CHOICE BASED CREDIT SYSTEM

EVALUATION SCHEME

AND

COURSE OF STUDY

IN

M.TECH

ELECTRONICS & COMMUNICATION ENGINEERING

(I YEAR& IIYEAR)

SCHEME OF EXAMINATION & SYLLABUS

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

FACULTY OF ENGINEERING AND TECHNOLOGY GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR

Faculty of Engineering & Technology

In the year 2000 Faculty of Engineering & Technology was established with an aim of imparting technical education in the spiritual surroundings of the Gurukula System. Keeping in mind the importance of technocrats with strong moral character, superior knowledge, and devotion to the nation. FET was established with a motto of Building Technocrats with ethics. FET is known in India and abroad for students with virtuous moral character and Technical abilities. FET is one of the richest faculty of Gurukula Kangri (Deemed to be University), with a huge number of books in the library, well-equipped electronics electrical and mechanical laboratories, latest software, and computers in computer labs. Football field, Tennis court, Volleyball court, Basketball arena, and open gym for the students with athletic interests.

Vision of F.E.T.

To provide affordable & quality education to engineering aspirants and nurture them to be highly skilled & innovative technocrats with ethics and nation building spirit.

Mission of F.E.T.

M1: (ETHICS & VALUES)
To educate and nurture engineering aspirants with values, updated engineering curriculum & latest technology to make them globally trusted and accepted.

M2: (RESEARCH)
Provide conducive environment for teaching, learning & research that can lead to patents, publications and make country proud.

M3: (AFFORDABILITY)
Provide cost effective education so that every section of society can be benefitted.

M4: (SKILLED)
Design industry oriented curriculum that can make engineering graduates ready to work for Indian Industries as well as MNCs.

Department of Electronics & Communication Engineering

The Department of Electronics & Communication Engineering (ECE) provides in-depth technical knowledge and opportunities for innovation and research with the latest computer and software facilities.

Vision And Mission

Vision of the department

To become an excellence in higher education and learning center, that will provide inter disciplinary knowledge with impartment of human values and professional ethics among the youth, so as to serve as a valuable resource for industry and human society.

Mission of the department

- **[M1]:** (**Contemporary excellence)**
  To provide students with an academic environment to promote teamwork, ethics, multidisciplinary approach and lifelong learning required for a successful professional carrier.

- **[M2]:** (**Comprehensive Learning)**

  Impart To develop and impart graduated level of state-of-the-art knowledge education in the field of Electronics & Communication Engineering through focused graduate programs.

- **[M3]:** (**Communal Responsibility & Sustainable Development)**

  Endeavour to apply the acquired knowledge into tangible benefits for to the society.

- **[M4]:** (**Morals & Values)**

  To provide students with strong foundation in basic sciences, Vedic knowledge, mathematics, computing, engineering principles and human values.

Master of Technology (Electronics & Communication Engineering)
M. Tech (ECE)

M.Tech stands for Master of Technology. It's a postgraduate program in engineering and technology fields pursued after a Bachelor's degree in a related field, typically lasting two years.

1. Introduction

The Department of Electronics & Communication Engineering at FET, Gurukul Kangri, Haridwar starts a new AICTE approved M.Tech program in Electronics & Communication Engineering (ECE) with an intake of 18 students from session 2025-26. This program aims to equip graduates with advanced knowledge and skills in critical areas of ECE and VLSI to address the ever-growing demand for qualified professionals in the industry.

2. Program Structure

The M.Tech Program will be a four-semesters (Two-years) program. Students will complete course work, laboratory sessions, and a final project/thesis.

The M.Tech in ECE program will be a two-years, full-time program consisting of:

- **Core Courses:** These courses provide a strong foundation in advanced computer science concepts.
- **Elective Courses:** Students can choose electives to specialize in specific areas of interest.
- **Audit Course:** A course that a student can take without earning academic credit or a grade.
- **Master's Thesis:** Students will undertake a research project under the supervision of a faculty member.

3. Admission Process/Eligibility Criteria

The program will consider applications from both GATE (Graduate Aptitude Test in Engineering) qualified and non-GATE students, though preference will be given to candidates having valid GATE score. Eligible candidates will be shortlisted based on their GATE score/Last Eligible Degree Percentage. The university may consider factors such as overall CGPA or percentage in B.Tech./UG program. Candidates with valid GATE score are eligible for AICTE scholarship as per AICTE norms.

Students must possess a Bachelor's degree in Engineering (BE/B.Tech) in ECE/EEE or allied branches from a recognized university. An M.Sc Physics/M.Sc Electronics are also eligible. The university will set a minimum qualifying GATE score or UG exam percentile based on the program's competitiveness.

