

Computer Engineering Curriculum Fall-25 and beyond**Non-Engineering Courses**

S No	Knowledge Area	Sub Area	Course Code	Course Title	Pre-requisite	Credit Hours (Theory-Lab-Total)
1	Humanities	English	EL170	Functional English	---	(3-0-3)
2			EL271	Expository Writing		(3-0-3)
3		Culture	HU405	Ideology and Constitution of Pakistan	---	(2-0-2)
4			HU124	Islamic Studies & Ethics	---	(2-0-2)
			FQ100	Fehm e Quran-I	---	(0-1-1)
			FQ101	Fehm e Quran -II	FQ100	(0-1-1)
			HU115	Pakistan Studies	---	(2-0-2)
5			XXX	Arts and Humanities Elective		(2-0-2)
6		Social Sciences	HU411	Civics and Community Engagement	---	(2-0-2)
7			XXX	Social Sciences Elective	---	(2-0-2)
Courses/Credit Hours (Humanities)						10/20
8	Management Sciences	Professional Practice	ME456	Project Management	---	(2-0-2)
9			BA353	Entrepreneurship		(2-0-2)
Courses/Credit Hours (Management Sciences)						02/04
10	Computer Sciences	Basic Computing	CE100	Information and Communication Technologies (ICT)		(2-1-3)
Courses/Credit Hours (Computer Sciences)						01/03
11	Natural Sciences	Math	MA110	Calculus & Analytical Geometry	---	(3-0-3)
12			MA214	Complex Variables & Transforms	MA110	(3-0-3)
13			MA217	Linear Algebra and Differential Equations	MA110	(4-0-4)
15		Physics/ Natural Sciences	PH111	Applied Physics	---	(2-1-3)
16			XXX	Math/Natural Science Elective		(2-1-3)
Courses/Credit Hours (Natural Sciences)						5/16

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No of Courses/Credit Hours (Non-Engineering)

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Engineering Courses

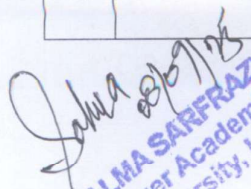
S No	Knowledge Area	Course Code	Course Title	Pre-Requisite	Credit Hours (Theory-Lab-Total)
1	Advanced Computer and Information Science	CE110	Computer Programming	---	(3-0-3)
		CE110L	Computer Programming Laboratory	---	(0-1-1)
2		CE104	Discrete Structures	---	(3-0-3)
Courses / Credit Hours (Computing)					02 / 07
3	Engineering Foundation	CE103	Computer Engineering Workshop	---	(0-1-1)
4		CE223	Digital Logic Design	---	(3-0-3)
		CE223L	Digital Logic Design Laboratory	---	(0-1-1)
5		EE101	Electric Circuit Analysis	---	(3-0-3)
		EE101L	Electric Circuit Analysis Laboratory	---	(0-1-1)
6		EE286	Electronic Devices and Circuits	EE100	(3-0-3)
		EE286L	Electronic Devices and Circuits Laboratory	EE100	(0-1-1)
7		CE113	Object Oriented Programming	CE110	(3-0-3)
		CE113L	Object Oriented Programming Laboratory	CE110	(0-1-1)
8		CE215	Data Structures and Algorithms	CE113	(3-0-3)


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Computer Engineering Curriculum Fall 2025

S No	Knowledge Area	Course Code	Course Title	Pre-Requisite	Credit Hours (Theory-Lab-Total)
9		CE215L	Data Structures and Algorithms Laboratory	CE113	(0-1-1)
		EE235	Signals and Systems	MA110	(3-0-3)
		EE235L	Signals and Systems Laboratory	MA110	(0-1-1)
10		MT203	Probability Methods in Engineering	---	(3-0-3)
11		CE224	Computer Organization and Assembly Language	CE223	(3-0-3)
		CE224L	Computer Organization and Assembly Language Laboratory	CE223	(0-1-1)
Courses / Credit Hours (Engineering Foundation)					9 / 32
12	Major Based Core (MBC) Breadth Courses	CE337	Computer Communication and Networks	---	(3-0-3)
		CE337L	Computer Communication and Networks Laboratory	---	(0-1-1)
13		CE323	Microprocessors and Interfacing	CE223	(3-0-3)
		CE323L	Microprocessors and Interfacing Laboratory	CE223	(0-1-1)
14		CE332	Operating Systems	CE110	(3-0-3)
		CE332L	Operating Systems Laboratory	CE110	(0-1-1)
15		CE216	Database Management Systems	---	(3-0-3)


