   **Dr. R. P. Narwaria**

Dr. Karuna Markam   **Prof Madhav Singh**   **Prof Pooja Sahoo**

Dr. Vandana Vikas Thakare
Head of the Department

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Annexure II

Item 2	To review the scheme structure for the Batch admitted in 2024-25 academic session under the Madhav Institute of Technology & Science-Deemed University (MITS-DU) structure

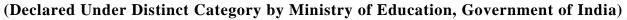# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(Deemed University)
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Department of Electronics Engineering

Scheme of Evaluation
B. Tech. I Semester (EL)*(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment	Major Evaluation	Lab Work & Sessional	Major Evaluation	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation.	Duration of Major Evaluation.
				Theory Block - Continuous Evaluation				**Practical Block - Continuous Evaluation**			**Contact Hours per week**						
1.	14241101	DC	Instrumentation & Sensors	20	20	30	30	-	-	100	3	-	-	**3**	Face to Face	MCQ	2 Hrs
2.	14241102	ESC	Computer Programming	20	20	30	30	-	-	100	2	-	-	**2**	Face to Face	MCQ	2 Hrs
3.	14241103	DC	Electronic Devices	20	20	30	30	-	-	100	2	1	-	**3**	Face to Face	PP	2 Hrs
4.	14241104	DC	Network Theory	20	20	30	30	-	-	100	2	1	-	**3**	Face to Face	PP	2 Hrs
5.	14241105	ESC	Basic Electrical & Electronics Engineering	20	20	30	30	-	-	100	2	-	-	**2**	Face to Face	MCQ	2 Hrs
6.	14241106	DLC	Computer Programming Lab	-	-	-	-	70	30	100	-	-	2	**1**	Experimental	AO	-
7.	14241107	DLC	Electrical & Electronics Engineering Lab	-	-	-	-	70	30	100	-	-	2	**1**	Experimental	AO	-
8.	14241108	SP	Semester Proficiency$	-	-	-	-	50		50	-	-	2	**1**	Face to Face	SO	-
9.	14241109	PBL	Micro Project-I	-	-	-	-	70	30	100	-	-	2	**1**	Experiential	SO	-
10.	14241110	ESC	Engineering Physics Lab	-	-	-	-	70	30	100	-	-	2	**1**	Experimental	AO	-
11.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	_	50	-	1	-	**1**	Interactive	SO	-
			Total	100	100	150	150	380	120	1000	11	03	10	19	-	-	-
12.	14241111	MAC	Universal Human Values & Professional Ethics (UHVPE)	20	20	30	30	-	-	100	2	-	-	**GRADE**	Blended	MCQ	1.5 Hrs
13.	14241112	MWS	Mandatory Workshop on Indian Constitution and Traditional Knowledge at Department Level (Duration: Two Days)											**GRADE**	Interactive	MCQ	-

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

Skill Internship Program (Soft Skill): Minimum 45 hours duration: To be credited in II Semester.

$Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses.

MCQ: Multiple Choice Question   **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral **OB:** Open Book

Micro Project-I will be presented and evaluated through an interdisciplinary project evaluation committee.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	3	3	0	0	0	2	1	1	0	0	0	1	1	1

Mode of Learning							Mode of Examination						Total Credits
Theory		**NEC**	**Lab**				**Theory**			**NEC**	**Lab**		
Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

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13	0	1	1	0	1	3	6	7	0	1	3	3	39
68.42%	0%	5.26%	5.26%	0%	5.26%	15.78%	31.57%	36.84 %	0%	5.26%	15.78%	15.78%	Credits %

Scheme of Evaluation

B. Tech. II Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block — Continuous Evaluation — Minor Evaluation I	Theory Block — Continuous Evaluation — Minor Evaluation II	Theory Block — Continuous Evaluation — Quiz/Assignment	Theory Block — Major Evaluation	Practical Block — Continuous Evaluation Lab Work & Sessional	Practical Block — Major Evaluation	Total Marks	Contact Hours per week (L)	Contact Hours per week (T)	Contact Hours per week P	Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation.
1.	14241201	DC	Data Communication	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	14241202	DC	Electronic Circuits	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	14241203	DC	Signals and Systems	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	14241204	DC	Digital Circuits and Systems	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
5.	14241205	BSC	Linear Algebra and Differential Equation	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	14241206	DLC	Digital Logic Design Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	14241207	DLC	Problem Solving through Python Programming	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	14241208	SP	Semester Proficiency$	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
9.	14241209	PBL	Micro Project-II#	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
10.	14241210	ESC	Engineering Chemistry Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
11.	14241211	HSMC	Language Lab	-	-	-	-	70	30	100	-	-	2	1	Blended	AO	-
12.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	_	50	-	1	-	1	Interactive	SO	-
13.	SIP1XXXX	SIP	Skill Internship Program (Soft Skill)	-	-	-	-	60	_	60	-	-	-	2**	Experiential	SO	-
			Total	100	100	150	150	510	150	1160	12	04	12	24	-	-	-
14.	14241212	MAC	Sustainability & Environmental Science	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5Hrs
15.		MWS	Mandatory Workshop on Indian Knowledge System at Department Level (Duration: Two Days)											GRADE	Interactive	MCQ	-

Summer Semester of six-eight week duration will be conducted for makeup of I & II semester examination.

$Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses ,

MCQ: Multiple Choice Question   **AO:** Assignment + Oral **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

#Micro Project-II will be presented and evaluated through an interdisciplinary project evaluation committee.

.** These credits will be transferred from **Skill Internship Program (Soft Skill)**.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
1	1	1	4	0	0	0	2	1	1	1	0	0	1	1	1
			Mode of Learning								Mode of Examination			Total Credits	

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

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Theory		NEC		Lab			Theory			NEC	Lab		
Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	
15	0	1	1	1	3	3	6	9	0	1	3	3	46
62.5%	0%	4.16%	4.16%	4.16%	12.5%	12.5%	25%	37.5 %	0%	4.16%	12.5%	12.5%	Credits %

Scheme of Evaluation
B. Tech. III Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block – Continuous Evaluation – Minor Evaluation I	Theory Block – Continuous Evaluation – Minor Evaluation II	Theory Block – Continuous Evaluation – Quiz/Assignment	Theory Block – Major Evaluation	Practical Block – Continuous Evaluation – Lab Work & Sessional	Practical Block – Major Evaluation	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
1.	14242101	BSC	Probability and Random Processes	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	14242102	DC	Data Structures	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	14242103	DC	Analog Communication	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	14242104	DC	Analog Integrated Circuits	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	14242105	DC	Communication Network and Transmission Line	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
6.	14242106	DLC	Analog Communication Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	14242107	DLC	Analog Integrated Circuits Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	14242108	SP	Semester Proficiency$	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
9.	14242109	PBL	Macro Project-I#	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
10.	14242110	SLP	Self-learning/Presentation$$$ (SWAYAM/NPTEL/MOOC)	-	-	-	-	40	-	40	-	-	2	1	Mentoring	SO	-
11.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
	Total			**100**	**100**	**150**	**150**	**350**	**90**	**940**	**11**	**05**	**10**	**21**	**-**	**-**	**-**
12.	14242311 MAC		Cyber Security	20	20	30	30	-	-	100	2	-	-	**GRADE**	Blended	MCQ	1.5Hrs
13.	MWS		Mandatory Workshop on Internet of Things(IoT) at Department Level (Duration: Two Days)											**GRADE**	Interactive	MCQ	-
			Skill Internship Program(Institute Level) (Qualifier): Minimum 30 hours duration: To be credited in IV Semester														

$Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question   **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

Macro Project-I will be presented and evaluated through an interdisciplinary project evaluation committee.

$$$Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance and presentation.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	1	0	4	0	0	0	2	1	1	0	0	0	1	1	1

Mode of Learning							Mode of Examination						Total Credits
Theory		NEC		Lab			Theory			NEC	Lab		
Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	

Department of Electronics Engineering

15	0	1	1	0	1	2	6	9	0	1	2	4	42
71.42%	0%	4.76%	4.76%	4.16%	4.76%	9.5%	28.57%	42.85 %	0%	4.16%	9.52%	19.04%	Credits %

Scheme of Evaluation
B. Tech. IV Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block — Continuous Evaluation — Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment	Major Evaluation	Practical Block — Continuous Evaluation — Lab Work & Sessional	Major Evaluation	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation.	Duration of Major Evaluation.
1.	14242201	DC	Linear Control Theory	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
2.	14242202	DC	Microprocessor and Interfacing	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	14242203	DC	Digital Communication	20	20	30	30	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	14242204	DC	Electromagnetic Fields	20	20	30	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	14242205	DC	VLSI Design	20	20	30	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	14242206	DLC	Microprocessor and Interfacing Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
7.	14242207	DLC	Digital Communication Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
8.	14242208	DLC	VLSI Design Lab	-	-	-	-	70	30	100	-	-	2	1	Experimental	AO	-
9.	14242209	SP	Semester Proficiency$	-	-	-	-	50	-	50	-	-	2	1	Face to Face	SO	-
10.	14242210	PBL	Macro Project-II#	-	-	-	-	70	30	100	-	-	2	1	Experiential	SO	-
11.	14242211	PC	Professional Certification	-	-	-	-	50	-	50	-	-	2	1	Blended	SO	-
12.	NECXXXXX	NEC	Novel Engaging Course (Activity Based Learning)	-	-	-	-	50	-	50	-	1	-	1	Interactive	SO	-
13.	SIP3XXXX	SIP	Skill Internship Program	-	-	-	-	60	-	60	-	-	-	2**	Experiential	SO	-
			Total	100	100	150	150	490	120	1110	11	05	12	24	-	-	-
14.	14242212	MAC	Project Management, Economics & Financing	20	20	30	30	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
15.	14242213	MWS	Mandatory Workshop on Computer Vision at Department Level (Duration: Two Days)											GRADE	Interactive	MCQ	-
16.		MWS	Mandatory Workshop on Life Skills at Department Level (Duration: Two Days)											GRADE	Interactive	MCQ	-

Summer Semester of six-eight week duration will be conducted for makeup of previous semester examination.

Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree

$Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question   **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

#Macro Project-II will be presented and evaluated through an interdisciplinary project evaluation committee.

** These credits will be transferred from Skill Internship Program.

PC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
1	0	0	5	0	0	0	3	1	1	1	0	0	1	1	2

Mode of Learning							Mode of Examination						Total Credits
Theory	NEC		Lab				Theory			NEC	Lab		
Face to	Online	Interactive	Face to	Blended	Experiential	Experimental	PP	MCQ	OB		AO	SO	

	Face				Face					SO				
15	0	1	1	0	3	3	6	9	0	1	3	5	42	
62.5%	0%	4.16%	4.16%	0%	4.16%	9.5%	25%	37.5%	0%	4.16%	12.5%	20.83%	Credits %	

Scheme of Evaluation
B. Tech. V Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block – Continuous Evaluation – Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment	Major Evaluation	Practical Block – Continuous Evaluation – Lab Work & Sessional	Major Evaluation	MOOCs – Assignment	Exam	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation.	Duration of Major Evaluation.
1.	14243101	DC	Digital Signal Processing	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
2.	14243102	DC	Embedded Systems	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
3.	14243103	DC	Data Science	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
4.	142431XX	DE	Departmental Elective* (DE-1)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
5.	14243104	SPC	Specialization Course (SPC-1)	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
6.	14243105	DLC	Digital Signal Processing Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
7.	14243106	DLC	Data Science Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
8.	14243107	SP	Semester Proficiency$	-	-	-	-	50	-	-	-	50	-	-	2	1	Face to Face	SO	-
9.	14243108	PBL	Cornerstone Project	-	-	-	-	70	30	-	-	100	-	-	4	2	Experiential	SO	-
	Total			80	80	120	120	260	90	25	75	850	11	04	10	20	-	-	-
10.	14243109	MAC	Supply Chain Management	20	20	30	30	-	-	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5Hrs
11.		MWS	Mandatory Workshop on Blockchain at Department Level (Duration: Two Days)													GRADE	Interactive	MCQ	-
	Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree																		

$Semester Proficiency– includes the Weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform

SMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	3	1	1	0	2	0	1	0	0	0	1	1	1

Mode of Learning							Mode of Examination						Total Credits
Theory		NEC	Lab				Theory			NEC	Lab		
Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(Deemed University)
(Declared Under Distinct Category by Ministry of Education, Government of India)
NAAC Accredited with A++ Grade
Department of Electronics Engineering

12	3	0	1	0	2	2	6	9	0	0	2	3	40
60%	15%	0%	5%	0%	10%	10%	30%	45 %	0%	4.16%	10%	15%	Credits %

Scheme of Evaluation
B. Tech. VI Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block – Continuous Evaluation – Minor Evaluation I	Theory Block – Continuous Evaluation – Minor Evaluation II	Theory Block – Continuous Evaluation – Quiz/ Assignment	Theory Block – Major Evaluation	Practical Block – Continuous Evaluation – Lab Work & Sessional	Practical Block – Major Evaluation	MOOCs – Assignment	MOOCs – Exam	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
1.	14243201	DC	Mobile Communication and 5G Networks	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
2.	14243202	DC	Artificial Intelligence & Machine Learning	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	MCQ	2 Hrs
3.	142432XX	DE	Departmental Elective* (DE-2)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
4.	142432XX	OC	Open Category Course (OC-1)	20	20	30	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
5.	14243203	SPC	Specialization Course (SPC-2)	20	20	30	30	-	-	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	14243204	DLC	Embedded System Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
7.	14243205	DLC	Artificial Intelligence & Machine Learning Lab	-	-	-	-	70	30	-	-	100	-	-	2	1	Experimental	AO	-
8.	14243206	SP	Semester Proficiency$	-	-	-	-	50	-	-	-	50	-	-	2	1	Face to Face	SO	-
9.	14243207	PBL	Capstone Project	-	-	-	-	70	30	-	-	100	-	-	4	2	Experiential	SO	-
			Total	80	80	120	120	260	90	25	75	850	12	03	10	20	-	-	-
10.	14243208	MAC	Disaster Management	20	20	30	30	-	-	-	-	100	2	-	-	GRADE	Blended	MCQ	1.5 Hrs
11.		MWS	Mandatory Workshop on Intellectual Property Rights at Department Level (Duration: Two Days)													GRADE	Interactive	MCQ	-
			Skill Enhancement Program/Research Internship/On Job Training for Four weeks duration																
			Summer Semester of six-eight week duration will be conducted for makeup of V & VI semester examination.																
			Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree																

$Semester Proficiency– includes the weightage towards ability/ skill/ competency /knowledge level /expertise attained etc. in the semester courses

MCQ: Multiple Choice Question   **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform.