4. Program Outcomes of ECE (M.Tech) program:

The main outcomes of the ECE (M.Tech) program are given here. At the end of the program a student is expected to have:

1. Apply advanced knowledge of mathematics, science, and engineering fundamentals to analyze, design, and develop solutions in Electronics and Communication Engineering.

2. Identify, analyze, and solve complex engineering problems using a systematic and research-based approach in ECE applications.

3. Design and develop electronics and communication systems, components, or processes that meet specific needs with consideration for public health, safety, and environmental concerns.

4. Utilize modern engineering tools, techniques, and resources for ECE-related tasks, with an understanding of their limitations.

5. Apply appropriate research methodologies, including literature review, experimentation, and data analysis, to conduct investigations and contribute to technological innovation.

6. Demonstrate ethical behavior, professional responsibility, and a commitment to sustainable development in engineering practice.

7. Communicate effectively on complex engineering activities with peers, the engineering community, and society at large through reports, presentations, and documentation.

8. Apply engineering and management principles to lead and manage projects in multidisciplinary environments efficiently.

9. Recognize the need for and engage in lifelong learning to adapt to emerging technologies and innovations in the field of ECE.

10. Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

(Effective from the academic session 2025-26)
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
Faculty of Engineering &Technology Electronics
& Communication Engineering

M. Tech. First Year   **SEMESTER-I**

	SUBJECT	PERIODS			EVALUATION SCHEME				Subject Total	Credits
					SESSIONAL EVALUATION			EXAM		
		L	T	P	CT	TA	Total	ESE		
THEORY										
CORE-1 MET-C101	Advance Communication System	3	1	0	20	10	30	70	100	3
CORE-2 MET-C102	Advance Microprocessor and Microcontroller	3	1	0	20	10	30	70	100	3
Program specific Elective -1 MET-PE	Section -A (1) Wireless Sensor Networks (MET-PE 101) (2) Embedded System Design (MET-PE 102) (3) Advanced Mathematics for engineers (MET-PE 103) (4) Analog and Digital CMOS VLSI Design (MET-PE 104)	3	1	0	20	10	30	70	100	3
Program specific Elective -2 MET-PE	Section -B (1) Cognitive Radios (MET-PE 105) (2) RF and Microwave Circuit Design(MET-PE 106) (3) Soft Computing (MET-PE 107) (4) Low power VLSI Design (MET-PE 108)	3	1	0	20	10	30	70	100	3
MET-C103	Research Methodology and IPR	2	0	0	20	10	30	70	100	2
PRACTICAL										
LAB-1 Elective -1 MET-C	(1) Advanced Communication Lab (MET-C111) (2) Advance Microcontroller Lab (MET-C112)	0	0	4	10	5	15	35	50	2
LAB-2 Elective -2 MET-C	(1)Wireless and Mobile Communication Lab(MET-C113) (2) Analog and Digital CMOS VLSI Design Lab (MET-C114)	0	0	4	10	5	15	35	50	2
Audit Course MET-A101	Physical Fitness and Stress Management	2	0	0	20	10	30	70	100	1
TOTAL		16	4	10	140	70	210	490	700	19

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GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
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M. Tech. First Year   **SEMESTER-II**

	SUBJECT	PERIODS			EVALUATION SCHEME					Subject Total	Credits
					SESSIONAL EVALUATION			EXAM			
		L	T	P	CT	TA	Total	ESE			
THEORY											
CORE-3 MET-C201	Antennas and communication Systems	3	1	0	20	10	30	70		100	3
CORE-4 MET-C202	Advanced Digital Signal Processing	3	1	0	20	10	30	70		100	3
Program specific Elective -3 (MET-PE)	Section-C (1) Satellite Communication (MET-PE 201) (2) Internet of Things (MET-PE 202) (3) Machine Learning (MET-PE 203) (4) VLSI Design Verification and Testing (MET-PE 204)	3	1	0	20	10	30	70		100	3
Program specific Elective -4 (MET-PE)	Section –D (1) Nano-Electronics (MET-PE 205) (2) MIMO System (MET-PE 206) (3) Artificial Intelligence (MET-PE 207) (4) RTL Simulation and Synthesis with PLDs (MET-PE 208)	3	0	0	20	10	30	70		100	3
PRACTICAL											
LAB-3 Elective -3 MET-C	(1) Microwave Systems lab(MET-C211) (2) VLSI Design Verification and Testing Lab(MET-C212)	0	0	4	10	5	15	35		50	2
LAB-4 Elective -4 MET-C	(1)Advanced Digital Signal Processing Lab(MET-C213) (2)RTL Simulation and Synthesis with PLDs Lab (MET-C214)	0	0	4	10	5	15	35		50	2
Minor Project MET-C227	Minor Project	2	0	2	10	5	15	35		50	2
Audit Course MET-A201	English for research paper writing	2	0	2	20	10	30	70		100	1
TOTAL		16	3	12	130	65	195	385		550	19

