ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
Roorkee – 247667

No. Acd./68 /Senate-93 Dated: January 05, 2023

Subject: Introduction of M.Tech. programme on 'Terahertz Communication and Sensing' and its course structure and admission eligibility criteria (Item No. 93.4)

The Senate in its 93rd meeting held on 28.12.2022 considered and approved the following proposals of the Department of Electronics and Communication Engineering:

1. Introduction of M.Tech. programme on 'Terahertz Communication and Sensing' w.e.f. 2023-24 along with its course structure **(Appendix-A)**

2. Admission eligibility criteria and number of seats for M.Tech. in 'Terahertz Communication and Sensing' as under:

Name of Programme	Minimum Educational Qualification	GATE Disciplines & Seats				GEN-EWS	Total Intake
		Main Discipline	Intake	Other Discipline	Intake		
M.Tech. (Terahertz Communication and Sensing)	B.E., B.Tech. in ECE, EE, Engineering Physics or equivalent: M.Sc. (Physics), M.Sc. (Electronics/ Electronic Science)	EC	10	PH, EE	8	2	20

Note: Reservation will be as per the GoI norms.

Assistant Registrar
(Curriculum)

Copy to (through e-mail):-

1. Chairman Senate & Director
2. Head and Chairperson, DAPC of Department of Electronics and Communication Engineering
3. Head of all Departments/ Centres/ School
4. Dean, Academic Affairs
5. ADoAA (IT Systems & Admission)/ (Curriculum)/ (Evaluation)
6. Meeting Section
7. Channel i / AIS (acad.iitr.ac.in) / Academic webpage of iitr.ac.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: XXX M.Tech. (Terahertz Communication and Sensing)
Department: EC Department of Electronics and Communication Engineering
Year: I

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	ECN-501	Electromagnetic Field Theory and Scattering	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	ECN-503	Terahertz Electronics	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	ECN-509	Terahertz Design Lab. -I	PCC	2	-	-	3	-	-	-	100	-	-	-
4.	ECN-511	Linear Algebra and Random Processes	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	ECN-519	Wireless Communication Systems	PCC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
		Total		**18**										
Semester-II (Spring)														
1.	ECN-502	Terahertz Design Lab. -II	PCC	2	-	-	3	-	-	-	100	-	-	-
2.	ECN-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
3.		Program Elective-I	PEC	4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-II	PEC	4	-	-	-	-	-	-	-	-	-	-
5.		Program Elective-III	PEC	4	-	-	-	-	-	-	-	-	-	-
6.		Program Elective-IV	PEC	4	-	-	-	-	-	-	-	-	-	-
		Total		**20**										

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: XXX **M.Tech. (Terahertz Communication and Sensing)**
Department: EC **Department of Electronics and Communication Engineering**
Year: II

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Semester- I (Autumn)														
1.	ECN-701A	Thesis Stage-I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		**12**										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
Semester-II (Spring)														
1.	ECN-701B	Thesis Stage-II (continued from III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		**18**										

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	20	12	18
Total Credits	**68**			

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Program Elective Courses for M.Tech. (Terahertz Communication and Sensing)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	ECN-504	High Frequency Measurements and Instrumentation	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
2.	ECN-514	Detection and Estimation Theory	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
3.	ECN-554	Microwave and Millimeter-Wave Circuits	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
4.	ECN-602	Terahertz Communication Systems	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
5.	ECN-603	Millimeter-Wave and Terahertz Antenna Design	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
6.	ECN-604	High Speed Semiconductor Devices	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
7.	ECN-605	Surface Electromagnetics	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
8.	ECN-606	High-Frequency Dielectric Guides	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
9.	ECN-607	Terahertz Sensing and Imaging	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
10.	ECN-618	Wireless Technologies: 5G and Beyond	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
11.	ECN-620	Advanced Wireless Communication	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
12.	ECN-622	Nonionizing Radiations and Health Risks	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-
13.	ECN-637	Microwave Photonic ICs	PEC	4	3	1	-	3	-	20-35	-	20-30	40-50	-

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