Fall 2023 Intake

PERFORMA FOR REVISION OF EXISTING PROGRAM

Program Scheme of Studies

Eligibility Criteria: (Minimum Criteria for Admission)	Minimum 60%
Duration: (Years of study)	Minimum 4 Years
Semester Duration: (Weeks)	16 Weeks
Semesters:	8
Course Load per Semester: (Credit Hours)	Maximum Load 18 credit hours
Number of Courses per semester:	6 courses
Structure of the Scheme	
Courses Credit Hours	
Core Courses: (Credit Hours)	
Foundation Courses : (Credit Hours)	
Major Courses: (Credit Hours)	
Technical Electives: (Credit Hours)	
General Electives: (Credit Hours)	
Supporting Science: (Credit Hours)	
University Electives: (Credit Hours)	
Total Credit Hours:	133

COD EE

Course Coding

Each course shall be numbered and coded as shown below:

Coding Scheme for BS (4 year) Program

Sr. #	Description	BS
1	Courses offered in the first year (Semester I&II)	100
2	Courses offered in the second year (Semester III & IV)	200
3	Courses offered in the third year (Semester V & VI)	300
4	Courses offered in the forth year (Semester VII & VIII)	400

Coding Scheme for BS (5 year) Program

Sr.	Description	BS
1	Courses offered in the first year (Semester I&II)	100
2	Courses offered in the second year (Semester III & IV)	200
3	Courses offered in the third year (Semester V & VI)	300
4	Courses offered in the fourth year (Semester VII & VIII)	400
5	Courses offered in the fifth year (Semester IX & X)	500

Coding Scheme for MA/MSc/MBA/ after 2 years Bachelors Program

Sr. #	Description	MA/MSc
1	Courses offered in the first year (Semester I&II)	300
2	Courses offered in the second year (Semester III & IV)	400

Coding Scheme for MS/MPhil Program

Sr. #	Description	MS/MPhil
1	Courses offered in the first year (Semester I&II)	500
2	Courses offered in the second year (Semester III & IV)	600

All course codes shall be preceded by two to three alphabets. The courses which have same course contents shall be given one course code despite being offered to many different batches.

Details of Faculty, Enrollment and Resources

Estimated Enrollment, Faculty and other Resources Required for New Program

Year	Full time Enrollment	Part time Enrollment
1	189	

CURRENT FACULTY

Name of Faculty	Highest Degree Earned	Total Years of Teaching Experience	Years Teaching in this Institution	Area of Degree Specialty	Full Time or Part Time (Visiting) in Program
Dr. Farhat Kaleem	Ph.D.	20	7	Electrical and Computer Engineering	Full Time
Dr. Irfan Ullah	Ph.D.	8	7	Energy and Power	Full Time
Dr Asif Hussain	Ph.D.	13	13	Electrical Machine Design & Control	Full Time
Dr Jawwad Nasar Chattha	Ph.D.	13	13	Communication	Full Time
Dr. Faran Awais Butt	Ph.D.	13	13	Electrical Engineering	Full Time
Asfa Javed	MS	8	8	Telecommunications	Full Time
Hassan Tariq	MS	7	8	Electronics and Telecomm.	Full Time
Muhammad Asad Ali	MS	6	6	Electrical	Full Time
Awais Saeed	MS	10	8	Electrical	Full Time
Abdullah Khalid	MS	6	7	Electronics and Telecomm.	Full Time

Total Full time Faculty in Program: 10

Total Part time (Visiting) Faculty in Program: 0

REQUIRED FACULTY

Number of Faculty Needed	Highest Degree Earned	Anticipated Rank/Experience Desired	Area of Degree Specialty	Year of Program to Be Employed	Full time or % Part time (Visiting) in Program

Total Full time Faculty in Program: Total Part time (Visiting) Faculty in Program

Resources		
	Existing	**Required**
Building		
Furniture		
Equipment		
Library (books, journals, etc)		
Laboratories		

Comparison of Roadmap

Current and Updated Road Maps are attached here.

Current BSEE Roadmap

UMT SEN Electrical Engineering Department

BS Electrical Engineering Roadmap

FIRST YEAR

Fall Semester (1st)				Spring Semester (2nd)			
ode	Course Title	CH	Pre req	Code	Course Title	CH	Pre req
143	Programming Fundamentals	3		MA 230	Differential Equations	3	
143L	Programming Fundamentals Lab	1		EE 102L	Engineering Drawing	1	
112L	Workshop Practice	2		ME 121	Engineering Mechanics	3	
110	English Grammar and Comprehension	2		ME 121L	Engineering Mechanics Lab	1	
112	Applied Calculus	3		HM 150	Islamic Studies / Ethics (For Non Muslim Students)	2	
124	Applied Physics	3		EE 110	Circuit Analysis	3	
124L	Applied Physics Lab	1		EE 110L	Circuit Analysis Lab	1	
171	Pakistan Studies	2		EN 112	Composition and Communication	2	EN110
	Total	17			Total	16	