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	2	1	1	1	2	0	1	0	0	0	1	1	1

Mode of Learning				Mode of Examination			Total Credits
Theory	NEC	Lab		Theory	NEC	Lab	

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	
12	3	0	1	0	2	2	6	9	0	0	2	3	40
60%	15%	0%	5%	0%	10%	10%	30%	45 %	0%	4.16%	10%	15%	Credits %

Scheme of Evaluation
B. Tech. VII Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode of Major Evaluation.	Duration of Major Evaluation.
				Theory Block				Practical Block		MOOCs			L	T	P				
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation	Assignment	Exam								
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment		Lab Work & Sessional											
1.	142441XX	DE	Departmental Elective# (DE-3)	20	20	30	30	-	-	-	-	100	3	-	-	3	Blended	PP	2 Hrs
2.	142441XX	DE	Departmental Elective* (DE-4)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
3.	142441XX	OC	Open Category Course* (OC-2)	20	20	30	30	-	-	25	75	100	2	1	-	3	Online	MCQ	3 Hrs
4.	14244101	SPC	Specialization Course# (SPC-3)	20	20	30	30	-	-	-	-	100	2	1	-	3	Blended	MCQ	2 Hrs
5.	14244102	SEP	Skill Enhancement Program/Research Internship/ On Job Training	-	-	-	-	50	-	-	-	50	-	-	2	1**	Experiential	SO	-
6.	14244103	DLC	Creative Problem Solving	-	-	-	-	50	-	-	-	50	-	-	2	1	Experiential	AO	-
			Total	60	60	90	90	120	100	50	150	500	10	02	04	14	-	-	-
			Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree																

MCQ: Multiple Choice Question **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book
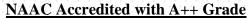
* Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform.

** These credits will be transferred from Skill Enhancement Program/Research Internship/On Job Training

#Course run through MITS-DU MOOCs

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	0	2	1	1	1	0	1	0	0	0	0	0	1

Mode of Learning							Mode of Examination						Total Credits
Theory		NEC		Lab			Theory			NEC	Lab		
Face to Face	Online	Interactive	Face to Face	Blended	Experiential	Experimental	PP	MCQ	OB	SO	AO	SO	
12	3	0	1	0	1	0	6	6	0	0	1	1	31
85.17%	21.42%	0%	7.14%	0%	7.14%	0%	42.85%	42.85 %	0%	0%	7.14%	7.14%	Credits %

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Scheme of Evaluation

B. Tech. VIII Semester (EL) *(for batch admitted in academic session 2024-25)*

S. No.	Course Code	Category Code	Course Name	Theory Block — Continuous Evaluation — Minor Evaluation I	Theory Block — Continuous Evaluation — Minor Evaluation II	Theory Block — Continuous Evaluation — Quiz/ Assignment	Theory Block — Major Evaluation	Practical Block — Continuous Evaluation	Practical Block — Major Evaluation	MOOCs — Assignment	MOOCs — Exam	Total Marks	L	T	P	Total Credits	Mode of Learning	Mode of Major Evaluation.	Duration of Major Evaluation.
1.	142442XX	DE	Departmental Elective* (DE-5)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
2.	142442XX	OC	Open Category Course* (OC-3)	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
3.	14244201	PBL	Industry Internship/Research Internship/ Innovation & Start-up	-	-	-	-	280	120	-	-	400	-	-	20	10	Experiential	SO	-
4.	14244202	PDC	Professional Development##	-	-	-	-	-	50	-	-	50	-	-	4	2	Interactive	SO	-
			Total	-	-	-	-	280	170	50	150	650	06	-	24	18	-	-	-

Summer Semester of six-eight week duration will be conducted to complete any backlog courses.
Additional Course for Honours or Minor Degree: Permitted to opt for maximum two additional courses for the award of Honours or Minor Degree

MCQ: Multiple Choice Question **AO:** Assignment + Oral   **PP:** Pen Paper   **SO:** Submission + Oral   **OB:** Open Book

*Course run through SWAYAM/NPTEL/ MOOC Learning Based Platform

Evaluation will be based on participation/laurels brought by the students to the institution in national/state level technical and other events during the complete tenure of the UG programme (participation in professional chapter activities, club activities, cultural events, sports, personality development activities, collaborative events, MOOCs, technical events, institute/department committees, etc.)

HSMC	BSC	ESC	DC	DE	SPC	OC	DLC	NEC	SP	SIP	SLP	PDC	PBL	MAC	MWS
0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0

Mode of Learning								Mode of Examination							Total Credits
Theory		NEC	Lab					Theory			NEC	Lab			
Face to	Online	Interactiv	Face to	Blended	Experientia	Experimenta	Interact	PP	MCQ	OB		AO	SO		

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

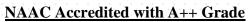| Face		e	Face		l	l	ive				SO			
0	6	0	0	0	10	0	2	0	6	0	0	0	12	36
0%	33.33%	0%	0%	0%	55.55%	0%	11.11%	0%	33.33 %	0%	0%	0%	7.14%	Credits %

Annexure III

Item 3	To review and finalize the syllabi of all courses of B. Tech. II Semester (for batch admitted in 2024-25) under the flexible curriculum along with their COs

B.Tech. II Semester (Electronics Engineering)

<u>**Data Communication (14241201)**</u>

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241201	DC	Data Communication	20	20	30	30	-	-	100	3	-	-	3

Data Communication (14241201)

Course objectives: To provide an introduction to fundamental computer network architecture concepts and their applications.

