

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

Electronics & Communication Engineering Department

M Tech Scheme of Courses (Effective Autumn 2025)

The Department of Electronics and Communication Engineering (ECE) initiated its M Tech Programme in Communication and Information Technology in 2004, aiming to provide advanced theoretical and practical training in areas such as communication engineering, signal processing, and wireless networks. To better align with evolving industry requirements and curriculum focus, the programme was subsequently renamed to Communication & Signal Processing in 2022. This change reflected a greater emphasis on signal processing and its applications within modern communication systems. The programme has proven to be successful, producing graduates who excel in both academia and industry by addressing complex problems and contributing to research and development in the field. The Department introduced another M Tech programme Microelectronics in 2015, further expanding its postgraduate offerings. Both programmes feature schemes and syllabi that are regularly updated to incorporate the latest developments in their respective domains, ensuring that students receive education that is relevant and in line with current technological advancements.

As per our NIT Srinagar M Tech academic Statutes

1. A student has to complete a minimum of 60 credits for the award of M. Tech Degree.
2. Full time student has to take 12 to 18 credits in each semester.
3. Part time (Only Sponsored) student has to take 9 to 12 credits in each semester.
4. In addition to above a student can audit a total number of 3 courses during his/her entire programme of M. Tech, for which he/she will be awarded an AU grade, subject to following:
 - a. In 1st year: 1st semester, full time student is not allowed to audit a course, whereas a part-time student can do so.
 - b. A part time or full time student can audit only one course in one semester.

The scheme of courses for both the programmes follows

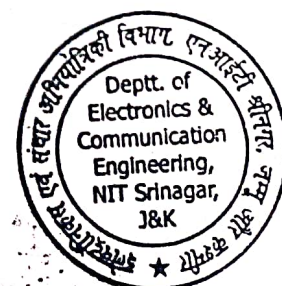


M. Tech. (Communication & Signal Processing)

The credit structure for this programme is as follows:

- a. Core : 32 credits
 b. Project : 16 credits
 c. Electives : 12 credits (Minimum)

Course Code	Course Name	Credits	Prerequisite
Core Courses			
1st year Autumn (July – December) Session			
ECEM-101	Digital Communications	3	X
ECEM- 225	Machine Learning	3	X
ECEM-236	Mathematical Foundations	3	X
ECEM- 176	Coding Techniques	2	X
1st year Spring (March – June) Session			
ECEM-103	Wireless Communications	3	101, 236
ECEM-108	Computer Networks	3	X
ECEM-169	Computer and Network Security	3	236
ECEM-226	Advanced Signal Processing	3	236
ECEM-237	Advanced Signal Processing Laboratory	2	X
ECEM-201	Seminar	1	X
2nd year Autumn (July – December) Session			
ECEM-109	Image Processing	3	226
ECEM-110	Image Processing Laboratory	2	X
ECEM-107	Advanced Design Techniques (Course based on simulation tools)	2	X
ECEM-202	Project (Dissertation) – I	3	X
2nd year Spring (March – June) Session			
ECEM-203	Project (Dissertation) – II	12	X
Electives			
ECEM - XXX	Elective courses from the specified list will be offered during the 1 st to 4 th Semesters	12	As mentioned
Total Credits (Minimum) for the award of Degree		60	



M. Tech. (MICROELECTRONICS)

The credit structure for this programme is as follows:

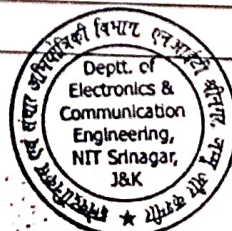
- a. Core : 26 credits
- b. Project : 16 credits
- c. Electives : 18 credits (Minimum)

Course Code	Course Name	Credits	Prerequisite
Core Courses			
1st year Autumn (July – December) Session			
ECES-155	VLSI Design	3	X
ECES-164	VLSI Technology	3	X
ECES-187	Physical Electronics I	3	X
ECES-111	Laboratory I (VLSI Design)	1	X
1st year Spring (March – June) Session			
ECES-168	Analog CMOS Design-I	3	155
ECES-224	Physical Electronics II	3	187
ECES-231	System Design using HDL	3	X
ECES-232	Laboratory II (Analog CMOS Design)	1	X
ECES-201	Seminar	1	X
2nd year Autumn (July – December) Session			
ECES-186	Mixed Signal Design	3	155, 168
ECES-233	Analog CMOS Design-II	3	155, 168
ECES-202	Project (Dissertation) – I	3	X
2nd year Spring (March – June) Session			
ECES-203	Project (Dissertation) – II	12	X
Electives			
ECES - XXX	Elective courses from the specified list will be offered during the 1 st to 4 th Semesters	18	Prerequisites as mentioned
Total credits (Minimum) for the award of Degree		60	



List of Electives for M. Tech (CSP) and M. Tech (Microelectronics)