SECOND YEAR

Fall Semester (3rd)				Spring Semester (4th)			
ode	Course Title	CH	Pre req	Code	Course Title	CH	Pre req
212	Electrical Network Analysis	3		EE 306	Probability and Statistics for Engineers	3	
212L	Electrical Network Analysis Lab	1		EE 208	Electronic Devices and Circuits	3	EE 110
220	Digital Logic Design	3		EE 208L	Electronic Devices and Circuits Lab	1	
220L	Digital Logic Design Lab	1		EE 213	Data Structures and Algorithms	3	CS 143
210	Linear Algebra	3		EE 213L	Data Structures and Algorithms Lab	1	
322	Applied Thermodynamics	3		EN 223	Research Project and Presentation	2	EN 112
151	Object Oriented Programming	3	CS 143	MA 223	Complex Variables and Transforms	3	
151L	Object Oriented Programming Lab	1	CS 143				
	Total	18			Total	16	

THIRD YEAR

Fall Semester (5th)				Spring Semester (6th)			
ode	Course Title	CH	Pre req	Code	Course Title	CH	Pre req
310	Electromagnetics	3	NS 124	EE xxx	Breadth Core – I	3	
315	Signals and Systems	3		EE xxx	Breadth Core – I Lab	1	
315L	Signals and Systems Lab	1		EE xxx	Breadth Core – II	3	
328	Modern Microprocessor Systems	3		EE xxx	Breadth Core – II Lab	1	
328L	Modern Microprocessor Systems Lab	1		EE 328	Control Systems	3	EE 315
340	Electrical Machines	3		EE 328L	Control Systems Lab	1	
340L	Electrical Machines Lab	1		SS xxx	Social Science Elective II	3	
215	Social Science Elective I	3		MS xxx	Management Science Elective I	3	
	Total	18			Total	18	

FOURTH YEAR

Fall Semester (7th)				Spring Semester (8th)			
ode	Course Title	CH	Pre req	Code	Course Title	CH	Pre req
410	Communication Systems	3	EE 315	EE 492	Senior Design Project – II	3	
410L	Communication Systems Lab	1		NS xxx	Natural Science Elective	3	
491	Senior Design Project I	3		MS xxx	Management Science Elective II	3	
xxx	Depth Elective I	3		EE 323	Depth Elective IV	3	
xxx	Depth Elective II	3		EE xxx	Depth Elective V	3	
xxxL	Depth Elective II Lab	1		EE xxxL	Depth Elective V Lab	1	
xxx	Depth Elective III	3					
	Total	17			Total	16	

Total Credit Hours: 136

Updated BSEE Roadmap

Updated BSEE Roadmap: Fall 2023

UMT SEN Electrical Engineering Department

BS Electrical Engineering Roadmap

FIRST YEAR

Fall Semester (1st)				Spring Semester (2nd)			
Code	Course Title	CH	Pre-req	Code	Course Title	CH	Pre-req
CS-143	Programming Fundamentals	3	----	MA-230	Differential Equations	3	----
CS-143L	Programming Fundamentals Lab	1	----	EE-102L	Engineering Drawing	1	----
HM-150	Islamic Studies / Ethics (For Non-Muslim Students)	2	----	ME-121	Engineering Mechanics	3	----
EN-112	Composition and Communication	2	----	ME-121L	Engineering Mechanics Lab	1	----
MA-112	Applied Calculus	3	----	ME-322	Applied Thermodynamics	3	----
NS-124	Applied Physics	3	----	EE-110	Circuit Analysis	3	----
NS-124L	Applied Physics Lab	1	----	EE-110L	Circuit Analysis Lab	1	----
SS-171	Pakistan Studies	2	----	SS-215	Social Science Elective 1	3	
----	----	---	----	----	----	---	----
Total		17		Total		18	

Summer Semester			
SD104	Community services	1	

SECOND YEAR

Fall Semester (3rd)				Spring Semester (4th)			
Code	Course Title	CH	Pre-req	Code	Course Title	CH	Pre-req
EE-212	Electrical Network Analysis	3	----	EE-306	Probability and Statistics for Engineers	3	----
EE-212L	Electrical Network Analysis Lab	1	----	EE-208	Electronic Devices and Circuits	3	EE-110
EE-220	Digital Logic Design	3	----	EE-208L	Electronic Devices and Circuits Lab	1	----
EE-220L	Digital Logic Design Lab	1	----	EE-213	Data Structures and Algorithms	3	CS-143
MA-210	Linear Algebra	3	----	EE-213L	Data Structures and Algorithms Lab	1	----
MS-xxx	Management Science Elective 1	3		MS-xxx	Management Science Elective-II	3	
CS-151	Object Oriented Programming	3	CS-143	MA-223	Complex Variables and Transforms	3	----

