



Habib University
shaping futures

BS IN ELECTRICAL ENGINEERING

4-YEAR ACADEMIC JOURNEY

Requirements for the Major

A major in BS Electrical Engineering requires completion of a minimum of 43 courses with a minimum of 134 credit-hours of coursework, and a minimum CGPA of 2.33, as shown in the table below:

Requirements	Course Category	Number of Courses to Complete
Habib Liberal Core ¹	University Core	10 ¹
Engineering Sciences & Computing (8 courses)	Calculus I	1
	Algorithmic Problem Solving	1 ¹
	Calculus II	1
	Data Structures & Algorithms	1
	Engineering Mathematics	1
	Object Oriented Programming	1
	Probability and Statistics	1
	International Political Economy Elective	1 ¹
	Linear Algebra	1
Circuits and Electronics (6 courses)	Introduction to Electrical & Computer Engineering	1
	Electric Circuits – I	1
	Electric Circuits – II	1
	Physics of Semiconductors	1
	Electric Circuits Lab	1
	Basic Electronics	1
Design (5 courses)	Design Your Habib Experience	1
	Engineering Workshop and Design	1
	Engineering Design and Innovation	1 ¹
	Capstone Design Project – I	1
	Capstone Design Project – II	1
Digital Systems (3 courses)	Digital Logic and Design	1
	Computer Architecture	1
	Microcontrollers and Interfacing	1
Systems Theory (3 courses)	Signals & Systems	1
	Analog and Digital Communication	1
	Principles of Feedback Control	1
Power Systems (3 courses)	Electromagnetic Theory	1
	Electrical Machines	1
	Power Generation, Transmission and Distribution	1
Summer Internship	Summer Internship	N/A

Requirements	Course Category	Number of Courses to Complete
EE Electives	Electives	4 ²
Elective	EE/CE/CS Elective	1
Interdisciplinary Engineering Elective	Interdisciplinary Engineering Elective (IDEE)	1
Professional Practices	Professional Practice Elective	2
Overall		43

¹Three courses double counted in Habib Liberal core as well as two in Engineering Sciences & Mathematics, and one in Design.

²Electives can be with or without labs. However, if the electives are offered with labs then those labs would be mandatory for graduation. The student must take at least 2 (out of 4) EE electives with lab to complete the graduating requirements.

4-Year Academic Journey

The students of EE Major are required to complete a minimum of 43 courses and 134 credit-hours over their 4-year journey (8 semesters). A set of recommended courses (semester-wise) fall under the following course categories:

Category 1: Habib Liberal Core (HLC), also known as the University Core, is a common curriculum designed for all Habib University students as a mandatory requirement. A total of 10 courses are included in the HLC/University Core.

Category 2: Engineering Sciences & Computing. Each student has to complete a total of 08 courses under the Engineering Sciences & Computing category.

Category 3: Circuits and Electronics. Each student has to complete a total of 06 courses under the Circuits and Electronics category.

Category 4: Design. Each student has to complete a total of 05 courses under the Design category.

Category 5: Digital Systems. Each student has to complete a total of 03 courses under the Digital Systems category.

Category 6: Systems Theory. Each student has to complete a total of 03 courses under the Systems Theory category.

Category 7: Power Systems. Each student has to complete 03 courses under the Power Systems category.

Category 8: EE Elective. Each student has to complete 05 courses under the EE Elective category.

Category 9: EE/CE/CS Elective. Each student has to complete 01 course under the EE/CE/CS Elective category.

Category 10: Interdisciplinary Engineering Elective. Each student has to complete 01 course under the Interdisciplinary Engineering Elective category.

Category 11: Professional Practices. Each student has to complete 02 courses under the Professional Practices category.

