Tentative Plan for Studies

The course offering in each semester as given below is not fixed; it may vary depending on the availability of faculty in the department and needs of the students.

Semester 1

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	HUM104	Functional English	3(3, 0)	
2	CSC101	Applications of Information and Communication Technologies	3(2, 1)	
3	PHY124	Applied Physics	3(2, 1)	
4	MTH114	Calculus and Analytic Geometry	3(3, 0)	
5	EEE121	Electric Circuits Analysis I	4(3, 1)	
6	EEE113	Engineering Drawing	1(0, 1)	
		Total	**17(13,4)**	

Semester 2

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	HUM112	Islamic Studies	2(2, 0)	
2	MTH105	Multivariable Calculus	3(3, 0)	MTH114
3	CSC103	Programming Fundamentals	4(3, 1)	
4	EEE222	Electric Circuits Analysis II	4(3,1)	EEE121
5	EEE241	Digital Logic Design	4(3, 1)	
		Total	**17 (14,3)**	

Semester 3

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	MTH231	Linear Algebra	3(3, 0)	
2	MTH242	Differential Equations	3(3, 0)	MTH114
3	CSC241	Object Oriented Programming	4(3, 1)	CSC103
4	EEE231	Electronics I	4(3, 1)	EEE121
5	EEE251	Probability Methods in Engineering	3(3, 0)	MTH114
		Total	**17 (15, 2)**	

Semester 4

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	HUM208	Civics and Community Engagement	2(2, 0)	
2	EEE223	Signals and Systems	4(3, 1)	MTH242
3	EEE261	Electromagnetic Theory	3(3, 0)	MTH105
4	EEE371	Electric Machines	4(3, 1)	EEE222
5	CSC211	Data Structures	4(3,1)	CSC103
		Total	**17(14, 3)**	

Semester 5

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	EEE351	Principles of Communication Systems	4(3, 1)	EEE223
2	HUM113	Ideology and Constitution of Pakistan	2(2, 0)	
3	EEE325	Control Systems	4(3, 1)	EEE223
4		Depth Elective (Core)- I	3(3,0)/3(2,1)/4(3,1)	
5	EEE342	Microprocessor Systems and Interfacing	4(3, 1)	EEE241
		Total	**17-18(12-14, 3-4)**	

Semester 6

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	HUM120	Expository Writing	3(3, 0)	
2	MTH375	Numerical Computations	3(2, 1)	MTH114, CSC103
3	EEE324	Digital Signal Processing	4(3, 1)	EEE223
4		Depth Elective (Core)- II	3(3, 0)/ 4(3, 1)	
5	EEE375	Power Distribution and Utilization	4(3, 1)	EEE222
		Total	**17-18 (14, 3-4)**	

Semester 7

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1		Arts and Humanities Elective	2(2, 0)	
2	EGG101	Engineering Professionalism	3(3, 0)	
3	ECO290	Fundamentals of Engineering Economics	2(2, 0)	

4		Depth Elective-I	4(3, 1)	
5		Depth Elective-II	3(3,0)/3(2,1)	
6	EGG498	Final Year Project (Part I)	3(0, 3)	
		Total	**17 (12-13,4-5)**	

Semester

Sr. No.	Course Code	Course Title	Credit Hours	Prerequisite(s)
1	MEE102	Engineering Mechanics and Thermodynamics	3(3, 0)	
2	MGT250	Introduction to Entrepreneurship	2(2, 0)	
3	MGT462	Project Planning and Management	3(3, 0)	
4		Depth Elective-III	3(3, 0) / 3(2, 1) / 4(3, 1)	
5	EGG499	Final Year Project (Part II)	3(0, 3)	EGG498
		Total	**14-15 (10-11, 3-4)**	