Unit I Introduction to Switching Techniques: Circuit switching, Message switching, Packet switching, Protocols, Layered network architecture and architecture OSI & TCP/IP reference model, Physical layer transmission medium, RS 232 C, Modem, Topologies.

Unit II Data Link Layer: Framing BSC, HDLC. ARQ: Stop and wait, Sliding window, Efficiency, Error detection and Error correction, Hamming codes, Parity checks – CRC, Checksum, HARQ.
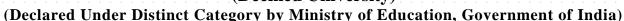
Unit III MAC Layer: MAC sub layer – LAN protocols, ALOHA, Slotted and pure ALOHA, CSMA, CSMA/CD, Token bus, Token Ring, TDMA, CDMA, FDMA, Ethernet, Bridge, Router, Gateway, Switch.
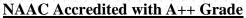
Unit IV Network Layer: Routing – Data gram and Virtual Circuit, Distance vector and Link state Routing, Dijkstra's Algorithms, Congestion Control: Leaky bucket algorithm, Slow start, ATM model and ATM traffic management – AAL, X.25, IP layer, IP addressing.

Unit V Transport Layer: Connection oriented transport protocol mechanism, TCP, Transport flow regulation, UDP Segmentation & Reassemble, Session and Transport Interaction, Synchronization, Session protocols, FTP, Remote login.

Text Books:
1. Data Communication & Networking – B.A. Forouzan, Tata Mc-Graw Hill
2. Data and Computer Communication – W. Stallings, Pearson

Reference Books:
1. LANs – Keiser, Tata Mc-Graw Hill
2. Internetworking with TCP/IP – VOL-I – D.E. Comer, PHI
3. ISDN and Broad band ISDN with Frame Relay & ATM – W. Stalling, Pearson

<u>**Course Outcome:**</u>
After successful completion of the course, students will be able to:

CO1: Apply various switching techniques in a layered network architecture.

CO2: Analyze protocols and techniques related to the Dynamic Link Layer.

CO3: Explain MAC sub-layer protocols to design and manage efficient LAN.

CO4: Analyze routing algorithms, congestion control mechanisms, and IP addressing techniques.

CO5: Explore transport-layer protocols for flow and error control.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3	2	0	2	1	1	1	3	1	3	3	2
CO2	3	3	2	2	0	1	1	1	2	1	2	3	3	1
CO3	3	1	1	1	0	2	1	1	1	2	1	3	3	2
CO4	3	3	2	2	0	1	2	1	2	1	2	2	3	1
CO5	3	3	1	1	0	1	2	1	2	1	2	2	3	1

1 - Slightly; 2 - Moderately; 3 – Substantially

B.Tech. II Semester (Electronics Engineering)

<u>**Electronic Circuits (14241202)**</u>

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241202	DC	Electronic Circuits	20	20	30	30	-	-	100	2	1	-	3

Course Objective: To understand different semiconductor circuits and grab the way to design circuits and perform measurements of circuit parameters.

Unit I: Diode Circuits: Review of P-N Junction Diodes, Power supply parameters, SMPS, Zener and Avalanche Breakdown, Zener voltage regulator, series pass regulator (with feedback) and shunt voltage regulators, Short circuit protection.

Unit II: Introduction to BJT Biasing and Stability: Review of BJTs, Transistor biasing and bias stabilization, the operating point, stability factor, analysis of fixed base bias, Voltage divider bias, collector to base bias, Emitter resistance bias circuit and Bias compensation techniques.

Unit III: BJT as an Amplifier: Low frequency BJT amplifiers, equivalent circuit of BJT using h parameter for CB, CE, CC configurations, calculation of transistor parameter for CB, CE, CC using h parameters. High frequency BJT amplifier: Hybrid-pi (π) common emitter transistor model, hybrid $-\pi$ conductance and capacitance, gain-bandwidth product.

Unit IV: Feedback amplifiers: Introduction to Feedback Amplifiers & their design parameters, comparison of different feedback amplifier

configuration viz (gain, input impedance, output impedance, current gain, voltage gain), cascading of BJT amplifier, Darlington Pair.

Unit V: Oscillators and Tuned Amplifiers: Barkhausen criterion, Sinusoidal oscillators, L-C (Hartley- Colpitts) oscillators, RC phase shift, resonant oscillator, Wien Bridge and crystal oscillators, Clapp oscillator, Tuned

Text Books:

1. Microelectronic Circuits: Theory and Application: Sedra& Smith,7th Edition, Oxford University Press.
2. Electronics Devices and Circuits: Boylested&Nashelsky,11th Edition, Pearson Education India

Reference Books:

1. Electrical Engineering material: A.J Dekker, 1st Edition, Prentice Hall of India.
2. Micro Electronics: Millman, & Grabel,2nd Edition, McGraw Hill Education
3. Integrated Electronics: Millman & Halkias, McGraw Hill Education.