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S No	Knowledge Area	Course Code	Course Title	Pre-Requisite	Credit Hours (Theory-Lab-Total)
16		CE216L	Database Management Systems Laboratory	---	(0-1-1)
		CE362	Software Engineering	---	(3-0-3)
17		EE338	Digital Signal Processing	EE235	(3-0-3)
		EE338L	Digital Signal Processing Laboratory	EE235	(0-1-1)
18		CE425	Digital System Design	CE223	(3-0-3)
		CE425L	Digital System Design Laboratory	CE223	(0-1-1)
Courses / Credit Hours (Breadth Courses)					07 / 27
19	Major Based Core (MBC) Depth Courses	CE439	Cloud and Distributed Computing	---	(3-0-3)
		CE439L	Cloud and Distributed Computing Laboratory	---	(0-1-1)
CEXXX		CE Depth Elective – I	---	(3-0-3)	
CEXXXL		CE Depth Elective – I Laboratory	---	(0-1-1)	
20		CEXXX	CE Depth Elective – II	---	(3-0-3)
		CEXXXL	CE Depth Elective – II Laboratory	---	(0-1-1)
21	CEXXX	CE Depth Elective – III	---	(3-0-3)	

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S No	Knowledge Area	Course Code	Course Title	Pre-Requisite	Credit Hours (Theory-Lab-Total)
		CEXXXL	CE Depth Elective - III Laboratory	---	(0-1-1)
Courses / Credit Hours (Depth Courses)					04 / 16
22	Multi-Disciplinary Engineering (MDE) Courses	XXX	MDE Elective-I	---	(3/2-0/1-3)
23		XXX	MDE Elective-II	---	(3/2-0/1-3)
24		MT409	Occupational Health and Safety	---	(1-0-1)
Courses / Credit Hours (MDE Courses)					03 / 07
25	Final Year Project (FYP)	CE497	Final Year Project I	List A	(0-1-1)
26		CE498	Final Year Project II	CE497	(0-2-2)
27		CE499	Final Year Project III	CE498	(0-3-3)
28	Industrial Training		6-8 Weeks Industrial Training Mandatory (Non-Credit)		(0-0-0)
29	Community Service	Hu407	Community Service Learning (30 Hours)		(0-0-0)
Courses / Credit Hours (FYP)					03 / 06
Courses/Credit Hours (Flexible Engineering/Non-Engineering)					03/11
No of Courses / Credit Hours (Engineering)					28 / 95
Total No of Courses / Credit Hours					46 / 138

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1	Flexible Engg/ Non-Engg Courses	XXX	Flexible Elective-I	XXX	(3-0-3)
		XXX	Flexible Elective-I Laboratory	XXX	(0-1-1)
2		XXX	Flexible Elective-II	XXX	(3-0-3)
		XXX	Flexible Elective-II Laboratory	XXX	(0-1-1)
3		XXX	Flexible Elective-III	XXX	(3-0-3) / (2-1-3)
Courses/Credit Hours (Flexible Engineering/Non-Engineering)					03/11

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Semester-wise Breakdown BCE Program Fall-25 & Beyond

Semester I

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	CE100	Information and Communication Technologies (ICT)	---	(2-0-2)	Computing
	CE100L	Information and Communication Technologies (ICT)	---	(0-1-1)	Computing
2	CE110	Computer Programming	---	(3-0-3)	Computing
	CE110L	Computer Programming Laboratory	---	(0-1-1)	Computing
3	PH111	Applied Physics	---	(2-0-2)	Natural Sciences
	PH111L	Applied Physics Lab	---	(0-1-1)	
4	MA110	Calculus & Analytical Geometry	---	(3-0-3)	Natural Sciences
5	EL170	Functional English	---	(3-0-3)	Humanities
6	CE103	Computer Engineering Workshop	---	(0-1-1)	Engineering Foundation
7	FQ100	Fehm e Quran I	---	(0-1-1)	As per HEC
No. of Courses = 7		Credit Hours = 18	Contact Hours = 28	Labs = 5	