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GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
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& Communication Engineering

M. Tech. Second Year   **(SEMESTER-III)**

	SUBJECT	PERIODS			EVALUATION SCHEME		Subject Total	Credits
					SESSIONAL EVALUATION	EXAM ESE		
		L	T	P				
THEORY								
Dissertation –Minor MET-P310	**Dissertation Phase – I** /Internship/Industry project	0	0	6	300		300	8
MET-P311	Seminar I	0	0	4	100		100	4
	Seminar II Explore Engineering & Technology in Ved, Vedang and other Vedic literature	0	0	4	100		100	1
TOTAL		0	0	14	500		500	13

(Effective from the academic session 2025-26)
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY), HARIDWAR
Faculty of Engineering &Technology Electronics
& Communication Engineering

M. Tech. Second Year   **(SEMESTER-IV)**

	SUBJECT	PERIODS			EVALUATION SCHEME		Subject Total	Credits
					SESSIONAL EVALUATION	EXAM ESE		
		L	T	P				
THEORY								
Dissertation –Minor MET-P400	Dissertation Phase – II Dissertation With Research Paper/ Internship/Industry project	0	0	16	100	400	500	16
	Total	0	0	16	100	400	500	16

Credit				
Semester	1	2	3	4
Semester wise Total Credit	19	19	13	16
Total Credit	67			

M. Tech. (Electronics & Communication) Specialization: Electronics & Communication Engineering

Semester I

Sr. No.	Course Code	Course Name
1	Core 1(MET-C101)	Advance Communication System
2	Core 2(MET-C102)	Advance Microprocessor and Microcontroller
3	Prog. Specific Elective-I (MET-PE 101) (MET-PE 102) (MET-PE 103) (MET-PE 104)	**Elective I** (1) Wireless Sensor Networks (2) Embedded System Design (3) Advanced Mathematics for engineers (4) Analog and Digital CMOS VLSI Design
4	Prog. Specific Elective-II (MET-PE 105) (MET-PE 106) (MET-PE 107) (MET-PE 108)	**Elective II** (1) Cognitive Radios (2) RF and Microwave Circuit Design (3) Soft Computing (4) Low power VLSI Design
5	Lab-1 Elective-1	(1) Advanced Communication Lab (MET-C111) (2) Advance Microcontroller Lab (MET-C112)
6	Lab-2 Elective-2	(1)Wireless and Mobile Communication Lab(MET-C113) (2) Analog and Digital CMOS VLSI Design Lab (MET-C114)
7	MET-C103	Research Methodology and IPR
8	Audit course 1(MET-A101)	Physical Fitness and Stress Management

Semester II

Sr. No.	Course Code	Course Name
1	Core 3	Antennas and communication Systems
2	Core 4	Advanced Digital Signal Processing
3	Prog. Specific Elective-1 (MET-PE 201) (MET-PE 202) (MET-PE 203) (MET-PE 204)	Elective-3 (1) Satellite Communication (2) Internet of Things (3) Neural networks (4) VLSI Design Verification and Testing
4	Prog. Specific Elective-2 (MET-PE 205) (MET-PE 206) (MET-PE 207) (MET-PE 208)	Elective-4 (1) Nano-Electronics (2) MIMO System (3) Artificial Intelligence (4) RTL Simulation and Synthesis with PLDs
5	Lab-3 Elective-3	(1) Microwave Systems Lab (MET-C211) (2) VLSI Design Verification and Testing Lab (MET-C212)
6	Lab-4	(1) Advanced Digital Signal

	Elective-4	Processing Lab (MET-C213)
		(2) RTL Simulation and Synthesis with PLDs Lab (MET-C214)
7	MET-C227	Mini Project
8	Audit course 2(MET-A201)	English for research paper writing

Semester III

Sr. No.	Course Code	Course Name
1.	Seminar I	**Seminar**
2.	Seminar II	Explore Engineering & Technology in Ved, Vedang and other Vedic literature.
3.	Dissertation	Dissertation Phase – I

Semester IV

Sr. No.	Course Code	Course Name
1.	Dissertation	Dissertation Phase – II

NOTE: Specialization certificate will be given by the university with the following conditions

1. If the student opt two electives of VLSI in First and Second semester each (Total four papers of of VLSI) he will get specialization certificate in VLSI.

2. If a student opt two electives of communication in First and Second semester each (Total four papers of Communication) he will get specialization certificate in Communication.

3. If the students opt mixed electives, no specialization will be given, only M.Tech in ECE will be given.