(Mirpur University of Science & Technology)
Scheme of Studies B.Sc. Electrical Engineering

Revised Scheme of Studies 2020-24

Duration:	**4-7 Years**
Semesters:	**8-14 Semesters**
Number of weeks per semester:	**18 (16 for teaching and 2 for examination)**
Total number of Credit Hours (CH)	**136**
Core Electrical Engineering - Power	**93**
Core Electrical Engineering - Electronics	**93**
Core Electrical Engineering - Communication	**93**
Number of CH per semester:	**15-18**
Engineering Domain Courses:	**93 (68.4%)**
(Power/ Electronics/ Communication)	
Non-Engineering Domain Courses:	**43 (31.6%)**
Internship/Practical Training:	**S/U Basis**

Semester 1					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-111	Linear Circuit Analysis	Foundation	3	3	
EE-111L	Linear Circuit Analysis Lab		1	3	
EE-112	Introduction to Computing	Computing	1	1	
EE-112L	Introduction to Computing Lab		1	3	
EE-113L	Workshop Practice Lab	Foundation	1	3	
GS-114	Applied Physics	Natural Sciences	3	3	
GS-114L	Applied Physics Lab		1	3	
GS-115	Calculus and Analytical Geometry	Humanities and Social Sciences	3	3	
HS-116	Functional English		3	3	
	Total		**17**	**25**	

Semester 2					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE -121	Programming Fundamentals	Computing	2	2	
EE -121L	Programming Fundamentals Lab		1	3	
HS -122	Health Safety and Environment	IDEE-1	3	3	
EE -123	Basic Electronics	Foundation	3	3	
EE -123L	Basic Electronics Lab		1	3	
GS -124	Linear Algebra	Natural Scicences	3	3	
HS -125	Communication Skills	Humanities and Social Sciences	2	2	
HS -126	Islamic Studies		3	3	
	Total		**18**	**22**	

Semester 3					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-231	Probability Methods in Engineering	Foundation	2	2	
EE-232	Data Structures and Algorithms	Computing	2	2	Both (EE-121, EE-121L) must be passed.
EE-232L	Data Structures and Algorithms Lab		1	3	
EE-233	Digital Logic Design	Foundation	3	3	
EE-233L	Digital Logic Design Lab		1	3	
EE-234L	Engineering Drawing Lab	Foundation	1	3	
HS-235	Pakistan and Kashmir Studies	Humanities and Social Sciences	3	3	
GS-236	Differential Equations	Natural Sciences	3	3	
	Total		**16**	**22**	

Semester 4					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-241	Electrical Machines - I	Core (Breadth)	2	2	
EE-241L	Electrical Machines - I Lab		1	3	
EE-242	Signal and Systems	Foundation	2	2	
EE-242L	Signal and Systems Lab		1	3	
EE-243	Electrical Network Analysis	Foundation	3	3	Both (EE-111, EE-111L) must be passed.
EE-243L	Electrical Network Analysis Lab		1	3	
HS-244	Technical Report Writing	Humanities and Social Sciences	3	3	
GS-245	Complex Variables and Transforms	Natural Sciences	3	3	
			16	22	

Semester 5					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-351	Linear Control Systems	Core (Breadth)	3	3	
EE-351L	Linear Control Systems Lab		1	3	
EE-352	Microprocessor Systems	Core (Breadth)	2	2	
EE-352L	Microprocessor Systems Lab		1	3	
EE-353	Electromagnetic Field Theory	Foundation	3	3	
EE-354	Power Electronics	Depth Elective (P)	2	2	
EE-354L	Power Electronics Lab	Breadth Core-I (E)	1	3	
EE-355	Electronic Circuit Design	Breadth Core-II (E/C)	3	3	
EE-355L	Electronic Circuit Design Lab		1	3	
Total			17	25	

Semester 6					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-361	Communication Systems	Core (Breadth)	3	3	Both (EE-242, EE-242L) must be passed.
EE-361L	Communication Systems Lab		1	3	
HS-362	Engineering Management and Entrepreneurship	Humanities and Social Sciences	3	3	
EE-363	Instrumentation and Measurement	Depth Elective (P/E/C)	3	3	
EE-363L	Instrumentation and Measurement Lab		1	3	
EE-364	Electrical Machines - II	Core (Breadth)	2	2	
EE-364L	Electrical Machines - II Lab		1	3	
GS-365	Numerical Analysis	Natural Sciences	3	3	
Total			17	23	

Semester 7 (Power)					
Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
EE-471	Power System Analysis	Breadth Core-I (P)	3	3	
EE-471L	Power System Analysis Lab		1	3	
EE-472	Power Distribution and Utilization	Breadth Core-II (P)	3	3	
EE-472L	Power Distribution and Utilization Lab		1	3	
EE-473	Power Generation	Depth Elective (P)	3	3	
EE-474	Electrical Power Transmission	Depth Elective (P)	3	3	
EE-474L	Electrical Power Transmission Lab		1	3	
EE-475	Final Year Project - I	Senior Design Project	3	9	
Total			18	30	

