

## Scheme of Study

Sr. No.	Regular Scheme	Part-Time Scheme
<b>Semester-I</b>		
1	Research Methodology	3
2	Area Elective Course I	3
3	Area Elective Course II	3
4	Area Elective Course III	3
<b>Semester-II</b>		
5	Area Elective Course IV	3
6	Area Elective Course V	3
7	Cross Area Elective I	3
8	Cross Area Elective II	3
<b>Semester-III</b>		
9	Thesis-I	3
10	Seminars	NC*
<b>Semester-IV</b>		
12	Thesis-II	3

The scholar may take a minimum of 3 or maximum of 6 Credit Hour Courses, in each Semester, up to a maximum of 10 Semesters to make a total of 24 Credit Hours Course work and 6 Credit Hour Thesis or 10 courses of 3 Credit Hours each, without Thesis, to make a total of 30 Credit Hours. Both the Thesis or Non-Thesis options are available to Regular as well as Part-Time scholars. There is no option in the Courses “Research Methodology”, “Seminar” or any such Courses declared compulsory by the University or HEC from time to time.

\* Non-credit course

## Detail of Courses

<b>M.Sc. Electrical Engineering</b>	
<b>Electronics and Embedded Systems</b>	
Course Code	LIST OF COMPULSORY COURSES
EE-5001	Research Methodology
EE-5002	Seminar

Course Code	LIST OF AREA ELECTIVE
EE-5101	Computational Method for Engineers
EE-5102	Linear Programming and Optimization
EE-5103	Linear Systems
EE-5104	Random Variables and Stochastic Processing
EE-5105	Simulation Modeling and Analysis
EE-5106	Advanced Embedded Systems
EE-5107	Electronic Design Automation

EE-5108	Advanced Digital Signal Processing
EE-5109	Advanced Digital Design
EE-5110	Advanced Electronic System Design-I
EE-5111	Advanced Electronic System Design-II
EE-5112	RF-Circuit Design
EE-5113	Computer Architecture & Organization
EE-5114	Advanced Microsystems Technology
EE-5115	MEMS and Micromachining
EE-5116	Nanotechnology
EE-5117	Nanophotonic and Metamaterials
EE-5118	Advanced VLSI Design
EE-5119	Digital Signal Processing Using FPGA
EE-5120	Computer Vision
EE-5121	Embedded Operating System
EE-5122	Advanced Electromagnetic Field Theory
EE-5123	Microwave Devices and Circuits
EE-5124	Radiating Systems & Antennas
EE-5125	FPGA-Based System Design
EE-5126	Advanced Control System
EE-5127	Advanced Microcomputer System
EE-5128	Control System with Embedded Implementation
EE-5129	Multimedia Systems
EE-5130	Filter Designing Techniques
EE-5131	Switched Mode Power Converters
EE-5132	HDL and High Level Synthesize
EE-5133	Advanced Topics in Electronics

Course Code	Thesis
EE-6001	Thesis

## Detail of Courses

M.Sc. Electrical Engineering	
Power and Energy System Engineering	
Course Code	LIST OF COMPULSORY COURSES
EE-5001	Research Methodology
EE-5002	Seminar

Course Code	LIST OF AREA ELECTIVE
EE-5101	Computational Method for Engineers
EE-5102	Linear Programming and Optimization

