Program Learning Outcome of Curriculum (PLO) and PLOs Mapping

Program Learning Outcomes of Master Program (Master of Engineeringin Electrical and Computer Engineering)

Plan 1.1 and 1.2
Specific PLOs
1. Analyze phenomena in Electrical and Computer Engineering by referring to in-depth theories in Electrical and Computer Engineering
2. Criticize, analyze, and find reasons to explain relationships between experimental results and advanced theory in Electrical and Computer Engineering
3. Apply advanced STEM knowledge (science, technology, engineering, and mathematics) for solving industrial problems in Electrical and Computer Engineering
4. Design and build tools for solving industrial problems in Electrical and Computer Engineering, following safety principles and relevant industry standards
5. Conduct research toward relating new knowledge in Electrical and Computer Engineering
Generic PLOs
G1. Demonstrate self-reliance, independent thinking, critical thinking, and project management skills for defining and solving specific problems in Electrical and Computer Engineering
G2. Demonstrate skills in interpersonal communication and presenting work in Electrical and Computer Engineering to the public
G3. Analyse content in international academic books and documents in Electrical and Computer Engineering
G4. Indicate and show a good attitude and professional ethics in Electrical and Computer Engineering
G5. Criticize content in research articles and write research articles in Electrical and Computer Engineering

Plan 2
Specific PLOs
S1. Analyze phenomena in Electrical and Computer Engineering by referring to in-depth theories in Electrical and Computer Engineering
S2. Criticize, analyze, and find reasons to explain relationships between experimental results and advanced theory in Electrical and Computer Engineering
S3. Apply advanced STEM knowledge (science, technology, engineering, and mathematics) for solving industrial problems in Electrical and Computer Engineering
S4. Design and build tools for solving industrial problems in Electrical and Computer Engineering, following safety principles and relevant industry standards
Generic PLOs
G1. Demonstrate self-reliance, independent thinking, critical thinking, and project management skills for defining and solving specific problems in Electrical and Computer Engineering
G2. Demonstrate skills in interpersonal communication and presenting work in Electrical and Computer Engineering to the public
G3. Analyse contents in international academic books and documents in Electrical and Computer Engineering
G4. Indicate and show a good attitude and professional ethics in Electrical and Computer Engineering

Program PLOs Mapping

Plan 1 Type 1.1

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Compulsory Course												
Industrial Research Methodology	090245001	3(3-0-6)		●	●			●	●	●	●	●
Seminar in Electrical and Computer Engineering	090245005	3(3-0-6)						●	●		●	
Master Thesis	090245097	40	●	●	●	●	●	●	●	●	●	●

Plan 1 Type 1.2

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Compulsory Course												
Industrial Research Methodology	090245001	3(3-0-6)		●	●			●	●	●	●	●
Seminar in Electrical and Computer Engineering	090245005	3(3-0-6)						●	●		●	
Industrial Internship	090245099	4	●		●	●		●	●		●	
Master Thesis	090245098	12	●	●	●	●	●	●	●	●	●	●
Elective Course												
Information Theory and Source Coding	090245121	3(3-0-6)	●	●		●		●	●			

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Mobile Radio Networks	090245122	3(3-0-6)	●		●			●				
Antenna Technology for Smart Devices	090245124	3(3-0-6)	●	●		●		●				
DSP Design Methodologies and Tools	090245125	3(3-0-6)	●	●		●		●	●			
Multimedia Communications	090245126	3(3-0-6)	●	●		●		●	●			
VLSI Architecture	090245127	3(3-0-6)	●	●		●		●	●			
Algorithm Design of Digital Receivers	090245128	3(3-0-6)	●	●		●		●	●			
Cryptography	090245129	3(3-0-6)	●	●		●		●	●			
System and Processor Architectures for Mobile Devices	090245130	3(3-0-6)	●	●		●		●	●			
Estimation and Detection Theory	090245131	3(3-0-6)	●	●		●		●	●			
Special Problems in Communication Engineering	090245132	3(3-0-6)	●		●							
Software-Defined Radio and Cognitive Radio Network	090245133	3(3-0-6)	●		●							
Advanced Topics in Communications	090245134	3(3-0-6)	●		●							
Electromagnetic Field Theory for Smart Sensing Applications	090245135	3(3-0-6)	●	●		●		●				
Communication Protocols and Computer Networks	090245137	3(3-0-6)	●		●	●						
Broadband Wireless Communication Systems	090245138	3(3-0-6)	●	●		●		●	●			
Introduction to Radar Technology	090245139	3(3-0-6)	●	●		●		●				
Design of Radio-Frequency Integrated Circuits	090245140	3(3-0-6)	●	●		●		●				
Power System Reliability	090245222	3(3-0-6)	●	●		●				●		
Electrical Transients in Electrical Power Systems	090245223	3(3-0-6)	●	●		●				●		

