Year/Semester wise break-up detail.

FIRST YEAR

1st Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hours**
1	EE-111	Linear Circuit Analysis	None	4(3-1)	6
2	GS-112	Applied Physics	None	3(3-0)	3
3	GS-113	Calculus & Analytical Geometry (Quantitative Reasoning-I)	None	3(3-0)	3
4	HS-114	Islamic Studies	None	2(2-0)	2
5	HS-115	Functional English	None	3(3-0)	3
6	HS-116	Introduction to Information and Communication Technologies	None	3(2-1)	5
7.	GS-117	*Introduction to Chemistry (Remedial Course for ICS students)	None	3(3-0)	3
Total				**18-21**	**22-25**

2nd Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	EE-121	Electrical Network Analysis	Linear Circuit Analysis	4(3-1)	6
2	EE-122	Electronic Devices & Circuits	None	4(3-1)	6
3	ME-123	Workshop Practice	None	1(0-1)	3
4	GS-124	Discrete Structures (Quantitative Reasoning -II)	None	3(3-0)	3
5	HS-125	Ideology and Constitution of Pakistan	None	2(2-0)	2

6	CS-126	Programming Fundamentals	None	3(2-1)	5
Total				**17**	**25**

*** Remedial Course only for Computer Science Students**

SECOND YEAR

3rd Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	CS-231	Data Structure and Algorithms	Programming Fundamentals	4(3-1)	6
2	EE-232	Digital Logic Design	None	4(3-1)	6
3	ME-233	Engineering Drawing	None	1(0-1)	3
4	GS-234	Differential Equations (Applied Math-I)	Calculus & Analytical Geometry (Quantitative Reasoning-I)	3(3-0)	3
5	MS-235	Engineering Project Management	None	2(2-0)	2
6	HS-236	Expository Writing	Functional English	3(3-0)	3
Total				**17**	**23**

4th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hours.**
1	EE-241	Microprocessor Systems	None	4(3-1)	6
2	ME-242	Applied Thermodynamics (IDEE-1)	None	3(3-0)	3
3	GS-243	Applied Math-II	Depends on Selected Course	3(3-0)	3
4	GS-244	Math Elective-I	Depends on Selected Course	3(3-0)	3
5	EE-245	Electrical Machines	Linear Circuit Analysis	4(3-1)	6

Total	**17**	**21**

THIRD YEAR

5th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hours.**
1	EE-351	Signals and Systems	Electrical Network Analysis	4(3-1)	6
2	EE-352	Electromagnetic Field Theory	None	3(3-0)	3
3	EE-353	Instrumentation and Measurements **(Breadth Core-I)**	Electrical Network Analysis	4(3-1)	6
4	HS-354	Social Science -1	None	2(2-0)	2
5	MS-355	Entrepreneurship	Engineering Management	2(2-0)	2
6	HS-356	Arabic Language (Arts and Humanities, Languages)	None	2(2-0)	2
Total				**17**	**21**

6th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	EE-361	Electronic Circuit Design **(Breadth Core II)**	Electronic Devices & Circuits	4(3-1)	6
2	EE-362	Linear Control Systems	None	4(3-1)	6
3	EE-363	Communication Systems	Signals and Systems	4(3-1)	6
4	CS-364	Data Science	Data Structure and Algorithms	2(2-0)	2
5	ME-365	Occupational Health and Safety (IDEE-II)	None	3(3-0)	3
Total				**17**	**23**

FOURTH YEAR

Specialization: Electrical (Electronics)

7th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	EE-471	Depth Elective I (Electronics)	Depends on Selected Course	4(3-1)	6
2	EE-472	Depth Elective II (Electronics)	Depends on Selected Course	4(3-1)	6
3	EE-473	Depth Elective III (Electronics)	Depends on Selected Course	4(3-1)	6
4	EE-474	Final Year Project (Phase –I) (Electronics)	None	3(0-3)	9
Total Credit Hours				**15**	**27**

8th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	EE-481	Depth Elective IV (Electronics)	Depends on Selected Course	4(3-1)	6
2	EE-482	Depth Elective V (Electronics)	Depends on Selected Course	3(3-0)	3
3	EE-483	Depth Elective VI (Electronics)	Depends on Selected Course	3(3-0)	3
4	HS-484	Social Sciences II/ Civics and Community Engagement	None	2(2-0)	2
5	EE-485	Final Year Project (Phase –II) (Electronics)	None	3(0-3)	9
Total Credit Hours				**15**	**23**