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Semester II

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	CE113	Object Oriented Programming	CE110	(3-0-3)	Engineering Foundation
	CE113L	Object Oriented Programming Laboratory	CE110	(0-1-1)	Engineering Foundation
2	CE104	Discrete Structures	---	(3-0-3)	Computing
3	EE100	Circuit Analysis	---	(3-0-3)	Engineering Foundation
	EE100L	Circuit Analysis Laboratory	---	(0-1-1)	Engineering Foundation
4	MA214	Complex Variables and Transforms	MA110	(3-0-3)	Natural Sciences
5	EL271	Expository Writing	EL170	(3-0-3)	Humanities
6	FQ101	Fehm e Quran-II (HEC)	FQ100	(0-1-1)	As per HEC
No. of Courses = 6		Credit Hours = 18	Contact Hours = 24	Labs = 3	

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Semester III

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	CE215	Data Structures and Algorithms	CE113	(3-0-3)	Engineering Foundation
	CE215L	Data Structures and Algorithms Laboratory	CE113	(0-1-1)	Engineering Foundation
2	CE223	Digital Logic Design	---	(3-0-3)	Engineering Foundation
	CE223L	Digital Logic Design Laboratory	---	(0-1-1)	Engineering Foundation
3	EE286	Electronic Devices and Circuits	EE100	(3-0-3)	Engineering Foundation
	EE286L	Electronic Devices and Circuits Laboratory	EE100	(0-1-1)	Engineering Foundation
4	MA217	Linear Algebra and Differential Equations	MA110	(4-0-4)	Natural Sciences
5	HU124	Islamic Studies and Ethics	---	(2-0-2)	Humanities
No. of Courses = 5		Credit Hours = 18	Contact Hours = 24	Labs = 3	

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Semester IV

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	CE224	Computer Organization and Assembly Language	CE223	(3-0-3)	Engineering Foundation
	CE224L	Computer Organization and Assembly Language Laboratory	CE223	(0-1-1)	Engineering Foundation
2	CE216	Database Management Systems	---	(3-0-3)	MBC Breadth
	CE216L	Database Management Systems Laboratory	---	(0-1-1)	MBC Breadth
3	MA221	Numerical Analysis and Computation	---	(2-0-2)	Natural Sciences
	MA221L	Numerical Analysis and Computation Laboratory	---	(0-1-1)	
4	HU405	Ideology and Constitution of Pakistan	---	(2-0-2)	Humanities
5	HU411	Civics and Community Engagement	---	(2-0-2)	Humanities
6	HU115	Pakistan Studies	---	(2-0-2)	As per HEC
No. of Courses = 6		Credit Hours = 17	Contact Hours = 23	Labs = 3	

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Semester V

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	CE332	Operating Systems	CE110	(3-0-3)	MBC Breadth
	CE332L	Operating Systems Laboratory	CE110	(0-1-1)	MBC Breadth
2	CE337	Computer Communication and Networks	---	(3-0-3)	MBC Breadth
	CE337L	Computer Communication and Networks Laboratory	---	(0-1-1)	MBC Breadth
3	XXX	Flexible Engg/Non-Engg Elective-I	---	(3-0-3)	Flexible Engg/Non-Engg Elective
4	EE235	Signals and Systems	MA110	(3-0-3)	Engineering Foundation
	EE235L	Signals and Systems Laboratory	MA110	(0-1-1)	Engineering Foundation
5	MT203	Probability Methods in Engineering	---	(3-0-3)	Natural Sciences
6	HU407	Community Service Learning	---	(0-0-0)	Humanities
No. of Courses = 6		Credit Hours = 18	Contact Hours = 24	Labs = 3	