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Battery Storage Systems	090245224	3(3-0-6)	●	●						●		
Selected Topics in Electrical Power Engineering	090245227	3(3-0-6)	●	●						●		
Asset Management of Electrical Power System	090245229	3(3-0-6)	●	●		●				●		
Power System Monitoring, Control and Protection	090245230	3(3-0-6)	●	●		●				●		
Distributed Generation Systems	090245231	3(3-0-6)	●	●		●				●		
Electric Drive System	090245234	3(3-0-6)	●	●		●				●		
Testing and Condition Diagnostic of High Voltage Equipment	090245235	3(3-0-6)	●	●		●				●		
Electric Power Generation Control and Protection	090245236	3(3-0-6)	●	●		●				●		
Selected Topics in Practical Computer Science	090245323	3(3-0-6)	●	●	●	●		●		●		
Network Security	090245331	3(3-0-6)	●	●	●	●						
Machine Vision	090245332	3(3-0-6)	●			●		●				
Digital Image Processing	090245334	3(3-0-6)	●			●				●		
Embedded Systems	090245336	3(3-0-6)	●			●		●				
Algorithmic Differentiation	090245342	3(3-0-6)	●	●	●							
Parallel Computing	090245343	3(3-0-6)	●	●	●	●						
Optimization	090245348	3(3-0-6)	●	●	●	●						
Applications of Digital Image Processing	090245349	3(3-0-6)	●			●				●		
Data Structures and Algorithms	090245350	3(3-0-6)	●	●	●	●						
Computer Architectures	090245351	3(3-0-6)	●		●	●		●	●	●	●	
Advanced Software Engineering	090245352	3(3-0-6)	●	●	●	●		●	●	●	●	
Advanced Database Systems	090245353	3(3-0-6)	●	●	●	●						

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Cloud Computing	090245355	3(3-0-6)	●	●	●	●		●	●	●	●	
Programming Languages and Compilers	090245357	3(3-0-6)	●	●	●							
Selected Topics in Computer Engineering	090245360	3(3-0-6)	●	●				●		●		
Advanced Topics in Computer Engineering	090245361	3(3-0-6)	●	●				●		●		
Artificial Intelligence	090245362	3(3-0-6)	●		●		●		●		●	
Data Science and Machine Learning	090245363	3(3-0-6)	●	●	●	●		●		●		
Data Engineering	090245364	3(3-0-6)	●	●	●			●	●	●		
Information Network Analysis	090245365	3(3-0-6)	●	●	●			●		●		
Communication Systems for Smart Grids	090245423	3(3-0-6)	●	●		●		●	●			
Internet of Things	090245424	3(3-0-6)	●			●		●				
Cyber Security for Smart Grids	090245425	3(3-0-6)	●	●		●		●	●			
Advanced Topics in Smart Grid Engineering	090245426	3(3-0-6)	●	●		●		●	●			
Special Problems in Smart Grid Engineering	090245427	3(3-0-6)	●	●		●		●	●			
Modern Power Grid Operation and Control	090245428	3(3-0-6)	●	●		●				●		
Advanced Wireless Communications and Metering Infrastructure	090245429	3(3-0-6)	●	●		●		●	●			
Advanced RFIC Design	090245521	3(3-0-6)	●	●		●		●				
Analysis and Design of CMOS Analog Integrated Circuits	090245522	3(3-0-6)	●	●		●		●				
Analysis and Design of Digital Integrated Circuits	090245523	3(3-0-6)	●	●		●		●				
Semiconductor Devices for IC Designers	090245524	3(3-0-6)	●	●		●		●				
Design of CMOS Mixed-Signal Integrated Circuits	090245525	3(3-0-6)	●	●		●		●				

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Integrated Circuit Physical Design Methodologies	090245526	3(3-0-6)	●	●		●		●				
IC Testing and Design for Testability	090245527	3(3-0-6)	●	●		●		●				

Plan 2

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Compulsory Course												
Industrial Research Methodology	090245001	3(3-0-6)		●	●			●	●	●	●	●
Seminar in Electrical and Computer Engineering	090245005	3(3-0-6)						●	●		●	
Industrial Internship	090245099	4	●		●	●		●	●		●	
Master Project	090245096	6	●	●	●	●	●	●	●	●	●	●
Elective Course												
Information Theory and Source Coding	090245121	3(3-0-6)	●	●		●		●	●			
Mobile Radio Networks	090245122	3(3-0-6)	●		●			●				
Antenna Technology for Smart Devices	090245124	3(3-0-6)	●	●		●		●				
DSP Design Methodologies and Tools	090245125	3(3-0-6)	●	●		●		●	●			
Multimedia Communications	090245126	3(3-0-6)	●	●		●		●	●			
VLSI Architecture	090245127	3(3-0-6)	●	●		●		●	●			
Algorithm Design of Digital Receivers	090245128	3(3-0-6)	●	●		●		●	●			