EE-5103	Linear Systems
EE-5204	Power System Modelling and Analysis
EE-5104	Random Variables and Stochastic Processing
EE-5206	Advanced Power System Analysis
EE-5208	Advanced High Voltage Engineering
EE-5209	Power System Stability and Control
EE-5210	Computational methods in power system analysis
EE-5211	Flexible AC Transmission System
EE-5212	High voltage DC Transmission System
EE-5213	Distribution System Modeling and Analysis
EE-5214	Advanced Power System Operation and Control
EE-5215	Power Generation Economics
EE-5216	Power System Restructuring
EE-5217	Advanced Power System Transmission
EE-5218	Power System Reliability
EE-5219	Advanced Smart Grid
EE-5220	Power System Transients
EE-5221	Power Quality
EE-5117	Nanophotonic and Metamaterials
EE-5222	Modeling and Simulation of Power System Components
EE-5223	Artificial Intelligence Techniques in Power System
EE-5224	Advanced Power System Protection
EE-5225	Digital Signal Processing in Power System
EE-5226	Insulation Coordination in Power Systems
EE-5227	Energy Management
EE-5228	Energy Audit
EE-5229	Advanced Renewable Energy Systems
EE-5230	Distributed Generation
EE-5231	Condition Monitoring Techniques
EE-5232	Advanced Electrical Machines and Drives
EE-5233	Advanced Power Electronics
EE-5234	Modeling and Simulation of Electrical Machines
EE-5235	Special Purpose Electrical Machines
EE-5236	Advanced Electrical Machine Design
EE-5237	Maintenance and Troubleshooting of Electrical Machines
EE-5126	Advanced Control Systems
EE-5238	Photovoltaic Systems
EE-5239	Power System Planning
EE-5240	Integration of Green Energy sources with power system
EE-5241	Optimization techniques in power systems
EE-5242	Advanced topics in power system
EE-5243	Power Electronic Converters
EE-5244	Advanced Power Distribution

EE-5245	Fault Tolerant Power System
EE-5246	Energy and Environment
EE-5247	Energy Informatics

Course Code	Thesis
EE-6001	Thesis

## Detail of Courses

M.Sc. Electrical Engineering	
Control Systems	
Course Code	LIST OF COMPULSORY COURSES
EE-5001	Research Methodology
EE-5002	Seminar

Course Code	LIST OF AREA ELECTIVE
EE-5101	Computational Method for Engineers
EE-5102	Linear Programming and Optimization
EE-5103	Linear Systems
EE-5104	Random Variables and Stochastic Processing
EE-5305	Nonlinear System Analysis
EE-5306	Nonlinear Control Systems
EE-5307	System identification
EE-5108	Advanced Digital Signal Processing
EE-5204	Power System Modelling and Analysis
EE-5310	Multivariable Feedback Control
EE-5311	Robust Control Systems
EE-5312	Advanced Control Systems
EE-5313	Distributed Control Systems
EE-5314	Guidance Navigation and Control
EE-5315	Optimal Control Systems
EE-5316	Control of Electric Machine Drives
EE-5317	Control of Power Electronic Converters
EE-5318	Digital Control Systems
EE-5319	Adaptive Control Systems
EE-5320	Stochastic Control Systems
EE-5321	Approximation of Dynamical Systems
EE-5322	Advanced Topics in Control Systems

Course Code	Thesis
EE-6001	Thesis

## Detail of Courses

<b>M.Sc. Electrical Engineering</b>	
<b>Communications and Computing</b>	
<b>Course Code</b>	<b>LIST OF COMPULSORY COURSES</b>
EE-5001	Research Methodology
EE-5002	Seminar

<b>Course Code</b>	<b>LIST OF AREA ELECTIVE</b>
EE-5101	Computational Method for Engineers
EE-5102	Linear Programming and Optimization
EE-5103	Linear Systems
EE-5104	Random Variables and Stochastic Processing
EE-5105	Simulation Modeling and Analysis
EE-5406	Digital Communication
EE-5108	Advanced Digital Signal Processing
EE-5408	Wireless Communication Systems
EE-5409	Advanced Computer Networks
EE-5411	Machine Learning
EE-5412	Neural Networks
EE-5413	Data Mining Concepts and Algorithms
EE-5414	Operating Systems Design
EE-5415	Image and Video Processing
EE-5416	Design and Analysis of Algorithms
EE-5417	Network Security
EE-5418	Wireless and Mobile Communication
EE-5419	Information and Coding Theory
EE-5420	Statistical Signal Processing
EE-5421	Adaptive Filter Theory
EE-5422	Optical Communications
EE-5122	Advanced Electromagnetic Theory
EE-5424	Analysis and Design of Microwave Linear Circuits
EE-5425	Antenna Theory and Design
EE-5426	Array Signal processing
EE-5427	Adaptive Array Processing
EE-5428	Artificial Intelligence
EE-5429	Pattern Recognition
EE-5430	Distributed Systems
EE-5307	System identification
EE-5432	Nonlinear Microwave and RF Circuits
EE-5433	Advanced Topics in Communication Systems