Course Outcomes

After the completion of this course students will be able to:
CO 1. Design different diode circuits.
CO 2. Design the biasing circuits for BJTs.
CO 3. Examine the working of BJT amplifiers.
CO 4. Analyze the different parameters of feedback amplifiers.
CO 5. Design the Oscillator and Tuned amplifier circuits.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	2	2	1	2	3	2	_	1	2	2
CO2	3	3	3	1	2	2	1	2	3	2	-	2	3	3
CO3	3	3	2	2	2	2	1	2	3	1	1	2	3	2
CO4	3	3	2	2	2	2	1	1	3	2	1	2	3	3
CO5	3	3	3	2	2	2	1	2	3	2	1	3	3	3

1 - Slightly; 2 - Moderately; 3 – Substantially

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

B.Tech. II Semester (Electronics Engineering)

Signals & Systems (14241203)

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241203	DC	Signals & Systems	20	20	30	30	-	-	100	2	1	-	3

Course objective: Coverage of continuous and discrete-time signals and systems, their properties and representations and methods that is necessary for the analysis of continuous and discrete-time signals and systems.

Unit-1 Introduction: Mathematical Description of Continuous& Discrete– Time Signals Definition, Classification of signals, Complex Exponential and Sinusoidal Function; Unit Step, Signum, Unit Ramp, Unit Impulse, Periodic Impulse or Impulse Train, Rectangle, Triangle, Sinc and Gaussian pulse functions, Even and Odd Functions, Periodic and non periodic Functions, Signal Energy and Power, Scaling and Shifting, Amplitude Scaling, Time Shifting, Differential and Integration.

Unit 2 Fourier series and Fourier transform: Fourier Transform: Exponential Fourier series, and Trigonometric Fourier series, properties of Fourier series, Introduction to Fourier transform, Fourier Transforms of elementary functions. Properties of Fourier Transform.

Unit 3: Z transforms: Introduction to Z-transform, relation between Laplace and Z-transform, relation between Fourier transform and Z-transform, ROC, properties of ROC, Properties of Z-transform, Inverse Z-transform, Unilateral Z-transform.

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Unit-4 Properties of Continuous and Discrete Time Systems: System Modeling, System Properties, Homogeneity, Time Invariance, Additivity, Linearity & Superposition, Stability, Incremental Linearity, Causality, Memory, Static, Nonlinearity, Inevitability, continuous & discrete LTI system.

Unit-5 Continuous and Discrete system analysis: The Convolution Integral, and Convolution Sum, Impulse Response, Convolution & Properties, System Interconnections, Stability and Impulse Response, Response of Systems to Standard Systems, Realization of Differential Equations, Analysis of discrete time LTI system using Z-transform, Analysis of continuous time LTI system using Laplace transform.

Text Books:

1. Digital Signals and Systems, 2nd Edition: Simon Haykin, Barry Van Veen, 2nd Edition, Wiley India Pvt. Ltd.
2. Signals and Systems: Hwei. P. Hsu, Schaum's outlines, 2 nd Edition, Tata Mcgraw Hill Education.

Reference Books:
1. Fundamentals of Signals & Systems: Michael J Roberts, 2 nd Edition, Mc Graw Hill Education.
2. Signal and Systems: Alan V. Oppenheim, Alan S. Willsky and S. Hamid Nawab, 2nd Edition, Pearson Education India.

<u>**Course Outcomes**</u>

After the completion of this course students will be able to:
CO1. Describe continuous and discrete time signals mathematically.
CO2. Determine the spectral characteristics of signals using Fourier series and Fourier transform.
CO3. Apply z-transform for analysis of discrete time signals.
CO4. Evaluate the performance parameters of LTI systems.
CO5. Analyze continuous and discrete time systems.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	2	1	1	2	2	1	2	_	3	2	2

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Department of Electronics Engineering

CO2	3	3	3	3	2	2	2	2	2	2	2	3	3	3
CO3	3	3	2	3	3	3	2	1	2	2	3	3	3	3
CO4	3	3	3	3	3	3	2	1	2	2	3	3	3	3
CO5	3	3	2	1	2	3	2	1	2	2	1	3	2	2

1 - Slightly; 2 - Moderately; 3 – Substantially

B.Tech. II Semester (Electronics Engineering)

<u>Digital Circuits and Systems (14241204)</u>

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241204	DC	Digital Circuits and Systems	20	20	30	30	-	-	100	2	1	-	3

Course Objective: To understand the concept of digital systems, design& analyze the combinational and sequential logic circuits.

Unit I: Boolean algebra and switching functions: Minimization of Boolean functions, Canonical & standard form, concept of prime implicant etc. Karnaugh's map method, Quine-McCluskey's method, Universal gates, NAND/NOR realization of Boolean functions.
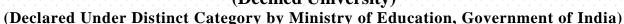
Unit II: Combinational Logic circuits: Half adder, Half subtractor, Full adder, Full subtratctor circuits. Serial and parallel adder, BCD adders, look-ahead carry generator, Code Converters, Decoders, Encoders, Multiplexers & demultiplexers.

