

SCHEME OF INSTRUCTION AND SYLLABI

FULL TIME M.TECH DEGREE IN

POWER & ENERGY SYSTEMS

(Department of Electrical Engineering)



NATIONAL INSTITUTE OF TECHNOLOGY DELHI

(NIT DELHI)

Department of Electrical Engineering

National Institute of Technology Delhi

1.1 About the Department

Department of Electrical Engineering (EE), National Institute of Technology Delhi was established in 2010 under the aegis of Ministry of Human Resource and Development (MHRD), Govt. of India. Currently it is offering one Undergraduate (B. Tech) course and one Postgraduate (M. Tech) courses in Power Electronics & Drives. The Department also offers PhD programme in relevant areas. The department is equipped with state-of-the-art facilities to carry out research work at all levels. The research focus of the department is in the area of power system reliability, power electronics, renewable energy systems, power systems, control/time delay systems, pattern recognition, image processing etc. The department also actively involved in multi-disciplinary research activities. The UG program is embraced by rigor and span to prepare a practicing engineer for a lifetime of creative work and ongoing technical learning. The department provides healthy & competitive environment for all round development of students leading to several remarkable achievements in GATE, CAT, GRE, TOEFEL, PSUs etc. The department has laboratories, equipped with latest equipment and software platforms, to impart state-of-the-art technical knowledge. The department aims to setup new laboratories such as Green Energy Technologies, Digital Control & FPGA Design, Biometric etc. The Department has active collaborations with Institutes & research institutes in India and abroad.

The Department of EE has a blend of young as well as experienced dynamic faculty members and is committed to provide quality education and research in the field. Faculty members of the department have excellent academic & research credentials and published numerous peer reviewed journal articles/ papers, Books, Book Chapters etc. in diversified field and having adequate experience in advanced research. The department hopes to achieve the national goals and objectives of industrialization and self-reliance. As a result, it hopes to produce graduates with strong academic and practical background so that they can fit into the industry immediately upon graduation.

1.2 Vision

- To excel in education, research and development services in electrical engineering in tune with societal aspirations.

1.3 Mission

- Impart quality education to produce globally competent electrical engineers capable of extending technological services.
- To create entrepreneurial environment and industry interaction for mutual benefit.
- To be a global partner in training human resources in the field of power and energy systems.
- Nurture scientific temperament, professional ethics and industrial collaboration.

B. Tech. (Electrical Engineering) Semester wise Credit Structure

Sl. No.	Courses	Credits				Total
		1 st Year		2 nd Year		
		1 st Sem	2 nd Sem	3 rd Sem	4 th Sem	
1	Program Core	09	09	0	0	18
2	Program Electives	09	09	0	0	18
3	Dissertation	0	0	15	20	35
4	Lab	02	02	0	0	04
5	Comprehensive Viva-voce	0	0	05	0	05
Total		20	20	20	20	80

M. Tech (PES) 1 Year I Semester				
S.No	Course code	Course Title	L-T-P	C
1	EELM 505	Power System Analysis and Operation (Mandatory)	3-0-0	3
2	EELM 5XX	Core-I	3-0-0	3
3	EELM 5XX	Core-II	3-0-0	3
4	EELM 51X	Elective-I	3-0-0	3
5	EELM 52X	Elective - II	3-0-0	3
6	EELM 53X	Elective - III	3-0-0	3
7	EEPM 508	Power Systems Simulation and Hardware Lab	0-0-3	2
Total			18-0-3	20
M. Tech (PES) 1 Year II Semester				
S.No	Course	Course Title	L-T-P	C
1	EELM 555	Renewable and Distributed Energy Systems (Mandatory)	3-0-0	3
2	EELM 5XX	Core-III	3-0-0	3
3	EELM 5XX	Core-IV	3-0-0	3
4	EELM 56X	Elective - IV	3-0-0	3
5	EELM 57X	Elective - V	3-0-0	3
6	EELM 58X	Elective - VI	3-0-0	3
7	EEPM 558	Energy Simulation and Hardware Lab	0-0-3	2
Total			18-0-3	20
M. Tech (PES) II Year III Semester				
S.No	Course	Course Title	L-T-P	C
1	EEPM 601	Dissertation-I		15
2	EEPM 602	Comprehensive Viva-voce		05
Total				20
M. Tech (PES) II Year IV Semester				
S.No	Course	Course Title	L-T-P	C
1	EEPM 651	Dissertation-II		20
Total				20
Total Credits				80

DEPARTMENTAL CORE

S.No	Course code	Course Title	L-T-P
1	EELM 506	Power System Protection	3-0-0
2	EELM 507	Power System Reliability	3-0-0
3	EELM 556	Distribution System Operation and Planning	3-0-0
4	EELM 557	Energy Auditing and Management	3-0-0

DEPARTMENTAL ELECTIVE FOR 1 YEAR II SEMESTER

S. No	Course Code	Course Title	L-T-P
Elective-I			
1	EELM 519	Microgrid Dynamics and Control	3-0-0
2	EELM 520	Smart Grid Technologies	3-0-0
3	EELM 521	Grid Integration of Renewable Energy Systems	3-0-0
4	EELM 522	Energy Policies and Planning	3-0-0
5	EELM 523	Power System Dynamics and Control	3-0-0
6	EELM 524	Restructured and Deregulated Power Systems	3-0-0
Elective-II			
7	EELM 535	Power System Planning	3-0-0
8	EELM 526	Power System Transient	3-0-0
9	EELM 527	Economic Operation of Power Systems	3-0-0
10	EELM 528	Smart Grid Planning & Operation	3-0-0
11	EELM 511	Power Quality	3-0-0
12	EELM 512	Flexible AC Transmission Systems (FACTS)	3-0-0
Elective-III			
13	EELM 515	Soft Computing and Applications	3-0-0
14	EELM 517	AI Techniques and Applications	3-0-0
15	EELM 529	Pattern Recognition	3-0-0
16	EELM 530	Machine Learning and DEEPM Learning	3-0-0

Departmental Elective for 1 Year II Semester

Elective-IV			
17	EELM 567	Electric Vehicles	3-0-0
18	EELM 570	Forecasting Techniques for Power System	3-0-0
19	EELM 571	Smart Appliances and Internet of Things	3-0-0
20	EELM 572	Smart Grid Protection	3-0-0
Elective-V			
21	EELM 562	Special Electrical Machines	3-0-0
22	EELM 568	Energy Storage Devices	3-0-0
23	EELM 573	Smart Grid Communications and Protocols	3-0-0
24	EELM 574	Advanced Power Electronics	3-0-0
25	EELM 575	Statistical Signal Processing	3-0-0
Elective-VI			
26	EELM 576	Smart Grid Resiliency and Cyber Security	3-0-0
27	EELM 577	Power Electronic Converters for Renewable Energy Systems	3-0-0
28	EELM 578	Power System Harmonics	3-0-0
29	EELM 579	High Voltage Technique	3-0-0