

Scheme of Studies for BE Electrical Engineering Program

Course Code	Course Title	Credit Hours	Pre-requisite (Current)	Pre-requisite (Updated)	Knowledge Area	Sub Area
Semester 01 (16CH)						
MTH-101	Calculus and Analytical Geometry	3	None	None	Natural Sciences	Math
SS-111	Islamic Studies	2	None	None	Humanities and Social Sciences	Culture
MGT-262	Entrepreneurship	3	None	None	Management Sciences	Elective
PHY-101	Applied Physics	3	None	None	Natural Sciences	Physics
PHY-101L	Applied Physics Lab	1	None	None	Natural Sciences	Physics
ME-102L	Engineering Drawing	1	None	None	Electrical Engineering Foundation	Foundation
COMP-102	Introduction to ICT	2	None	None	Computing	Computing
COMP-102L	Introduction to ICT Lab	1	None	None	Computing	Computing
Semester 02 (18 CH)						
MTH-202	Linear Algebra and Differential Equations	3	Calculus and Analytical Geometry	None	Natural Sciences	Math
SS-103	English Language and Communication Skills	3	NA	None	Humanities and Social Sciences	English
SS-120	Occupational Health and Safety	2	NA	None	Humanities and Social Sciences	Elective
SS-112	Pakistan Studies	2	None	None	Humanities and Social Sciences	Culture
ECE-111	Linear Circuit Analysis	3	None	None	Electrical Engineering Foundation	Foundation
ECE-111L	Linear Circuit Analysis Lab	1	None	None	Electrical Engineering Foundation	Foundation
COMP-111	Programming Fundamentals	3	None	None	Computing	Computing
COMP-111L	Programming Fundamentals Lab	1	None	None	Computing	Computing
Semester 03 (16 CH)						
MTH-205	Complex Variables and Transforms	3	Calculus and Analytical Geometry	None	Natural Sciences	Math
ECE-212	Electronic Devices and Circuits	3	None	None	Electrical Engineering Foundation	Foundation

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ECE-212L	Electronic Devices and Circuits Lab	1	None	None	Electrical Engineering Foundation	Foundation
ECE-161	Digital Logic Design	3	None	None	Electrical Engineering Foundation	Foundation
ECE-161L	Digital Logic Design Lab	1	None	None	Electrical Engineering Foundation	Foundation
ECE-211	Electrical Network Analysis	3	Linear Circuit Analysis	Linear Circuit Analysis	Electrical Engineering Foundation	Foundation
ECE-211L	Electrical Network Analysis Lab	1	Linear Circuit Analysis	Linear Circuit Analysis	Electrical Engineering Foundation	Foundation
ME-101L	Workshop Practice	1	None	None	Electrical Engineering Foundation	Foundation
Semester 04 (18 CH)						
MTH-231	Probability and Statistics	3	Calculus and Analytical Geometry	Calculus and Analytical Geometry	Natural Sciences	Math
SS-203	Technical and Business Writing	3	Communication Skills	None	Humanities and Social Sciences	English
ECE-251	Signals and Systems	3	Complex Variables and Transforms	Complex Variables and Transforms	Electrical Engineering Foundation	Foundation
ECE-251L	Signals and Systems Lab	1	Complex Variables and Transforms	Complex Variables and Transforms	Electrical Engineering Foundation	Foundation
ECE-261	Introduction to Embedded Systems	3	Digital Logic Design Object Oriented Programming	Digital Logic Design Programming Fundamentals	Electrical Engineering Foundation	Foundation
ECE-261L	Introduction to Embedded Systems Lab	1	Digital Logic Design Object Oriented Programming	Digital Logic Design Programming Fundamentals	Electrical Engineering Foundation	Foundation
ECE-213	Electronic Circuit Design	3	Electronic Devices and Circuits	Electronic Devices and Circuits	Electrical Engineering Core	Breadth
ECE-213L	Electronic Circuit Design Lab	1	Electronic Devices and Circuits	Electronic Devices and Circuits	Electrical Engineering Core	Breadth
Semester 05 (18 CH)						
SS-220	Organizational Behavior	3	None	None	Humanities and Social Sciences	Elective
ECE-321	Electrical Machines	3	Electrical Network Analysis	Electrical Network Analysis	Electrical Engineering Core	Breadth
ECE-321L	Electrical Machines Lab	1	Electrical Network Analysis	Electrical Network Analysis	Electrical Engineering Core	Breadth

