



Course Specifications:

Bachelor of Computer Engineering Program

2024



Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	6	12	7%
	Elective			
College Requirements	Required	14	37	23%
	Elective	2	6	4%
Program Requirements	Required	21	53	32%
	Elective	3	9	6%
Capstone Course/Project	Required	2	5	2%
Field Training/ Internship	Required	1	1	1%
Residency year	Required	10	34	21%
Others	Free Hours	2	6	4%
Total		61	162	100%

* Add a separate table for each track (if any).

2. Program Courses:

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	ENG0011.pdf	English I	Required	--	8	Preparatory Year
	CSC105.pdf	Computer Skills	Required	--	2	Preparatory Year
	PHYS110.pdf	Physics 1	Required	--	2	Preparatory Year
	STAT100.pdf	Statistics	Required	--	2	Preparatory Year
	PSYCH 101.pdf	Thinking Skills and learning styles	Required	--	4	Preparatory Year
Level 2	ENG0012.pdf	English II	Required	ENG 0011	5	Preparatory Year
	ESP102.pdf	English for Engineering and Computer Science	Required	ENG 0011	2	Preparatory Year
	MATH105.pdf	Differential Calculus	Required	--	3	Preparatory Year

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	CSC111.pdf	Computer programming	Required	CSC 105	3	Preparatory Year
	PHYS115.pdf	Physics 2	Required	PHYS110	3	Preparatory Year
Level 3	CS181.pdf	Computer Programming II	R	CSC111	3	College
	Phys116.pdf	Physics III	R	PHYS115	4	College
	MATH115.pdf	Integral Calculus	R	MATH105	3	College
	ARAB101.pdf	Linguistic Skills	R	-	2	Institution
	IT131.pdf	Database	R	CSC111	3	College
Level 4	COE121.pdf	Logic Design	R	CSC111	3	College
	COE122.pdf	Logic Design Lab	R	-	1	College
	CS182.pdf	Computer Programming III	R	CS181	3	College
	MATH116.pdf	Linear Algebra and Multi-Variable Calculus	R	MATH115	3	College
	STAT126.pdf	Statistics & Probability	R	STAT100	3	College
	ARAB103.pdf	Arabic Writing	R	-	2	Institution
	IC101.pdf	Introduction to Islamic Culture	R	-	2	Institution
Level 5	COE211.pdf	Electric Circuits	R	MATH115 PHYS116	3	Department
	COE212.pdf	Electric Circuits Lab	R	-	1	Department
	COE223.pdf	Computer Organization	R	COE121	3	Department
	CS211.pdf	Concepts of Algorithms	R	CS181	3	College
	MATH212.pdf	Discrete Mathematics	R	MATH116	3	College
	MATH218.pdf	Differential Equations	R	MATH116	3	College
	IC102.pdf	Islam and	R	IC101	2	Institution

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
		Community Building				
Level 6	COE213.pdf	Electronics	R	COE211	3	Department
	COE214.pdf	Electronics Lab	R	COE212	1	Department
	COE224.pdf	Assembly Language	R	COE223	3	Department
	COE231.pdf	Human-Computer Interaction (HCI)	R	CS181	2	Department
	CS214.pdf	Data Structures	R	MATH212	3	College
	CS222.pdf	Operating Systems	R	CS182	3	College
Level 7		CoC Elective I	E	-	3	College
	COE325.pdf	Microprocessor s Systems	R	COE213, COE224	3	Department
	COE326.pdf	Microprocessor Systems Lab	R	-	1	Department
	COE361.pdf	Signals and Systems Analysis	R	MATH218	3	Department
	COE362.pdf	Signals and Systems Lab	R	-	1	Department
	CS383.pdf	Software Engineering	R	CS222	3	Department
	MATH329.pdf	Operation Research	R	MATH116	3	Department
	IC103.pdf	Economic System in Islam	R	IC101	2	Institution
Level 8	COE332.pdf	Microcontroller Applications	R	COE325	2	Department
	COE333.pdf	Computer Systems Engineering	R	CS383	3	Department
	COE351.pdf	Computer Networks	R	CS222	3	Department
	COE352.pdf	Computer Networks Lab	R	-	1	Department
	IC104.pdf	Political System in Islam	R	IC101	2	Institution
		Free Hours I	E	-	3	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 9		COC Elective II	E	-	3	College
	COE497.pdf	Summer Training	R	120 C.H.	1	Department
	COE434.pdf	Embedded Systems	R	COE325	3	Department
	COE435.pdf	Embedded Systems Lab	R	-	1	Department
	COE498.pdf	Graduation Project (I)	R	120 C.H.	2	Department
	IT362.pdf	Communication Skills & Ethics issues	R	STAT126	2	College
		COE Optional I	E	-	3	Department
Level 10		Free Hours II	E	-	3	College
	COE415.pdf	VLSI	R	COE213	3	Department
	COE499.pdf	Graduation Project (II)	R	COE498	3	Department
		COE Optional II	E	-	3	Department
		COE Optional III	E	-	3	Department

COE Elective Courses

Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours
COE416	VLSI System Design using VHDL	Elective	COE415	3
COE427	Advanced Computer Architecture	Elective	COE325	3
COE428	Parallel Processing	Elective	COE325	3
COE429	Advanced Digital Logic Design	Elective	COE325	3
COE432	Digital Control Systems	Elective	COE361	3
COE436	Advanced Embedded Systems	Elective	COE434	3
COE437	Real-Time Operating Systems	Elective	COE434	3
COE441.pdf	Robotics and Control	Elective	COE361	3
COE442.pdf	Artificial Intelligence and Expert Systems	Elective	COE333	3
COE443	Computer Vision & Pattern Recognition	Elective	COE361	3
COE444	Machine Learning	Elective	COE361	3
COE455.pdf	Natural Language Processing	Elective	COE361	3
COE453	Communication Systems	Elective	COE351	3
COE454	Wireless Networks and Mobile Computing	Elective	COE351	3
COE455	Computer and Network Security	Elective	COE351	3
COE457	Cloud Computing	Elective	COE351	3
COE458	Internet of Things	Elective	COE351	3
COE463.pdf	Digital Signal Processing	Elective	COE361	3
COE464	Image and Multimedia Processing	Elective	COE361	3
COE492.pdf	Special Topics (I)	Elective	COE325	3
COE493.pdf	Special Topics (II)	Elective	COE325	3

College Elective Courses

Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours
STAT327	Statistical inference (2)	Elective	STAT126	3
CHEM101	General Chemistry (1)	Elective	-	4
CHEM111	General Chemistry	Elective	-	4
COE361	Signal and System Analysis	Elective	COE362 (co) & MATH218 (pre)	3
COE362 (co)	Signal and System Analysis (Lab)	Elective	COE361	1
IT351	Data Science for the Internet of Things (IoT)	Elective	-	3
MATH204	Vector Calculation	Elective	-	3
MATH218	Differential Equations	Elective	-	3
MATH244	Linear Algebra (2)	Elective	MATH116	3
MATH319	Coding and Coding Theory	Elective	-	3
MATH326	Mathematical Methods	Elective	-	3
MATH345	Algebra Applications	Elective	-	3
MATH351	Numerical Analysis	Elective	-	3
MATH382	Real Analysis	Elective	-	3
MATH243	Thermodynamics	Elective	-	3
PHYS321	Electromagnetism (2)	Elective	-	3
PHYS422	Electronics	Elective	-	3