Unit III: Sequential Circuits: Latches, Flip-flops - SR, JK, D, T, and Master-Slave, Characteristic table and equation, Application table, Edge triggering, Level Triggering, Realization of one flip flopusing other flip flops, Multivibrators: Monostable, Astable, Bistable (transistorized).

Unit IV: Registers and Counters: Asynchronous Ripple or serial counter, Asynchronous Up/Down counter, Synchronous counters, Synchronous Up/Downcounters, Programmable counters, Design of Synchronous counters: State diagram, State table, State minimization, State assignment, Excitation

table and Maps Circuit, Implementation: Modulo-n-counter, Registers:Shift registers, Universal shift registers, Shift register counters, Ring counter, Shift counters, Sequence generators.

Unit V: Logic Families: RTL, DTL, all types of TTL circuits, ECL, HTL and PMOS, NMOS & CMOS logic etc. Comparison of various logic families, ROM organization- PROM, EPROM, EEPROM, EAPROM, RAM organization- Static RAM, Dynamic RAM.

Text Books:

1. Digital Design: M. Mano,4th Edition, Prentice Hall of India.
2. Logic & Computer Design Fundamental: M.Mano, 5th Edition, Pearson Education India.
3. Digital Circuits and Design: S. Salivahanan,5th Edition, Oxford University Press.

Reference Books:

1.Digital Electronics: W.H. Gothman, Prentice Hall of India.
2.Digital System Principles & Applications: R.J. Tocci,11th Edition, Pearson Education India.
3.Pulse, Digital & Switching Waveforms: Millman&Taub, McGraw Hill Education.

Course Outcomes

After the completion of this course students will be able to:
CO1. Develop/implement the Boolean expression using logic gates.
CO2. Design different combinational logic circuits such as adder, subtractor, decoder etc.
CO3. Analyze sequential circuits such as flip-flops, latches etc.
CO4. Design shift registers and counters using flip-flops.
CO5. Compare logic families, semiconductor memories, & multivibrators.
Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	2	1	1	2	1	2	1	2	2	3	3	3
CO2	3	3	3	3	2	3	1	2	2	1	3	3	2	2
CO3	3	3	3	3	2	2	1	-	1	2	1	2	3	3

CO4	3	3	2	2	2	2	2	-	2	1	1	2	3	3
CO5	3	3	3	2	3	3	1	1	1	1	2	3	2	3

1 - Slightly; 2 - Moderately; 3 – Substantially

Annexure IV

Item 4	To review and finalize the **Experiment list/ Lab manual and Micro Project-II** for all the Laboratory Courses to be offered in **B. Tech. II Semester** (**for batch admitted in 2024-25**)

B.Tech. II Semester (Electronics Engineering)

<u>**Digital Logic Design Lab (14241206)**</u>

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assign ment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241206	DLC	Digital Logic Design Lab					70	30	100	-	-	2	1

Course Objective: Develop skills in designing and testing electrical and electronic circuits.

List of Experiment

Department of Electronics Engineering

1. To verify the truth tables for logic gates – AND, OR, NOT, EX-OR, EX- NOR, NAND, NOR
2. To realize basic logic gates using universal gates
3. To verify the truth table of half adder and full adder
4. To verify the truth table of half subtractor and full subtractor
5. To design R-S Flip-Flop
6. To design J-K Flip-Flop
7. To examine parity generator/checker
8. To design ripple counter using J-K Flip-Flop.

Course Outcomes:

After completing the lab, students will be able to

CO1. Verify the De Morgan's theorem.
CO2. Design the basic and universal gates.
CO3. Design adder & subtractor circuits.
CO4. Verify the truth table of flip-flops.
CO5. Design Counters and Registers
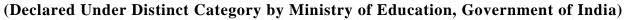
B.Tech. II Semester (Electronics Engineering)

Problem Solving through Python Programming (14241207)

Subject Code	Category Code	Subject Name	Theory Slot				Practical Slot		Total Marks	Contact Hr./week			Total Credits
			Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment Marks	Major Evaluation	Continuous Evaluation/ Lab work & Sessional	Major Evaluation		L	T	P	
14241207	DLC	Problem Solving through Python Programming					70	30	100	-	-	2	1

Course Objectives: Develop skills in modular programming by writing reusable functions and dividing the code into logical modules.

Department of Electronics Engineering

List of Experiments

1. Write python programming to declare various data type and display its data type.
2. Write python programming to declare sequential data types and display its data type.
3. Write python programming to perform addition and subtraction and display the result.
4. Write python programming to perform multiplication and division and display the result.
5. Write a python programming to perform Boolean operation and display the result.
6. Write a python programming to perform logical operations and display the result.
7. Write a python programming to declare a string, display its different index position and also change the letter of string with some other letter.
8. Write python programming to declare array and display its different index position.
9. Write python programming to declare a string then (a) Capitalize it, (b) convert into title format, (c) Swap the case of string.
10. Write a python programming to declare a string use slice object to slice the given sequence to perform addition, subtraction, multiplication and division of integer and floating values.

Course Outcomes

After completing the lab, students will be able to:

CO1. Write basic programs in Python.
CO2. Visualize data using Python packages.