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ECE-331	Electromagnetic Field Theory	3	Applied Physics Calculus and Analytical Geometry	Calculus and Analytical Geometry	Electrical Engineering Core	Breadth
ECE-332	Communication Systems	3	Signals and Systems	Signals and Systems	Electrical Engineering Core	Breadth
ECE-332L	Communication Systems Lab	1	Signals and Systems	Signals and Systems	Electrical Engineering Core	Breadth
ECE-351	Digital Signal Processing	3	Signals and Systems	Signals and Systems	Electrical Engineering Core	Breadth
ECE-351L	Digital Signal Processing Lab	1	Signals and Systems	Signals and Systems	Electrical Engineering Core	Breadth
Semester 06 (18 CH)						
MTH-307	Numerical Computations	2	Linear Algebra and Differential Equations	None	Natural Sciences	Elective
MTH-307L	Numerical Computations Lab	1	Linear Algebra and Differential Equations	None	Natural Sciences	Elective
ME-103	Thermodynamics	3	None	None	IDEE	IDEE
ECE-342	Linear Control Systems	3	Signals and Systems Complex Variables and Transforms	Signals and Systems	Electrical Engineering Core	Breadth
ECE-342L	Linear Control Systems Lab	1	Signals and Systems Complex Variables and Transforms	Signals and Systems	Electrical Engineering Core	Breadth
ECE-341	Instrumentation and Measurements	3	Electronic Devices and Circuits	None	Electrical Engineering Core	Breadth
ECE-341L	Instrumentation and Measurements Lab	1	Electronic Devices and Circuits	None	Electrical Engineering Core	Breadth
COMP-112	Object Oriented Programming	3	Programming Fundamentals	Programming Fundamentals	Computing	Computing
COMP-112L	Object Oriented Programming Lab	1	Programming Fundamentals	Programming Fundamentals	Computing	Computing
Semester 07 (17 CH)						
MGT-345	Engineering Project Management	3	None	None	Management Sciences	Elective
ECE-411	Power Electronics and Drives	3	Electronic Devices and Circuits	Electronic Devices and Circuits	Electrical Engineering Depth	Depth
ECE-411L	Power Electronics and Drives Lab	1	Electronic Devices and Circuits	Electronic Devices and Circuits	Electrical Engineering Depth	Depth
ECE-433	Computer Communication Networks	3	Communication Systems	None	Electrical Engineering Depth	Depth

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ECE-433L	Computer Communication Networks Lab	1	Communication Systems	None	Electrical Engineering Depth	Depth
ECE-421	Power Generation, Transmission and Distribution	3	Electrical Network Analysis	Electrical Network Analysis	Electrical Engineering Depth	Depth
ECE-421L	Power Generation, Transmission and Distribution Lab	1	Electrical Network Analysis	Electrical Network Analysis	Electrical Engineering	Depth
ECE-498	Final Year Design Project – I	2	None	None	Senior Design Project	Final Year Design Project-I
Semester 08 (17 CH)						
SS-331	Community Service	2	None	None	Humanities and Social Sciences	Non-Credited mandatory
SS-310	Professional Ethics	3	None	None	Humanities and Social Sciences	Elective
ECE-4XX	Depth Elective I	3			Electrical Engineering Specialization Based Electives	Depth
ECE-4XXL	Depth Elective I Lab	1			Electrical Engineering Specialization Based Electives	Depth
ECE-4XX	Depth Elective II	3			Electrical Engineering Specialization Based Electives	Depth
ECE-4XXL	Depth Elective II Lab	1			Electrical Engineering Specialization Based Electives	Depth
ECE-499	Final Year Design Project – II	4	None	Final Year Design Project – I	Senior Design Project	Final Year Design Project-II

Total CH: 136

Engineering domain CH: 90 = 66%

Non-Engineering domain CH: 46 = 34%

Elective Courses for Electrical Engineering Program

S.No.	Course code	Subject	Pre-requisite (Current)	Pre-requisite (Updated)
1.	ECE-412	RF and Microwave Engineering	Electromagnetic Field Theory	Electromagnetic Field Theory

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2.	ECE-413	Digital Integrated Circuit Design	Digital Logic Design	Digital Logic Design
3.	ECE-414	Analog Integrated Circuit Design	Electronic Circuit Design	Electronic Circuit Design
4.	ECE-422	Power Distribution and Utilization	Electrical Network Analysis	Electrical Network Analysis
5.	ECE-423	Power Generation	Electrical Network Analysis	Electrical Network Analysis
6.	ECE-424	Electrical Power Transmission	Electrical Network Analysis	Electrical Network Analysis
7.	ECE-425	Power System Analysis	Electrical Network Analysis	Electrical Network Analysis
8.	ECE-426	Power System Protection	Power System Analysis	Power System Analysis
9.	ECE-427	Renewable Energy Systems	None	None
10.	ECE-431	Digital Communication	Communication Systems	Communication Systems
11.	ECE-432	Wireless and Mobile Communication	Communication Systems	Communication Systems
12.	ECE-434	Antennas and Wave Propagation	Electromagnetic Field Theory	Electromagnetic Field Theory
13.	ECE-201	Computer Architecture and Organization	Digital Logic Design	Digital Logic Design
14.	ECE-461	Digital Systems Design	Digital Logic Design	Digital Logic Design
15.	ECE-462	Internet of Things	Introduction to Embedded Systems	Digital Logic Design

Note: Electives shall be offered on students' interest subject to the availability of resources