2. Major Engineering Discipline Courses

Knowledge Area	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
Advanced Computer and Information Sciences	CSC103	Programming Fundamentals	4(3, 1)	
	CSC241	Object Oriented Programming	4(3, 1)	CSC103
	CSC211	Data Structures	4(3, 1)	CSC103
Engineering Foundation	EEE113	Engineering Drawing	1(0, 1)	
	EEE121	Electric Circuits Analysis I	4(3, 1)	
	EEE222	Electric Circuits Analysis II	4(3, 1)	EEE121
	EEE231	Electronics I	4(3, 1)	EEE121
	EEE241	Digital Logic Design	4(3, 1)	
	EEE251	Probability Methods in Engineering	3(3, 0)	MTH114
	EEE261	Electromagnetic Theory	3(3, 0)	MTH105
	EEE223	Signals and Systems	4(3, 1)	MTH242
Major Based Core (Breadth)	EEE324	Digital Signal Processing	4(3, 1)	EEE223
	EEE325	Control Systems	4(3, 1)	EEE223
	EEE342	Microprocessor Systems and Interfacing	4(3, 1)	EEE241
	EEE351	Principles of Communication Systems	4(3, 1)	EEE223
	EEE371	Electric Machines	4(3, 1)	EEE222
	EEE375	Power Distribution and Utilization	4(3, 1)	EEE222
Major Based Core (Depth)		Depth Elective (Core) I	3/4(2/3, 0/1)	
		Depth Elective (Core) II	3/4(3, 0/1)	
		Depth Elective III	4(3, 1)	
		Depth Elective IV	3 (3, 0) /3(2, 1)	
		Depth Elective V	3/4(2-3, 0/1)	
Multi-Disciplinary Engineering	EGG101	Engineering Professionalism	3(3, 0)	
	MEE102	Engineering Mechanics and Thermodynamics	3(3, 0)	

i. Major-Based Core (Depth) Courses

	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]	Stream
I	EEE382	Power Generation	3(3, 0)		Power
	EEE232	Electronics II	4(3, 1)	EEE231	Telecommunication

	EEE232	Electronics II	4(3, 1)	EEE231	Electronics
	CSC323	Operating Systems	3(2, 1)		Computer
	EEE232	Electronics II	4(3, 1)	EEE231	Robotics and Control
	MEE436	Automotive Engineering	3(3, 0)		Electric Vehicles
II	EEE485	Power System Analysis	3(3, 0)	EEE222	Power
	EEE314	Data Communication and Computer Networks	4(3, 1)		Telecommunication
	EEE338	Power Electronics	4(3, 1)	EEE232	Electronics
	EEE314	Data Communication and Computer Networks	4(3, 1)		Computer
	EEE421	Introduction to Digital Control Systems	4(3, 1)	EEE325	Robotics and Control
	EEE385	EV Charging Devices and Technologies	3(3, 0)		Electric Vehicles

ii. List of Depth Elective Courses:

(minimum three Depth Elective courses must be selected from one of the specialization streams given below, with at least 01 of these courses of 4(3, 1) Credit hours)

A. Electives Power

#	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
1.	EEE232	Electronics II	4(3, 1)	EEE231
2.	EEE338	Power Electronics	4(3, 1)	EEE232
3.	EEE374	Electrical Measurements and Instrumentation	4(3, 1)	EEE222
4.	EEE381	Power Transmission	4(3, 1)	EEE222
5.	EEE435	Industrial Electronics	4(3, 1)	EEE232
6.	EEE462	Artificial Intelligence	3(2, 1)	CSC103
7.	EEE481	Design of Electrical Machines	3(3, 0)	EEE371
8.	EEE483	Power System Operation and Control	3(3, 0)	EEE222
9.	EEE484	High Voltage Engineering	4 (3, 1)	EEE375
10.	EEE486	Power System Protection	3(3, 0)	EEE222

11.	EEE488	Renewable and Alternate Energy Systems	3(3, 0)	-
12.	EEE489	Power Plant Engineering	3(3, 0)	EEE222
13.	EEE491	Industrial Drives	3(3, 0)	EEE338
14.	EEE492	FACTS and HVDC Transmission	3(3, 0)	EEE338
15.	EEE493	Smart Grids	3(3, 0)	-
16.	EEE494	Advanced Electrical Machines	4(3, 1)	EEE371
17.	CSC354	Machine Learning	3(3, 0)	-

B. Electives Telecommunications

#	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
1.	EEE353	Digital Communication Systems	4(3, 1)	EEE251, EEE351
2.	EEE354	Telecommunication Systems Engineering	3(3, 0)	EEE351
3.	EEE362	Microwave Engineering	4(3, 1)	EEE261
4.	EEE438	RF Electronics	4(3, 1)	EEE232
5.	EEE455	Optical Fiber Communications	3(3, 0)	EEE351
6.	EEE456	Broadband Technologies	3(3, 0)	EEE314
7.	EEE462	Artificial Intelligence	3(2, 1)	CSC103
8.	EEE463	Antenna & Radio Wave Propagation	4(3, 1)	EEE261
9.	EEE464	Wireless Communication Systems	3(3, 0)	EEE351
10.	EEE467	Telecommunication Policies Standards and Regulations	3(3, 0)	-
11.	CPE445	Internet of Things	3(3, 0)	-
12.	CSC341	Network Programming	3(3, 0)	EEE314
13.	CSC354	Machine Learning	3(3, 0)	-