B.Tech. II Semester (Electronics Engineering)

<u>**Micro Project-II**</u>

<u>**Course Objectives**</u>: To design an application-based project.

1. LED Blinking Circuit – Blink an LED using a 555 timer or microcontroller.
2. Light-Activated Switch – Use an LDR to turn devices on/off based on light intensity.
3. Water Level Indicator – Monitor and display water levels using LEDs and float sensors.
4. Automatic Night Lamp – Automatically turn on a lamp in low light using an LDR.
5. Battery Level Indicator – Indicate battery levels using LEDs and voltage dividers.
6. Clap-Activated Switch – Control devices with a clap using a sound sensor.
7. Temperature-Controlled Fan – Adjust fan speed based on temperature using a thermistor.

8. Rain Detector – Detect rainfall using a rain sensor and trigger an alert.
9. Traffic Light Controller – Simulate traffic signals using LEDs and timers.
10. Digital Thermometer – Measure temperature using a thermistor and display it on an LCD.
11. Burglar Alarm System – Trigger an alarm when motion is detected using a PIR sensor.
12. IR Obstacle Detection System – Detect obstacles using IR sensors and LEDs.
13. Soil Moisture Sensor Circuit – Monitor soil moisture to automate irrigation systems.
14. Electronic Dice – Create an electronic dice using LEDs and a random generator circuit.
15. Heartbeat Monitor – Measure and display heart rate using a pulse sensor.
16. DC Motor Speed Controller – Control motor speed using a potentiometer and PWM.
17. Power Supply Regulator Circuit – Design a stable voltage supply using regulators.
18. Solar Mobile Charger – Use solar panels to charge mobile devices.
19. Line Follower Robot – Build a robot that follows a black line using IR sensors.
20. Metal Detector – Detect metallic objects using an inductive sensor circuit.
21. To-Do List Application – Create a task management system for adding, viewing, and deleting tasks.
22. Temperature Converter – Convert temperatures between Celsius, Fahrenheit, and Kelvin.
23. Quiz Application – Develop a multiple-choice quiz with scoring and result display.
24. Random Password Generator – Generate secure random passwords using Python's random module.
25. Dice Rolling Simulator – Simulate the rolling of dice with random number generation.
26. Currency Converter – Convert between different currencies using an API.
27. Simple Chatbot – Build a rule-based chatbot for basic conversation using conditionals.
28. Age Calculator – Calculate age from the user's date of birth.
29. File Renaming Tool – Automate renaming multiple files in a directory.
30. Basic Alarm Clock – Set a timer to trigger an alarm using time and sound libraries.
31. Temperature and Humidity Monitor – Use a DHT11 sensor to display real-time temperature and humidity.
32. Obstacle Avoiding Robot – Employ an ultrasonic sensor to detect and avoid obstacles.
33. Light-Activated LED – Use an LDR to turn an LED on/off based on light intensity.
34. Soil Moisture Detection System – Monitor soil moisture levels and trigger a water pump when dry.
35. Motion-Activated Security Alarm – Use a PIR sensor to detect motion and trigger an alarm.
36. Fire Detection System – Detect fire using a flame sensor and sound an alert.
37. Smart Dustbin – Open a dustbin lid automatically using an ultrasonic sensor.
38. Gas Leakage Detection System – Use an MQ-2 sensor to detect gas leaks and trigger a buzzer.
39. Heartbeat Monitoring System – Measure heart rate using a pulse sensor and display the results.
40. Simple Calculator – Perform basic arithmetic operations to understand input/output and operators.
41. Number Guessing Game – Implement a random number guessing game using loops and conditionals.

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

42. Student Grade Calculator – Calculate grades based on input marks using decision-making statements.
43. Library Management System – Manage book records using file handling and structures.
44. Tic-Tac-Toe Game – Build a two-player game to practice arrays and game logic.
45. Bank Account Management System – Simulate banking operations using classes and OOP concepts.
46. Prime Number Finder – Identify prime numbers in a range using loops and mathematical logic.
47. Contact Management System – Store and manage contacts using structures and file handling.
48. Simple Voting System – Create a voting system with counters and conditional statements.
49. Rock, Paper, Scissors Game – Develop a game using random number generation and control flow.

Course Outcomes:

CO1: Analyze the electronic components, measuring instruments, and tools.

CO2. Design and simulate the schematic, layout using CAD software.

CO3. Design and fabricate PCBs for various electronic circuits individually and in a team.

CO4. Troubleshoot the program or circuit individually and in a team.

CO5. Implementation of e mini project that benefits society.

Annexure V

Item 5	To review and finalize the syllabi of II semester PG Programme under the Madhav Institute of Technology & Science-Deemed University (MITS-DU) (M.E./M.Tech./MCA/MBA/MUP) along with their Course Outcomes (COs)

<u>Not Applicable</u>

Annexure VI

Recommended in the BoS meeting of **Electronics Engineering** held on 6th Dec 2024

Item6	To review and finalize the syllabus/module of Classified Novel Engaging Course to be offered in II semester of PG programme

<u>**Not Applicable**</u>

<u>**Annexure VII**</u>

Item 7	Any other matter.