

SCHEME OF INSTRUCTION AND SYLLABI

FULL TIME M.TECH DEGREE IN

POWER ELECTRONICS & DRIVES

(Department of Electrical Engineering)

EFFECTIVE FROM 2021-2022



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. (PED) 1 Year I Semester					
S.No	Course	Course Title	L-T-P	C	
1	EELM 501	Power Electronics Devices & Converters (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 5XX	Elective-I	3-0-0	3	
5	EELM 5XX	Elective - II	3-0-0	3	
6	EELM 5XX	Elective - III	3-0-0	3	
7	EELM 504	Power Electronics Lab	0-0-3	2	
Total			18-0-3	20	
M.Tech. (PED) 1 Year II Semester					
S.No	Course	Course Title	L-T-P	C	
1	EELM 551	Switched Mode Power Converters (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 5XX	Elective - IV	3-0-0	3	
5	EELM 5XX	Elective - V	3-0-0	3	
6	EELM 5XX	Elective - VI	3-0-0	3	
7	EELM 554	Electrical Drives Lab	0-0-3	2	
Total			18-0-3	20	
M.Tech. (PED) II Year III Semester					
S.No	Course	Course Title	L-T-P	C	
1	EELM 601	Dissertation-I		15	
2	EELM 602	Comprehensive Viva-voce		05	
Total				20	
M.Tech. (PED) II Year IV Semester					
S.No	Course	Course Title	L-T-P	C	
1	EELM 651	Dissertation-II		20	
Total				20	
Total Credits				80	

Departmental Core

S.No	Course	Course Title	L-T-P
1	EELM 502	Dynamics of Electrical Machines	3-0-0
2	EELM 503	Electrical Drives	3-0-0
3	EELM 552	Advanced Electrical Drives	3-0-0
4	EELM 553	Power Electronics for Renewable Energy Systems	3-0-0

Departmental Elective

S.No	Course	Course Title	L-T-P
1	EELM 511	Power Quality	3-0-0
2	EELM 512	Flexible AC Transmission Systems (FACTS)	3-0-0
3	EELM 513	Digital Control in Power Electronic Systems	3-0-0
4	EELM 514	Digital Signal Processor & its applications to Power Electronics	3-0-0
5	EELM 515	Soft Computing and Applications	3-0-0
6	EELM 516	Analog Integrated Circuit Design	3-0-0
7	EELM 517	AI Techniques and Applications	3-0-0
8	EELM 518	Internet of Things	3-0-0
9	EELM 557	Energy Auditing and Management	3-0-0
10	EELM 561	Robust Control	3-0-0
11	EELM 562	Special Electrical Machines	3-0-0
12	EELM 563	Applied Linear Algebra	3-0-0
13	EELM 564	Advanced Control Systems	3-0-0
14	EELM 565	FPGA based Digital Design Techniques	3-0-0
15	EELM 566	Optimal Control	3-0-0
16	EELM 567	Electric Vehicles	3-0-0
17	EELM 568	Energy Storage Devices	3-0-0
18	EELM 569	Telemetry Systems	3-0-0
19	EELM 591	Introduction to Smart Grid	3-0-0
20	EELM	DC Microgrid and Control System	3-0-0

	592		
--	-----	--	--