DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code : **XXX M.Tech. (Terahertz Communication and Sensing)**
Department : **Department of Electronics and Communication Engineering**
Year : **I**
Model : **2**

Teaching Scheme					**Contact Hours/Week**			**Exam Duration**	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	ECC-501	Electromagnetic Field Theory and Scattering	PCC	3	3	0	0	3	0
2.	ECC-503	THz Electronics	PCC	3	3	0	0	3	0
3.	ECC-505	Linear Algebra and Random Processes	PCC	4	3	1	0	3	0
4.	ECC-507	Essential Concepts in THz Communication	PCC	4	3	1	0	3	0
5.	ECC-509	THz Design Lab.	PCC	2	0	0	3	0	3
6.		Social Science Course	SSC	2	-	-	-	-	-
		Total		**18**					
Semester-II (Spring)									
1.		Program Elective-I	PEC	2	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
6.	ECC-700	Seminar	SEM	2	-	-	-	-	-
		Total		**19**					

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Program Code : **XXX M.Tech. (Terahertz Communication and Sensing)**
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Year : **II**
Model : **2**

Teaching Scheme					**Contact Hours/Week**			**Exam Duration**	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	ECC-691	Internship Social Activity	ISA	3-5	-	-	-	-	-
2.	ECC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		Total		**13-15**					
Semester-II (Spring)									
1.	ECC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		Total		**14**					

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	19	13-15	14
Total Credits	**64-66**			

M.Tech. (Terahertz Communication and Sensing)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
1.	ECL-503	Terahertz Communication Systems	PEC	4	3	1	0	3	0
2.	ECL-504	Millimeter Wave and Terahertz Antenna Design	PEC	4	3	1	0	3	0
3.	ECL-514	Detection and Estimation Theory	PEC	4	3	1	0	3	0
4.	ECL-505	High Speed Semiconductor Devices	PEC	4	3	1	0	3	0
5.	ECL-506	Surface Electromagnetics	PEC	4	3	1	0	3	0
6.	ECL-507	High-Frequency Dielectric Guides	PEC	4	3	1	0	3	0
7.	ECL-508	Terahertz Sensing and Imaging	PEC	4	3	1	0	3	0
8.	ECL-509	Microwave and Millimeter Wave Circuits	PEC	4	3	1	0	3	0
9.	ECL-510	Nonionizing Radiations and Health Risks	PEC	4	3	1	0	3	0
10.	ECL-511	Microwave Photonic ICs	PEC	4	3	1	0	3	0
11.	ECL-618	Wireless Technologies: 5G and Beyond	PEC	4	3	1	0	3	0
12.	ECL-620	Advanced Wireless Communication	PEC	4	3	1	0	3	0
13.	ECL-564	Industry Oriented THz Lab.	PEC	2	0	0	3	0	3
14.	ECL-565	THz CAD Lab.	PEC	2	0	0	3	0	3
15.	ECL-566	6G Communication Lab.	PEC	2	0	0	3	0	3

M.Tech. (Terahertz Communication and Sensing)

Science, Technology, and Advanced Research-tools Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
1.	ECT-501	Inference and Learning Algorithms	STAR	3	3	0	0	3	0
2.	ECT-502	Semiconductor Technology and its Applications	STAR	3	3	0	0	3	0
3.	ECT-503	5G/6G Technology and its Societal Applications	STAR	3	3	0	0	3	0
4.	ECT-504	Applications of RF Technology in Defence and Space Applications	STAR	3	3	0	0	3	0

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Program Code : **XXX Master of Science (by Research) in Terahertz Communication and Sensing**
Department : **Department of Electronics and Communication Engineering**
Year : **I**
Model : **3**

Teaching Scheme					**Contact Hours/Week**			**Exam Duration**	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	ECC-501	Electromagnetic Field Theory and Scattering	PCC	3	3	0	0	3	0
2.	ECC-503	THz Electronics	PCC	3	3	0	0	3	0
3.	ECC-505	Linear Algebra and Random Processes	PCC	4	3	1	0	3	0
4.	ECC-507	Essential Concepts in THz Communication	PCC	4	3	1	0	3	0
5.	ECC-509	THz Design Lab.	PCC	2	0	0	3	0	3
6.		Social Science Course	SSC	2	-	-	-	-	-
		Total		**18**					
Semester-II (Spring)									
1.		Program Elective-I	PEC	4	-	-	-	-	-
2.	ECC-751A	Thesis Stage-I	THESIS	13	-	-	-	-	-
		Total		**17**					

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Year : **II**
Model : **3**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	ECC-751B	Thesis Stage-II	THESIS	15	-	-	-	-	-
		Total		**15**					
Semester-II (Spring)									
1.	ECC-751C	Thesis Stage-III	THESIS	16	-	-	-	-	-
		Total		**16**					

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	18	17	15	16
Total Credits	**66**			

Master of Science (by Research) in Terahertz Communication and Sensing

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
1.	ECL-503	Terahertz Communication Systems	PEC	4	3	1	0	3	0
2.	ECL-504	Millimeter Wave and Terahertz Antenna Design	PEC	4	3	1	0	3	0
3.	ECL-514	Detection and Estimation Theory	PEC	4	3	1	0	3	0
4.	ECL-505	High Speed Semiconductor Devices	PEC	4	3	1	0	3	0
5.	ECL-506	Surface Electromagnetics	PEC	4	3	1	0	3	0
6.	ECL-507	High-Frequency Dielectric Guides	PEC	4	3	1	0	3	0
7.	ECL-508	Terahertz Sensing and Imaging	PEC	4	3	1	0	3	0
8.	ECL-509	Microwave and Millimeter Wave Circuits	PEC	4	3	1	0	3	0
9.	ECL-510	Nonionizing Radiations and Health Risks	PEC	4	3	1	0	3	0
10.	ECL-511	Microwave Photonic ICs	PEC	4	3	1	0	3	0
11.	ECL-618	Wireless Technologies: 5G and Beyond	PEC	4	3	1	0	3	0
12.	ECL-620	Advanced Wireless Communication	PEC	4	3	1	0	3	0
13.	ECL-564	Industry Oriented THz Lab.	PEC	2	0	0	3	0	3
14.	ECL-565	THz CAD Lab.	PEC	2	0	0	3	0	3
15.	ECL-566	6G Communication Lab.	PEC	2	0	0	3	0	3