FOURTH YEAR

Specialization: Electrical (Power)

7th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	PE-471	Depth Elective I (Power)	Depends on Selected Course	4(3-1)	6
2	PE-472	Depth Elective II (Power)	Depends on Selected Course	4(3-1)	6
3	PE-473	Depth Elective III (Power)	Depends on Selected Course	4(3-1)	6
4	PE-474	Final Year Project (Phase –I) (Power)	None	3(0-3)	9
Total Credit Hours				**15**	**27**

8th Semester					
Sr. No.	**Course Code**	**Course Title**	**Prerequisites**	**Credit Hours Total (Theory-Lab)**	**Total Contact Hrs.**
1	PE-481	Depth Elective IV (Power)	Depends on Selected Course	4(3-1)	6
2	PE-482	Depth Elective V (Power)	Depends on Selected Course	3(3-0)	3
3	PE-483	Depth Elective VI (Power)	Depends on Selected Course	3(3-0)	3
4	HS-484	Social Sciences II/ Civics and Community Engagement	None	2(2-0)	2
4	PE-485	Final Year Project (Phase –II) (Power)	None	3(0-3)	9
Total Credit Hours				**15**	**23**

Proposed Elective Courses

(i) Social Science

- HS-E01 Professional Ethics
- HS-E02 Sociology for Engineers
- HS-E03 Critical Thinking
- HS-E04 Organizational Behavior
- HS-E05 Professional Psychology
- HS-E06 Introduction to Environmental Sciences

(ii) Management Science

- MS-E01 Engineering Management
- MS-E02 Engineering Economics
- MS-E03 Engineering Project Management
- MS-E04 Leadership and Personal Grooming

(iii) Quantitative Reasoning Mandatory (any two courses)

- GS-E01 Calculus and Analytical Geometry
- GS-E02 Linear Algebra
- GS-E03 Exploring Quantitative Skills
- GS-E04 Tools for Quantitative Reasoning
- GS-E05 Discrete Structures

(v) Natural Science Applied Math and Math Electives

- GS-E06 Differential Equations
- GS-E07 Multivariable Calculus
- GS-E08 Numerical Analysis
- GS-E09 Introduction to Algorithms
- GS-E10 Probability Methods in Engineering

(vi) Computing

- CS-E01 Data Structures and Algorithms
- CS-E02 System Programming
- CS-E03 Image & Video Coding
- CS-E04 Digital Control
- CS-E05 Internet of Things (IoT)
- CS-E06 Network Protocols and Standards
- CS-E07 Network Security
- CS-E08 Network and System Programming
- CS-E09 Computer Organization
- CS-E10 Computer Architecture
- CS-E11 Digital Systems Design
- CS-E12 Embedded Systems
- CS-E13 Parallel Processing
- CS-E14 Computer Graphics
- CS-E15 Computer Vision

(vii) List of Depth Electives Electrical (Electronics & Communication)

- PE-E01 Power Electronics
- EE-E02 Opto-Electronics
- EE-E03 VLSI Design
- EE-E04 Digital Electronics
- EE-E05 FPGA Based System Design
- EE-E06 Biomedical Instrumentation
- EE-E07 Solid State Devices
- EE-E08 Introduction to Nanotechnology
- EE-E09 Digital Signal Processing
- EE-E10 Digital Communication
- EE-E11 Data Communication
- EE-E12 Computer Communication Networks
- EE-E13 Wave Propagation and Antenna
- EE-E14 Digital Image Processing
- EE-E15 Mobile and Wireless Communication
- EE-E16 Digital Control Systems
- EE-E17 Modern Control System
- EE-E18 Machine Learning

(viii) List of Depth Electives Electrical (Power)

- PE-E01 Power Electronics
- PE-E02 Industrial Electronics
- PE-E03 Digital Control Systems
- PE-E04 Modern Control System
- PE-E05 Power Generation, Transmission & Distribution
- PE-E06 Electric Power Generation & Utilization
- PE-E07 Electric Power Transmission
- PE-E08 Power system analysis
- PE-E09 Power system Protection
- PE-E10 Power system stability and control
- PE-E11 Advanced electrical machines
- PE-E12 Renewable energy systems
- PE-E13 Power plants
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(ix) Arts, Humanities and Languages

- HS-E07 Arabic Language
- HS-E08 Technical Writing and Presentation Skills