Habib University
shaping futures

BS IN COMPUTER 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 (6 courses)	Calculus I	1
	Calculus II	1
	Introduction to Probability and Statistics	1[1]
	Natural Science Elective	1[3]
	Linear Algebra	1
	Statistics and Inferencing	1
CE Foundation (4 courses)	Algorithmic Problem Solving	1[1]
	Introduction to Electrical & Computer Engineering	1
	Electric Circuits – I	1
	Discrete Mathematics	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
Algorithms & Software (4 courses)	Data Structures & Algorithms	1
	Object Oriented Programming	1
	Database Systems	1
	Software Engineering	1
Computing Systems Design (5 courses)	Digital Logic and Design	1
	Computer Architecture	1
	Microcontrollers and Interfacing	1
	Operating Systems	1
	Digital Systems Design	1
Electronics	Basic Electronics	1
Information Systems (2 courses)	Signals & Systems	1
	Digital Signal Processing	1
Networking & Security	Data Communication and Networking	1
Multidisciplinary Engineering Elective	Multidisciplinary Engineering Elective	2[5]

Requirements	Course Category	Number of Courses to Complete
CE Electives	Electives	4[2]
Professional Practices	Professional Practice Elective	2[4]
Over All		43

[1] Three courses double counted in Habib Liberal core as well as one each in CE Foundation, Engineering Sciences & Mathematics, and Design. Additionally, one Philosophy elective of at least 3 credit-hours is to be taken.

[2] Electives of 3 or 4 credit hours each are to be taken with or without labs. However, if the electives are offered with labs then those labs would be mandatory for graduation.

[3] One Natural Science elective course of at least 3 credit-hours.

[4] Two Professional Practice courses totalling to at least 5 credit-hours.

[5] Two Multidisciplinary Engineering electives of at least 3 credit-hours each.
Elective courses in any category are to be taken from the list approved by the ECE program

4-Year Academic Journey

The students of CE Major are required to complete a minimum of 43 courses and 135 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 06 courses under the Engineering Sciences & Computing category.

Category 3: CE Foundation. Each student has to complete a total of 04 courses under the CE Foundation category.

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

Category 5: Algorithms & Software. Each student has to complete a total of 04 courses under the Algorithms & Software category.

Category 6: Computing Systems Design. Each student has to complete a total of 05 courses under the Computing Systems Design category.

Category 7: Electronics. Each student has to complete 01 course under the Electronics category.

Category 8: Information Systems. Each student has to complete 02 courses under the Information Systems category.

Category 9: Networking & Security. Each student has to complete 01 course under the Networking & Security category.

Category 10: Multidisciplinary Engineering Elective. Each student has to complete 02 courses under the Multidisciplinary Engineering Elective category.

Category 11: CE Elective. Each student has to complete 04 courses under the CE Elective category.

Category 12: Professional Practice Elective. Each student has to complete 02 courses under the Professional Practice Elective 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 6)	
CS 101 – Algorithmic Problem Solving	3-1	CE Foundation (1 of 4) and University Core (2 of 10)	Double-counted towards CE Foundation as well as Habib Liberal Core.
CE 100 – Introduction to Electrical & Computer Engineering	0-2	CE Foundation (2 of 4)	This course is also offered with the code EE 100.
CE 112 – Electric Circuits – I	2-0	CE Foundation (3 of 4)	This course is also offered with the code EE 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 (2 of 6)	
CE 171 – Data Structures & Algorithms	3-1	Algorithms & Software (1 of 4)	This course is also offered with the code CS 102.
CS 113 – Discrete Mathematics	3	CE Foundation (4 of 4)	
CE 222 – Digital Logic and Design	3-1	Computing Systems Design (1 of 5)	This course is also offered with the code CS 130 and EE 172.
ENGR 291 – Engineering Workshop and Design	0-1	Design (2 of 5)	
Third Semester (5 Courses)			
CORE 201 – Pakistan and Modern South Asia	4	University Core (4 of 10)	
CE 361 – Probability and Statistics	3	Engineering Sciences & Computing (3 of 6) 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 EE 354.
Natural Science Elective	3-0/1	Engineering Sciences & Computing (4 of 6)	
CE 272 – Object Oriented Programming	3-1	Algorithms & Software (2 of 4)	This course is also offered with the code CS 224.
CE 321 – Computer Architecture	3-1	Computing Systems Design (2 of 5)	This course is also offered with the code EE 371 and CS 330.

Courses to complete	Credit hours	Course Category	Comments
Fourth Semester (6 Courses)			
CORE 202 – Hikmah I	4	University Core (6 of 10)	
CORE 200 – Scientific Method	3	University Core (7 of 10)	
MATH 205 – Linear Algebra	3	Engineering Sciences & Computing (5 of 6)	
CE 211 – Basic Electronics	3-1	Electronics (1 of 1)	This course is also offered with the code EE 211.
CE 251 – Signals & Systems	3-1	Information Systems (1 of 2)	This course is also offered with the code EE 252.
CE 332 – Microcontrollers and Interfacing	0-1	Computing Systems Design (3 of 5)	This course is also offered with the code EE 376.
Summer (Year 2/3)			
Summer – Internship**			Can be completed in summers of either 2nd year or 3rd year.
Fifth Semester (5 Courses)			
CORE 121 – Jehan-e-Urdu	4	University Core (8 of 10)	
CE 362 – Statistics and Inferencing	3	Engineering Sciences & Computing (6 of 6)	This course is also offered with the code MATH 322.
CE 324 – Operating Systems	3-1	Computing Systems Design (4 of 5)	This course is also offered with the code CS 232.
CE 373 – Database Systems	3-1	Algorithms & Software (3 of 4)	This course is also offered with the code CS 355.
CE 341 – Data Communication and Networking	3-1	Networking and Security (1 of 1)	
Sixth Semester (6 Courses)			
CE 374 – Software Engineering	3	Algorithms & Software (4 of 4)	This course is also offered with the code CS 353.
CE 352 – Digital Signal Processing	3-1	Information Systems (2 of 2)	
CE 391 – Engineering Design and Innovation	0-2	Design (3 of 5) and University Core (9 of 10)	This course is also offered with the code EE 391.
CE Elective*	3-0/1	CE Elective (1 of 4)	
Multidisciplinary Engineering Elective I*	0-2	Multidisciplinary Engineering Elective (1 of 2)	
Seventh Semester (5 Courses)			
Professional Practices	2/3	Professional Practice Elective (1 of 2)	
CE 325 – Digital Systems Design	3	Computing Systems Design (5 of 5)	
CE 491 – Capstone Design Project – I	0-3	Design (4 of 5)	
CE Elective*	3-0/1	CE Elective (2 of 4)	
Multidisciplinary Engineering Elective II*	3-0/1	Multidisciplinary Engineering Elective (2 of 2)	

Courses to complete	Credit hours	Course Category	Comments
Eighth Semester (5 Courses)			
A course in Philosophical Form of Thought	3	University Core (10 of 10)	
Professional Practices	2/3	Professional Practice Elective (2 of 2)	
CE Elective* (02 courses)	3-0/1	CE Elective (3 & 4 of 4)	
CE 492 – Capstone Design Project – II	0-3	Design (5 of 5)	

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.

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