CS-151L	Object Oriented Programming Lab	1	CS-143				
Total		18		Total		17	
Summer Semester							
SD100	English Immersion	0					

THIRD YEAR

Fall Semester (5th)				Spring Semester (6th)			
Code	Course Title	CH	Pre-req	Code	Course Title	CH	Pre-req
EN-223	Research Project and Presentation	2	EN-112	EE-xxx	Breadth Core – I	3	
EE-315	Signals and Systems	3	----	EE-xxx	Breadth Core – I Lab	1	
EE-315L	Signals and Systems Lab	1	----	EE-xxx	Breadth Core – II	3	
EE-328	Modern Microprocessor Systems	3	----	EE-xxx	Breadth Core – II Lab	1	
EE-328L	Modern Microprocessor Systems Lab	1	----	EE-328	Control Systems	3	EE-315
EE-340	Electrical Machines	3	----	EE-328L	Control Systems Lab	1	----
EE-340L	Electrical Machines Lab	1	----	EE-310	Electromagnetics	3	NS-124
NS-xxx	Natural Science Elective	3	----	EE-xxx	Depth Elective-I	3	
Total		17		Total		18	
Summer Semester							
SD102	21st Century Skills	0					

FOURTH YEAR

Fall Semester (7th)				Spring Semester (8th)			
Code	Course Title	CH	Pre-req	Code	Course Title	CH	Pre-req
EE-410	Communication Systems	3	EE-315	EE-492	Senior Design Project – II	3	----
EE-410L	Communication Systems Lab	1		SS-xxx	Social Science Elective-II	3	----
EE-491	Senior Design Project - I	3	----	EE-xxx	Depth Elective-V	3	
EE-xxx	Depth Elective-II	3	----	EE-xxxL	Depth Elective-V Lab	1	
EE-xxxL	Depth Elective-II Lab	1	----				
EE-xxx	Depth Elective-III	3	----	----			
EE-xxx	Depth Elective-IV	3	----				
			----	----	----		----
Total		17		Total		10	
Total Credit Hours: 133							
					COOP	6	
Total Credit Hours: 139 (With COOP)							

University of Management and Technology
School of Engineering
Department of Electrical Engineering

Recommended List of Breadth & Depth Elective Courses in Electrical Engineering (Power Systems Engineering)

Breadth Electives

1. Instrumentation and Measurement (EE416)
2. Power Distribution and Transmission (EE322)

Depth Electives

1. Power Electronics (EE446)
2. Power System Analysis and Design (EE406)
3. Power System Operation and Control (PE420)
4. High Voltage Engineering (EE426)
5. Power System Protection (EE423)
6. Renewable Electrical Energy Resources (EE407)
7. Electrical Machine Design (EE424)
8. Smart Grid (EE429)
9. Applied Machine Learning (EE440)
10. Power Plant Engineering (ME641)

University of Management and Technology
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Department of Electrical Engineering

Recommended List of Breadth & Depth Elective Courses in Electrical Engineering (Electronic Engineering)

Breadth Electives

Instrumentation and Measurement (EE416)
Digital Signal Processing (EE415)

Depth Electives

1. Digital Electronics (EE445)
2. Digital System Design (EE320)
3. Electronic System Design (EE323)
4. Power Electronics (EE446)
5. Biomedical Signal Processing
6. Robotics (CS5113)
7. VLSI Circuit Design
8. Applied Machine Learning (EE440)

University of Management and Technology
School of Engineering
Department of Electrical Engineering

Recommended List of Breadth & Depth Elective Courses in Electrical Engineering (Communication Engineering)

Breadth Electives

1. Instrumentation and Measurement (EE416)
2. Digital Signal Processing (EE415)

Depth Electives

1. Computer Networks (EE330)
2. Digital Communication
3. Wireless Communication (EE480)
4. Internet of Things (EE453)
5. Network Security (CS437)
6. Wireless and Mobile Networks
7. Applied Machine Learning (EE440)
8. Smart Grid (EE429)

List of Social Sciences, Management Sciences and Natural Sciences Elective Courses for BS-EE Curriculum

1. Applied Physics (NS124)
2. Applied Calculus (MA 112)
3. Critical Thinking (TDS104)
4. Engineering Management (MS323)
5. Engineering Economics (MS224)
6. Entrepreneurship (SS306)
7. Organizational Behavior (MS375)
8. Engineering & Innovation (MSxxx)
9. Operational Research (MA301)
10. Optimization Techniques (NSxxx)
11. Modelling & Simulation (NSxxx)

Summary of revisions suggested in the roadmap

Please see the current and updated roadmaps. The total credit hours in the updated roadmap are 136, whereas the total credit hours in the current roadmap are 135.

Note: **Course outlines on standard template shall be attached with Program Revision Performa.**