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Semester VI

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-Lab-	Knowledge Area
1	CE323	Microprocessors and Interfacing	CE223	(3-0-3)	MBC Breadth
	CE323L	Microprocessors and Interfacing Laboratory	CE223	(0-1-1)	MBC Breadth
2	XXX	Flexible Engg/Non-Engg Elective-I	---	(3-0-3)	Flexible Engg/Non-Engg Elective
	XXX	Flexible Engg/Non-Engg Elective-I Laboratory	---	(0-1-1)	Flexible Engg/Non-Engg Elective
3	CEXXX	CE Depth Elective – I	---	(3-0-3)	MBC Depth
	CEXXXL	CE Depth Elective – I Laboratory	---	(0-1-1)	MBC Depth
4	XXX	MDE Elective – I	---	(X-X-3)	MDE Elective
5	XXX	Management Elective – I	---	(2-0-2)	Management Sciences
6	CE497	Final Year Project I	List A	(0-1-1)	Senior Design Project
No. of Courses = 6		Credit Hours = 18	Contact Hours = 26/28	Labs = 4/5	

INDUSTRIAL TRAINING / INTERNSHIP (SUMMER)

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Semester VII

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-	Knowledge Area
1	XXX	Flexible Engg/Non-Engg Elective-I	---	(3-0-3)	Flexible Engg/Non-Engg Elective
	XXX	Flexible Engg/Non-Engg Elective-I Laboratory	---	(0-1-1)	Flexible Engg/Non-Engg Elective
2	CE425	Digital System Design	CE223	(3-0-3)	MBC Breadth
	CE425L	Digital System Design Laboratory	CE223	(0-1-1)	MBC Breadth
3	CEXXX	CE Depth Elective – II	---	(3-0-3)	MBC Depth
	CEXXXL	CE Depth Elective - II Laboratory	---	(0-1-1)	MBC Depth
4	XXX	Arts and Humanities Elective		(2-0-2)	Humanities
5	CE498	Final Year Project II	CE497	(0-2-2)	Senior Design Project
No. of Courses = 5		Credit Hours = 16	Contact Hours = 22	Labs = 5	

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Semester VIII

S. No.	Course Code	Courses	Prerequisites	Credit Hrs. (Theory-Lab-)	Knowledge Area
1	CEXXX	CE Depth Elective – III	---	(3-0-3)	MBC Depth
	CEXXXL	CE Depth Elective - III Laboratory	---	(0-1-1)	MBC Depth
2	XXX	MDE Elective – II	---	(X-X-3)	MDE Elective
3	XXX	Management Elective -II	---	(2-0-2)	Management
4	XXX	Social Sciences Elective	---	(2-0-2)	Humanities
5	CE499	Final Year Project III	CE498	(0-3-3)	Senior Design Project
6	MT409	Occupational Health and Safety	---	(1-0-1)	MDE Course
No. of Courses = 6		Credit Hours = 15	Contact Hours = 23/25	Labs = 4/5	

	Total Theory Subjects = 42	Total Labs = 30-32
Total Credit Hours	138	
Engineering	95	Total Courses = 28
Non-Engineering	43	Total Courses = 18

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**Computer Engineering (CE) Depth Electives
for Fall'25 & Beyond**

S. No.	Knowledge Area	Course Code	Courses	Pre-Requisite	Credit Hours	
1	Programming	CE409	System Programming	---	(3-0-3)	
		CE409L	System Programming Laboratory	---	(0-1-1)	
2		CE411	GPGPU Programming	---	(3-0-3)	
		CE411L	GPGPU Programming Laboratory	---	(0-1-1)	
3		CE417	Mobile Application Development	---	(3-0-3)	
		CE417L	Mobile Application Development Laboratory	---	(0-1-1)	
4		CE464	Software Design and Testing	---	(3-0-3)	
		CE464L	Software Design and Testing Laboratory	---	(0-1-1)	
5		Systems	CE328	Embedded Systems	---	(3-0-3)
			CE328L	Embedded Systems Laboratory	---	(0-1-1)
6	CE426		Computer Architecture	---	(3-0-3)	
	CE426L		Computer Architecture Laboratory	---	(0-1-1)	
7	CE429		Hardware Arithmetic for Machine Learning	---	(3-0-3)	
	CE429L		Hardware Arithmetic for Machine Learning Laboratory	---	(0-1-1)	
8	CE472		Fault Tolerant Computing	---	(3-0-3)	
	CE472L		Fault Tolerant Computing Laboratory	---	(0-1-1)	
9	CE456		Computer System Modeling	---	(3-0-3)	
	CE456L		Computer System Modeling Laboratory	---	(0-1-1)	
10	CE473	Digital instrumentation and Systems	---	(3-0-3)		
	CE473L	Digital instrumentation and Systems Laboratory	---	(0-1-1)		