Semester 7 (Electronics)					
Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
EE-471	Introduction to Nanotechnology	Depth Elective (E)	3	3	
EE-472	Digital System Design	Depth Elective (E)	3	3	Both (EE-233, EE-233L) must be passed.
EE-472L	Digital System Design Lab		1	3	
EE-473	Integrated Electronics	Depth Elective (E)	3	3	
EE-473L	Integrated Electronics Lab		1	3	
EE-474	Digital Signal Processing	Depth Elective (E)	3	3	Both (EE-242, EE-242L) must be passed.
EE-474L	Digital Signal Processing Lab		1	3	
EE-475	Final Year Project - I	Senior Design Project	3	9	
Total			18	30	

Semester 7 (Communication)					
Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
EE-471	Digital Communication	Depth Elective (C)	3	3	
EE-472	Computer Communication Networks	Breadth Core-I (C)	3	3	
EE-472L	Computer Communication Networks Lab		1	3	
EE-473	Wave Progpagation and Antennas	Depth Elective (C)	3	3	EE-353
EE-47L	Wave Progpagation and Antennas Lab		1	3	
EE-474	Digital Signal Processing	Depth Elective (C)	3	3	Both (EE-242, EE-242L) must be passed.
EE-474L	Digital Signal Processing Lab		1	3	
EE-475	Final Year Project - I	Senior Design Project	3	9	
Total			18	30	

Semester 8 (Power/ Electronics/ Communication)

Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
HS-481	Engineering Ethics		2	2	
HS-482	Engineering Economics	Humanities and Social Sciences	3	3	
HS-483	Arabic		2	2	
	IDEE	IDEE	3	3	
	Engineering Depth Elective (Power/ Electronics/ Communication)	Depth Elective (P/E/C)	3	3	
	Engineering Depth Elective (Power/ Electronics/ Communication) Lab		1	3	
EE-484	Final Year Project - II	Senior Desgin Project	3	9	
Total			**17**	**25**	

List of Elective Courses (Power)

Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
EE-48E1	Power System Protection		3	3	
EE-48E1L	Power System Protection Lab		1	3	
EE-48E2	Renewable Energy Systems		3	3	
EE-48E2L	Renewable Energy Systems Lab		1	3	
EE-48E3	Power System Operation and Control		3	3	
EE-48E3L	Power System Operation and Control Lab		1	3	
EE-48E4	Smart Grid	Depth Electives	3	3	
EE-48E4L	Smart Grid Lab		1	3	
EE-48E5	High Voltage Engineering		3	3	
EE-48E5L	High Voltage Engineering Lab		1	3	
EE-48E6	Artificial Intelligence		3	3	
EE-48E6L	Artificial Intelligence LAB		1	3	
EE-48E7	Electrical Machine Design		3	3	
EE-48E7L	Electrical Machine Design Lab		1	3	

List of Elective Courses (Electronics)

Code	Course Title	Knowledge Area	Credit Hours	Contact Hours	Pre-requisites
EE-48E1	VLSI Design		3	3	
EE-48E1L	VLSI Design LAB		1	3	
EE-48E2	Embedded System Design		3	3	
EE-48E2L	Embedded System Design Lab		1	3	
EE-48E3	Opto-Electronics		3	3	
EE-48E3L	Opto-Electronics Lab		1	3	
EE-48E4	Medical Robotics		3	3	
EE-48E4L	Medical Robotics Lab		1	3	
EE-48E5	RF and Microwave Engineering	Depth Electives	3	3	
EE-48E5L	RF and Microwave Engineering Lab		1	3	
EE-48E6	Artificial Intelligence		3	3	
EE-48E6L	Artificial Intelligence LAB		1	3	
EE-48E7	Biomedical Instrumentation		3	3	
EE-48E7L	Biomedical Instrumentation Lab		1	3	
EE-48E8	Wave Progpagation and Antennas		3	3	
EE-48E8L	Wave Progpagation and Antennas Lab		1	3	

List of Elective Courses (Communication)					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
EE-48E1	Wireless and Mobile Communications	Depth Electives	3	3	
EE-48E1L	Wireless and Mobile Communications Lab		1	3	
EE-48E2	Optical Communicaiton		3	3	
EE-48E2L	Optical Communicaiton Lab		1	3	
EE-48E3	Navigation and Radar Systems		3	3	
EE-48E3L	Navigation and Radar Systems Lab		1	3	
EE-48E4	Digital Image Processing		3	3	
EE-48E4L	Digital Image Processing Lab		1	3	
EE-48E5	RF and Microwave Engineering		3	3	
EE-48E5L	RF and Microwave Engineering Lab		1	3	
EE-48E6	Artificial Intelligence		3	3	
EE-48E6L	Artifical Intelligence LAB		1	3	

List of IDEEs					
Code	**Course Title**	**Knowledge Area**	**Credit Hours**	**Contact Hours**	**Pre-requisites**
ME-46E1	Engineering Mechanics	Inter-Deciplinary Engineering Electives	3	3	
ME-46E2	Applied Thermodynamics		3	3	