Course Code	Thesis
EE-6001	Thesis

## Detail of Courses

<b>M.Sc. Electrical Engineering</b>	
<b>Telecommunication Engineering</b>	
Course Code	LIST OF COMPULSORY COURSES
EE-5001	Research Methodology
EE-5002	Seminar

Course Code	LIST OF AREA ELECTIVE
EE-5101	Computational Method for Engineers
EE-5102	Linear Programming and Optimization
EE-5103	Linear Systems
EE-5104	Random Variables and Stochastic Processing
EE-5108	Advanced Digital Signal Processing
EE-5506	Cellular and mobile communications
EE-5112	RF circuits design
EE-5408	Wireless Communication Systems
EE-5409	Advanced Computer Networks
EE-5406	Digital Communication
EE-5511	Optimization theory
EE-5512	Mobile and sensor networks
EE-5513	Advanced communication systems
EE-5514	Principles of digital communications
EE-5515	Advanced digital communications
EE-5419	Information and Coding Theory
EE-5517	Advanced communication networks
EE-5518	Advanced microwave engineering
EE-5519	Radar signal processing
EE-5520	Advanced concepts in radar systems
EE-5521	Global positioning and navigation systems
EE-5522	Advanced digital signal processing
EE-5523	Advanced mobile communication
EE-5524	Signal detection and estimation
EE-5525	Advanced optical communication
EE-5526	Advanced wireless communications

EE-5527	Broadband communication
EE-5528	Electromagnetic field analysis
EE-5529	Advanced EMF theory
EE-5530	Multimedia communication
EE-5531	Cryptography and network security
EE-5532	Cyber security
EE-5533	Cognitive radio networks
EE-5534	Software defined radios
EE-5535	Signal processing applications in reconfigurable architecture
EE-5536	Stochastic processes
EE-5537	Modeling and simulation
EE-5538	Telecommunication network operations
EE-5539	Digital image processing
EE-5425	Antenna theory and design
EE-5541	Mobile and pervasive computing
EE-5542	Scientific writing and research methodology
EE-5543	Microwave networks & passive components
EE-5421	Adaptive filter theory
EE-5545	Computational electromagnetic
EE-5546	Microwave and RFIC design
EE-5547	Filtering & tracking
EE-5120	Computer vision
EE-5429	Pattern recognition
EE-5550	Machine learning
EE-5551	Medical image processing
EE-5552	Hardware security
EE-5553	Next generation networks
EE-5554	Smart grid
EE-5555	Quantum communication
EE-5556	Quantum cryptography
EE-5557	Cloud computing
EE-5558	Advanced digital system design
EE-5559	Quality of service in telecom networks
EE-5560	Network planning and optimization
EE-5561	Data communication and security
EE-5562	Data mining
EE-5563	Big data
EE-5564	Computer sensing
EE-5565	Telecom policies and standards
EE-5566	RF electronics
EE-5567	SS7 and intelligent networks
EE-5568	Internet of things
EE-5569	Human computer interaction

EE-5570	Telecommunication networks management
EE-5129	Multimedia systems
EE-5572	Speech communication
EE-5573	Wireless sensor networks
EE-5574	Data security
EE-5575	Telecommunication economics
EE-5576	Electromagnetic compatibility
EE-5577	Visible light communications
EE-5578	Free space optical communications
EE-5579	Digital broadcasting
EE-5426	Array signal processing
EE-5581	Smart antenna

<b>Course Code</b>	<b>Thesis</b>
EE-6001	Thesis