

### 2.1.3. PROGRAM STRUCTURE

The B.Sc. Electrical Engineering is offered by Namal College in line with the Department of Electrical Engineering, University of Engineering and Technology, Lahore. It is a four-year program that comprises of eight semesters. During each semester a number of core and elective courses are offered from different knowledge areas ranging from management sciences, mathematics and humanities apart from the core electrical engineering courses.

Course Code	Course Title	Cr. Hrs		Knowledge Area	Pre-requisites
		Th	Lab		
<b>Semester 1</b>					
<b>EE 100</b>	Electric Circuits	3	1	Electrical Engineering Fundamentals	None
<b>CH 100</b>	Applied Chemistry	2	1	Natural Sciences	None
<b>ME 100L</b>	Workshop Practice	0	1	Mechanical Engineering	None
<b>PHY 111</b>	Applied Physics	2	1	Natural Sciences	None
<b>MA 123</b>	Calculus	3	0	Natural Sciences	None
<b>HU 151</b>	Arabic Language	1	0	Humanities	None
	English	0	0	Humanities	None
<b>Sub Total</b>		<b>11</b>	<b>4</b>		
<b>Semester 2</b>					
<b>EE 101</b>	Electrical and Electronics Workshop	0	1	Electrical Engineering Practice	None
<b>EE 110</b>	Circuit Analysis & Design	3	1	Electrical Engineering Fundamentals	EE 100
<b>ME 122L</b>	Engineering Drawing	0	1	Civil Engineering	None
<b>CS 141</b>	Introduction to Computing	3	1	Computer Science	None
<b>ME 110</b>	Applied Thermodynamics	3	0	Natural Sciences	None
<b>HU 111</b>	Communication Skills	0	1	Humanities	English
<b>MA 228</b>	Differential Equations	3	0	Natural Sciences	MA 123
<b>Sub Total</b>		<b>12</b>	<b>5</b>		

Semester 3					
EE 212	Semiconductor Devices	3	1	Microelectronics	None
EE 230	Programming Fundamentals	3	1	Computer Science	None
EE 272	Digital Systems	3	1	Digital Electronics	None
HU 221	Technical Writing & Presentation Skills	3	0	Humanities	None
MA 234	Linear Algebra	3	0	Natural Sciences	None
<b>Sub Total</b>		<b>15</b>	<b>3</b>		
Semester 4					
EE 213	Analog & Digital Electronic Circuits	3	1	Electrical Engineering Fundamentals	EE 212
EE 220	Signals & Systems	3	0	Electrical Engineering Fundamentals	None
EE 232	Data Structures & Algorithms	3	1	Computer Science	EE 230
EE 273	Microprocessor Systems	3	1	Computer Engineering	None
MA 346	Numerical Methods	3	0	Natural Sciences	None
<b>Sub Total</b>		<b>15</b>	<b>3</b>		
Semester 5					
EE 320	Applied Probability & Statistics	3	0	Natural Sciences	EE 220, MA 234
EE 340	Control Systems	3	1	Controls	None
EE 350	Electric Machinery Fundamentals	3	1	Electrical Machines	None
EE 356	Power Transmission, Distribution and Utilization	3	1	Electrical Power	None
EE 380	Electromagnetic Theory	3	0	Electromagnetism	None
<b>Sub Total</b>		<b>15</b>	<b>3</b>		

Semester 6					
EE 322	Analog & Digital Communications	3	1	Communications	None
EE 384	Digital Signal Processing	3	1	Signal Processing	EE 220
EE XXX	Restricted Elective	3	1	Misc.	None
MCT 351	Introduction to Robotics	3	1	Robotics	None
IS 101	Islamic & Pakistan Studies / Ethics	3	0	Humanities	None
<b>Sub Total</b>		<b>15</b>	<b>4</b>		
Semester 7					
EE XXX	Elective	3	1	Misc.	None
EE XXX	Elective	3	1	Misc.	None
MGT 460	Engineering Economics	3	0	Management	None
IS 201	Islamic & Pakistan Studies II / Ethics	3	0	Humanities	None
EE 499a	Project (Phase-I)	0	3	Final Year Design Project	None
<b>Sub Total</b>		<b>12</b>	<b>5</b>		
Semester 8					
EE XXX	Elective	3	1	Misc.	None
EE XXX	Elective	3	1	Misc.	None
MGT 414	Entrepreneurship & Business Management	3	0	Management	None
EE 499b	Project (Phase-II)	0	3	Final Year Design Project	None
<b>Sub Total</b>		<b>9</b>	<b>5</b>		
Total Credit Hours: 134					

## 2.1.4 POSSIBLE ELECTIVES

Course Code	Course Title	Cr. Hrs		Knowledge Area	Pre-requisites
		Th	Lab		
EE 412	Integrated Electronic Circuits	3	1	Microelectronics	None
EE 413	Industrial Electronics	3	1	Industrial Electronics	None
EE 424	Satellite Engineering	3	0	Communications	None
EE 425	Wireless Communications	3	1	Communications	EE 384
EE 426	Digital Image Processing	3	1	Signal Processing	EE 384
EE 432	Computer Networks	3	1	Communications	None
EE 436	Database Engineering	3	1	Computer Science	None
EE 439	Introduction to Machine Learning	3	0	Computer Science	MA 234
EE 450	High Voltage Engineering	3	1	Electrical Power	None
EE 452	Renewable Electrical Energy Systems	3	0	Electrical Power	None
EE 461	Design of Electrical Machines	3	0	Electrical Machines	EE 350
EE 453	Power System Operation & Control	3	1	Electrical Power	EE 451
EE 454	Power System Protection	3	1	Electrical Power	EE 451
EE 456	Introduction to Smart Grids	3	0	Interdisciplinary	None
EE 475	Computer Architecture	3	1	Computer Engineering	EE 272
EE 476	Introduction to VLSI Systems	3	1	Microelectronics	None
EE 477	Software Construction	3	0	Computer Science	None
EE 481	Optical Circuits & Systems	3	0	Optics	None

<b>EE 482</b>	Microwave Engineering – Passive Devices	3	1	Communications	EE 380
<b>EE 484</b>	Microwave Engineering – Active Devices	3	1	Communications	EE 482
<b>EE 485</b>	Electromagnetic Compatibility	3	0	Electromagnetism	EE 380
<b>EE 491</b>	Electrical Instrumentation and Measurement	3	1	Electrical Machines	None

---