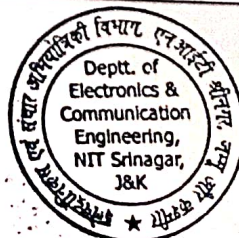
ECEM-102	Software Engineering	3	X
ECEM-104	Advanced Computer Architecture	3	X
ECEM-106	Hardware Description Language	2	X
ECEM-112	Communication Skills & Research Techniques	3	X
ECEM-151	DSP Processors and Architecture	3	226
ECEM -152	Antenna Theory	3	X
ECEM-153	Advanced Microprocessors	3	X
ECEM-154	Information Theory	3	X
ECEM-157	Error Control Coding	3	X
ECEM-158	Special Topics in Applied Mathematics	3	X
ECEM-159	Embedded Systems	3	X
ECEM-160	Real Time Operating Systems	3	X
ECEM-161	Optical Communications	3	X
ECEM-162	Telemedicine	3	X
ECEM-163	Random Processes and Queuing Theory	3	101
ECEM-165	Management Information System	3	X
ECEM-166	Special Topics in Communications	3	X
ECEM-170	ESD reliability	3	X
ECEM-171	RF IC Design	3	X
ECEM-172	Advanced System Design	3	155, 231
ECEM-173	Special Topics in Information Technology (IT)	3	X
ECEM-174	Object Oriented Database	3	X
ECEM-175	Dataware Housing	3	X
ECEM-177	Software Project Management	3	X
ECEM-178	Computer Vision and Artificial Intelligence	3	X
ECEM-181	Smart Materials & Applications	3	187
ECEM-183	Deep Neural Networks	3	225
ECEM-188	Testing, Fault Tolerance & Verification in VLSI	3	155
ECEM-189	Memory Design & Technology	3	155
ECEM-191	Issues in Deep Submicron CMOS Design	3	187, 224
ECEM-192	Nanoelectronics	3	187, 224
ECEM-193	Computer Aided VLSI Design	3	155
ECEM-194	MEMS Design	3	X
ECEM-195	Simulation of Circuits & Devices	3	155, 187, 224
ECEM-196	Nanophotonics and Nanostructures	3	187, 224
ECEM-197	Special Topics in Microelectronics	3	187, 224



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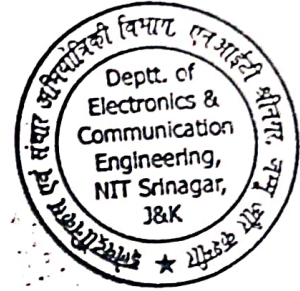
ECEM-198	Organic Materials in Electronics	3	X
ECEM-199	Quantum Devices & Quantum Computing	3	X
ECEM-200	Power Semiconductor Devices	3	187, 224
ECEM-204	Semiconductor Optoelectronic Devices	3	187
ECEM-205	Research Seminar	3	X
ECEM-206	Programming and Programming Methodology	3	X
ECEM-207	Reinforcement Learning	3	225,236
ECEM-208	Pattern Classification	3	225, 236
ECEM-209	Advanced Image Processing	3	109
ECEM-210	Network Security Laboratory	2	169
ECEM-211	Network Security Assessment and Monitoring	3	109
ECEM-212	Research Methodologies and Techniques	3	X
ECEM-213	Operating Systems	3	X
ECEM-214	Theory of Computation	3	X
ECEM-215	High Speed Networks	3	108
ECEM-216	Logic Programming	3	X
ECEM-217	Biometrics	3	109
ECEM-218	Simulation and Modeling Techniques	3	X
ECEM-219	Next Generation Networks	3	108
ECEM-220	Distributed Computing	3	X
ECEM-221	Fault Tolerant Computing	3	X
ECEM-222	Advanced Network Security	3	169
ECEM-223	Current Mode Analog Circuits	3	168
ECEM-227	Detection and Estimation theory	3	101
ECEM-228	Next Generation Communication Systems	3	103, 108
ECEM-229	Quantum Error Correction and Cryptography	3	101,236
ECEM-230	Multirate filter banks and wavelets	3	236
ECEM-234	Semiconductor Device Compact Modeling	3	187, 224
ECEM-235	VLSI Algorithms and Architectures	3	X
ECEM-225	Solar Photovoltaics	3	X
MTHM-103	Function Spaces and Wavelet Analysis	3	X
MTHM-104	Operations Research	3	X
MTHM-105	Advanced Engineering Mathematics	3	X

- For M. Tech Microelectronics (ME) all core courses of CSP are offered as Elective
- For M. Tech Communication & Signal Processing (CSP) all core courses of ME are offered as Elective



Elective Courses from other PG Programs

Specialization	Electives from other programs
M. Tech (CSP)	All courses from PG programs offered by: 1. Electrical Engineering 2. Computer Science & Engineering 3. Mathematics
M. Tech (Microelectronics)	All courses from PG programs offered by: 1. Electrical Engineering 2. Computer Science & Engineering 3. Physics



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