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11	Networks and Cloud	CE338	Information and Cyber Security	---	(3-0-3)
		CE338L	Information and Cyber Security Laboratory	---	(0-1-1)
		CE339	Integrated Services over Packet Networks	---	(3-0-3)
		CE339L	Integrated Services over Packet Networks Laboratory	---	(0-1-1)
		CE438	Network and Computer Security	---	(3-0-3)
		CE438L	Network and Computer Security Laboratory	---	(0-1-1)
		CE439	Cloud and Distributed Computing	---	(3-0-3)
		CE439L	Cloud and Distributed Computing Laboratory	---	(0-1-1)
16	AI/ML	CE346	Digital Image Processing	---	(3-0-3)
		CE346L	Digital Image Processing Laboratory	---	(0-1-1)
		CE347	Computer Graphics and Animation	---	(3-0-3)
		CE347L	Computer Graphics and Animation Laboratory	---	(0-1-1)
		CE348	Introduction to Computer Vision	---	(3-0-3)
		CE348L	Introduction to Computer Vision Laboratory	---	(0-1-1)
		CE351	Artificial Intelligence for Engineers	---	(3-0-3)
		CE351L	Artificial Intelligence for Engineers Laboratory	---	(0-1-1)
		CE352	Machine Learning	---	(3-0-3)
		CE352L	Machine Learning Laboratory	---	(1-0-1)
		CE453	Data Mining Fundamentals	---	(3-0-3)
		CE453L	Data Mining Fundamentals Laboratory	---	(0-1-1)
		CE454	Big Data Analysis	---	(3-0-3)
		CE454L	Big Data Analysis Laboratory	---	(0-1-1)
		CE455	Introduction to Deep Learning	---	(3-0-3)
CE455L	Introduction to Deep Learning Laboratory	---	(0-1-1)		

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24		Any other relevant course decided by HEI as per requirement		
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**Computer Engineering Multi-Disciplinary Engineering Elective (MDEE) Courses
for Fall 25 & Beyond**

S. No.	Course Code	Courses	Pre-Requisite	Credit Hours
1	EE352	Control Systems	---	(3-0-3)
2	EE435	Information Coding Theory	---	(3-0-3)
3	EE407	VLSI Design	---	(2-0-2)
	EE407L	VLSI Design Laboratory	---	(0-1-1)
4	EE476	Wireless Communication	---	(3-0-3)
5	MT371	Introduction to Bio-Mechatronics	---	(3-0-3)
6	MT467	Applied Robotics	---	(3-0-3)
7	MT473	Laser & Its Applications	---	(3-0-3)
8	MT485	System Reliability & Safety	---	(3-0-3)
9	BM304	Bio-Medical Engineering System	---	(3-0-3)
10	BM414	DNA Computing	---	(3-0-3)
11	BM434	Medical Robotics	---	(3-0-3)
12	BM435	Bioinformatics	---	(3-0-3)
13	CY104	Introduction to Cyber security	---	(2-0-2)
	CY104L	Introduction to Cyber security Lab	---	(0-1-1)
14	CY256	Secure Software Design and Development	---	(2-0-2)
	CY256L	Secure Software Design and Development Lab	---	(0-1-1)
		Any other relevant course decided by HEI as per requirement		