C. Electives Electronics

#	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
1.	EEE333	Analog Integrated Circuit, Analysis and Design	4(3, 1)	EEE232
2.	EEE343	Computer Organization and Architecture	4(3, 1)	EEE241
3.	EEE344	Digital System Design	4(3, 1)	EEE241
4.	EEE374	Electrical Measurements and	4(3, 1)	EEE222

		Instrumentation		
5.	EEE415	Digital Image Processing	4(3, 1)	EEE223
6.	CPE434	VLSI Design	4(3, 1)	CPE241 or EEE241
7.	EEE435	Industrial Electronics	4(3, 1)	EEE232
8.	EEE437	Analog Filter Design	4(3, 1)	EEE232
9.	EEE438	RF Electronics	4(3, 1)	EEE232
10.	CPE443	FPGA-Based System Design	4(3, 1)	CPE344 or EEE344
11.	EEE446	Real Time Embedded Systems	4(3, 1)	EEE342
12.	EEE462	Artificial Intelligence	3(2, 1)	CSC103
13.	EEE464	Wireless Communication Systems	3(3, 0)	EEE351
14.	EEE478	Biomedical Instrumentation	4(3, 1)	EEE374
15.	CSC354	Machine Learning	3(3, 0)	-

D. Electives Computer

#	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
1.	EEE343	Computer Organization and Architecture	4(3, 1)	EEE241
2.	EEE344	Digital System Design	4(3, 1)	EEE241
3.	EEE415	Digital Image Processing	4(3, 1)	EEE223
4.	CPE434	VLSI Design	4(3, 1)	CPE241 or EEE241
5.	CPE443	FPGA-Based System Design	4(3, 1)	CPE344 or EEE344
6.	EEE446	Real Time Embedded Systems	4(3, 1)	EEE342
7.	EEE461	Neural Networks	3(3, 0)	-
8.	EEE462	Artificial Intelligence	3(2, 1)	CSC103
9.	CPE445	Internet of Things	3(3, 0)	-
10.	CSC270	Database Systems	4(3, 1)	-
11.	CSC291	Software Engineering	3(3, 0)	-
12.	CSC334	Parallel and Distributed Computing	4(3, 1)	CSC323
13.	CSC353	Computer Graphics	3(2, 1)	-
14.	CSC354	Machine Learning	3(3, 0)	-

E. Electives Robotics and Control

#	Course	Course Title	Credit	Prerequisite(s)[†]

	Code		Hours[1]	
1.	EEE374	Electrical Measurements and Instrumentation	4(3, 1)	EEE222
2.	EEE422	Fuzzy Logic	4(3, 1)	EEE325
3.	EEE424	Optimal Control	4(3, 1)	EEE325
4.	EEE425	Introduction to Adaptive Control	4(3, 1)	EEE325
5.	EEE427	Multivariable Control	4(3, 1)	EEE325
6.	EEE428	Introduction to Non-linear Control	3(3, 0)	EEE325
7.	EEE447	Robotics	4(3, 1)	EEE325
8.	EEE449	Medical Robotics	4(3, 1)	EEE325
9.	EEE450	Mobile Robotics	4(3, 1)	EEE325
10.	EEE461	Neural Networks	3(3, 0)	-
11.	EEE462	Artificial Intelligence	3(2, 1)	CSC103
12.	CSC354	Machine Learning	3(3, 0)	-

F. Electives Electric Vehicles

#	Course Code	Course Title	Credit Hours[1]	Prerequisite(s)[†]
1.	EEE232	Electronics II	4(3, 1)	EEE231
2.	EEE338	Power Electronics	4(3, 1)	EEE232
3.	EEE374	Electrical Measurements and Instrumentation	4(3, 1)	EEE222
4.	EEE431	Sensors and Actuators	3(3, 0)	EEE222
5.	EEE432	EV Batteries and Ancillaries	3(3, 0)	EEE222
6.	EEE433	EV Software	3(3, 0)	
7.	EEE439	EV Control Systems	3(3, 0)	EEE325
8.	EEE441	EV Integration with Power Grid	3(3, 0)	EEE222
9.	EEE442	Autonomous Vehicles	3(3, 0)	EEE222
10.	EEE444	EV Circuits and Electronics	3(3, 0)	EEE231
11.	ATE335	Chassis System Design	3(3, 0)	
12.	EEE445	Vehicular Networking	3(3, 0)	
13.	EEE463	Antenna & Radio Wave Propagation	4(3, 1)	EEE261
14.	EEE494	Advanced Electrical Machines	4(3, 1)	EEE371
15.	CSC354	Machine Learning	3(3, 0)	-