Courses to complete	Credit hours	Course Category	Comments
First Semester (6 Courses)			
CORE 101 – Rhetoric and Communication	4	University Core (1 of 10)	
MATH 101 – Calculus I	3	Engineering Sciences & Computing (1 of 8)	
CS 101 – Algorithmic Problem Solving	3-1	Engineering Sciences & Computing (2 of 8) and University Core (2 of 10)	Double-counted towards Engineering Sciences & Computing as well as Habib Liberal Core.
EE 100 – Introduction to Electrical & Computer Engineering	0-2	Circuits and Electronics (1 of 6)	
EE 112 – Electric Circuits – I	2-0	Circuits and Electronics (2 of 6)	This course is also offered with the code CE 112.
PLAY 113 – Design Your Habib Experience	0-1	Design (1 of 5)	
Second Semester (6 Courses)			
CORE 102 – What is Modernity	4	University Core (3 of 10)	
MATH 102 – Calculus II	3	Engineering Sciences & Computing (3 of 8)	
CS 102 – Data Structures & Algorithms	3-1	Engineering Sciences & Computing (4 of 8)	
EE 172 – Digital Logic and Design	3-1	Digital Systems (1 of 3)	This course is also offered with the code CE 222 and CS 130.
EE 213 – Electric Circuits – II	3	Circuits and Electronics (3 of 6)	
ENGR 291 – Engineering Workshop and Design	0-1	Design (2 of 5)	
Third Semester (6 Courses)			
CORE 201 – Pakistan and Modern South Asia	4	University Core (4 of 10)	
MATH 202 – Engineering Mathematics	3	Engineering Sciences & Computing (5 of 8)	
PHY xxx – Physics of Semiconductors	3-1	Circuits and Electronics (4 of 6)	
CS 224 – Object Oriented Programming	3-1	Engineering Sciences & Computing (6 of 8)	This course is also offered with the code CE 272.
EE 213L – Electric Circuits Lab	0-1	Circuits and Electronics (5 of 6)	
EE 354 – Probability and Statistics	3	Engineering Sciences & Computing (7 of 8) and University Core (5 of 10)	Double-counted towards Engineering Sciences & Computing as well as Habib Liberal Core. This course is also offered with the code MATH 310 and CE 361.

Courses to complete	Credit hours	Course Category	Comments
Fourth Semester (5 Courses)			
CORE 200 – Scientific Methods	3	University Core (6 of 10)	
MATH 205 – Linear Algebra	3	Engineering Sciences & Computing (8 of 8)	
EE 211 – Basic Electronics	3-1	Circuits and Electronics (6 of 6)	This course is also offered with the code CE 211.
EE 252 – Signals & Systems	3-1	Systems Theory (1 of 3)	This course is also offered with the code CE 251.
EE 371 – Computer Architecture	3	Digital Systems (2 of 3)	This course is also offered with the code CE 321.
Summer (Year 2/3)			
Summer – Internship**			Can be completed in summers of either 2nd year or 3rd year.
Fifth Semester (6 Courses)			
CORE 121 – Jehan-e-Urdu	4	University Core (7 of 10)	
EE 241 – Electromagnetic Theory	3	Power Systems (1 of 3)	
EE 322 – Analog and Digital Communication	3-1	Systems Theory (2 of 3)	
EE 376 – Microcontrollers and Interfacing	0-1	Digital Systems (3 of 3)	This course is also offered with the code CE 332.
EE Elective*	3-0/1	EE Elective (1 of 5)	
Professional Practices	3	Professional Practices Elective (1 of 2)	
Sixth Semester (6 Courses)			
CORE 202 – Hikmah I	4	University Core (8 of 10)	
EE 331 – Electrical Machines	3-1	Power Systems (2 of 3)	
EE 361 – Feedback Control Systems	3-1	Systems Theory (3 of 3)	
EE 391 – Engineering Design and Innovation	0-2	Design (3 of 5) and University Core (9 of 10)	Double-counted towards Design as well as Habib Liberal Core. This course is also offered with the code CE 391.
EE Elective*	3-0/1	EE Elective (2 of 4)	
Seventh Semester (5 Courses)			
A course in Philosophical Form of Thought	3	University Core (10 of 10)	
EE 335 – Power Generation, Transmission and Distribution	3-1	Power Systems (3 of 3)	
EE Elective*	3-0/1	EE Elective (3 of 4)	
EE/CE/CS Elective***	3-0/1	EE/CE/CS Elective (1 of 1)	
EE 491 – Capstone Design Project – I	0-3	Design (4 of 5)	

Courses to complete	Credit hours	Course Category	Comments
Eighth Semester (4 Courses)			
Interdisciplinary Engineering Elective (IDEE)	3	Interdisciplinary Engineering Elective (1 of 1)	
EE Elective*	3-0/1	EE Elective (5 of 5)	
EE 492 – Capstone Design Project – II	0-3	Design (5 of 5)	
Professional Practices	3	Professional Practices Elective (2 of 2)	

Note 1: *Electives can be with or without labs. However, if the electives are offered with labs then those labs would be mandatory for graduation. The student must take at least 2 (out of 4) electives with lab to complete the graduating requirements.

Note 2: **Internship is mandatory for graduation (6-8 weeks during third or fourth year of graduation).

Note 3: ***EE/CE/CS Elective (200-level & above) to be taken in 5th semester (or in later semesters).

Habib University

University Avenue, Off Shahrah-e-Faisal, Gulistan-e-Jauhar, Karachi, Pakistan

 +92 21 1110 42242 (HABIB)
  www.habib.edu.pk


 /HabibUniversity