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**Flexible Engineering/Non-Engineering Electives Courses
for Fall'25 & Beyond**

S. No.	Course Code	Courses	Pre-Requisite	Credit Hours
1	EE465/EE465L	Optical Fiber Communications	---	(3-1-4)
2	EE437/EE437L	Transmission and Switching Systems	---	(3-1-4)
3	EE478	Satellite Communications	---	(3-0-3)
4	EE338	Digital Signal Processing	EE235	(3-0-3)
	EE338L	Digital Signal Processing Laboratory	EE235	(0-1-1)
5	EE476	Wireless Communication	---	(3-0-3)
6	CE362	Software Engineering	---	(3-0-3)
7	EE470	Next Generation Networks	---	(3-0-3)
8	EE469	Telecommunication Network Management	---	(3-0-3)
9	AV827	Navigation Systems	---	(3-1-4)
10	MT481	Introduction to Fuzzy Logic	---	(3-0-3)
11		Any Elective Course from Engineering/Non-Engineering Departments decided by the HEI as per requirement		

Arts & Humanities Electives For Fall'2025 & Beyond as proposed by PEC

Course Code	Courses	Pre-requisites	Credit Hours
MT302	Professional Ethics	---	(2-0-2)
HU215	Ethics	---	(2-0-2)
HU211	Introduction to Sociology	---	(2-0-2)

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MT201	Energy and Society	---	(2-0-2)
ME454	Health Safety and Environment	---	(2-0-2)
EL301	Technical English	---	(2-0-2)
FL321	Foreign Language: French	---	(2-0-2)
FL202	Foreign Language: Chinese	---	(2-0-2)
FL404	Foreign Language: German	---	(2-0-2)
FL451	Foreign Language: Spanish	---	(2-0-2)
FL200	Foreign Language: Arabic	---	(2-0-2)
EL106	Communication Skills	---	(2-0-2)
HUXXX	History	---	(2-0-2)
HUXXX	Philosophy	---	(2-0-2)
	Any other relevant course decided by HEI as per requirement	---	(2-0-2)

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**Computer Engineering List of Social Sciences Electives
for Fall'25 & Beyond**

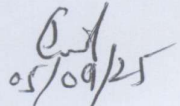
S. No	Course Code	Courses	Credit Hours
1	HU213	Introduction to Psychology	(2-0-2)
2	HU314	Contemporary International Relations	(2-0-2)
3	MT302	Professional Ethics	(2-0-2)
4	BA334	Engineering Economics	(2-0-2)
5		Any other relevant course decided by HEI as per requirement	

**Computer Engineering List of Management Electives
for Fall'25 & Beyond**

S. No	Course Code	Courses	Credit Hours
1	EM436	Engineering Management & Entrepreneurship	(2-0-2)
2	EM437	Engineering Procurement & Contract Management	(2-0-2)
3	EM438	Engineering Project Management	(2-0-2)
4		Any other relevant course decided by HEI as per requirement	


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Minors in Computer Engineering For Fall'2024 & Beyond

S. No.	Code	Course		
1	CE110	Computer Programming	---	(3-0-3)
	CE110L	Computer Programming Lab		(0-1-1)
2	CE113	Object Oriented Programming	---	(3-0-3)
	CE113L	Object Oriented Programming Laboratory		(0-1-1)
3	CE223	Digital Logic Design	---	(3-0-3)
	CE223L	Digital Logic Design Lab		(0-1-1)
4	CE224	Computer Organization and Assembly Language	---	(3-0-3)
	CE224L	Computer Organization and Assembly Language Laboratory		(0-1-1)
5	CE332	Operating Systems	---	(3-0-3)
	CE332L	Operating Systems Laboratory		(0-1-1)
6	CE323	Microprocessors and Interfacing	---	(3-0-3)
	CE323L	Microprocessors and Interfacing Lab		(0-1-1)
7	CE425	Digital System Design	---	(3-0-3)
	CE425L	Digital System Design Laboratory		(0-1-1)
8	CE346	Digital Image Processing	---	(3-0-3)
	CE346L	Digital Image Processing Laboratory		(0-1-1)

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