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Cryptography	090245129	3(3-0-6)	●	●		●		●	●			
System and Processor Architectures for Mobile Devices	090245130	3(3-0-6)	●	●		●		●	●			
Estimation and Detection Theory	090245131	3(3-0-6)	●	●		●		●	●			
Special Problems in Communication Engineering	090245132	3(3-0-6)	●		●							
Software-Defined Radio and Cognitive Radio Network	090245133	3(3-0-6)	●		●							
Advanced Topics in Communications	090245134	3(3-0-6)	●		●							
Electromagnetic Field Theory for Smart Sensing Applications	090245135	3(3-0-6)	●	●		●		●				
Communication Protocols and Computer Networks	090245137	3(3-0-6)	●		●	●						
Broadband Wireless Communication Systems	090245138	3(3-0-6)	●	●		●		●	●			
Introduction to Radar Technology	090245139	3(3-0-6)	●	●		●		●				
Design of Radio-Frequency Integrated Circuits	090245140	3(3-0-6)	●	●		●		●				
Power System Reliability	090245222	3(3-0-6)	●	●		●				●		
Electrical Transients in Electrical Power Systems	090245223	3(3-0-6)	●	●		●				●		
Battery Storage Systems	090245224	3(3-0-6)	●	●						●		
Selected Topics in Electrical Power Engineering	090245227	3(3-0-6)	●	●						●		
Asset Management of Electrical Power System	090245229	3(3-0-6)	●	●		●				●		
Power System Monitoring, Control and Protection	090245230	3(3-0-6)	●	●		●				●		
Distributed Generation Systems	090245231	3(3-0-6)	●	●		●				●		
Electric Drive System	090245234	3(3-0-6)	●	●		●				●		

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Testing and Condition Diagnostic of High Voltage Equipment	090245235	3(3-0-6)	●	●		●				●		
Electric Power Generation Control and Protection	090245236	3(3-0-6)	●	●		●				●		
Selected Topics in Practical Computer Science	090245323	3(3-0-6)	●	●	●	●		●		●		
Network Security	090245331	3(3-0-6)	●	●	●	●						
Machine Vision	090245332	3(3-0-6)	●			●		●				
Digital Image Processing	090245334	3(3-0-6)	●			●				●		
Embedded Systems	090245336	3(3-0-6)	●			●		●				
Algorithmic Differentiation	090245342	3(3-0-6)	●	●	●							
Parallel Computing	090245343	3(3-0-6)	●	●	●	●						
Optimization	090245348	3(3-0-6)	●	●	●	●						
Applications of Digital Image Processing	090245349	3(3-0-6)	●			●				●		
Data Structures and Algorithms	090245350	3(3-0-6)	●	●	●	●						
Computer Architectures	090245351	3(3-0-6)	●		●	●		●	●	●	●	
Advanced Software Engineering	090245352	3(3-0-6)	●	●	●	●		●	●	●	●	
Advanced Database Systems	090245353	3(3-0-6)	●	●	●	●						
Cloud Computing	090245355	3(3-0-6)	●	●	●	●		●	●	●	●	
Programming Languages and Compilers	090245357	3(3-0-6)	●	●	●							
Selected Topics in Computer Engineering	090245360	3(3-0-6)	●	●				●		●		
Advanced Topics in Computer Engineering	090245361	3(3-0-6)	●	●				●		●		
Artificial Intelligence	090245362	3(3-0-6)	●		●		●		●		●	
Data Science and Machine Learning	090245363	3(3-0-6)	●	●	●	●		●		●		

Course	Code	Credits	PLO S1	PLO S2	PLO S3	PLO S4	PLO S5	PLO G1	PLO G2	PLO G3	PLO G4	PLO G5
Data Engineering	090245364	3(3-0-6)	●	●	●			●	●	●		
Information Network Analysis	090245365	3(3-0-6)	●	●	●			●		●		
Communication Systems for Smart Grids	090245423	3(3-0-6)	●	●		●		●	●			
Internet of Things	090245424	3(3-0-6)	●			●		●				
Cyber Security for Smart Grids	090245425	3(3-0-6)	●	●		●		●	●			
Advanced Topics in Smart Grid Engineering	090245426	3(3-0-6)	●	●		●		●	●			
Special Problems in Smart Grid Engineering	090245427	3(3-0-6)	●	●		●		●	●			
Modern Power Grid Operation and Control	090245428	3(3-0-6)	●	●		●				●		
Advanced Wireless Communications and Metering Infrastructure	090245429	3(3-0-6)	●	●		●		●	●			
Advanced RFIC Design	090245521	3(3-0-6)	●	●		●		●				
Analysis and Design of CMOS Analog Integrated Circuits	090245522	3(3-0-6)	●	●		●		●				
Analysis and Design of Digital Integrated Circuits	090245523	3(3-0-6)	●	●		●		●				
Semiconductor Devices for IC Designers	090245524	3(3-0-6)	●	●		●		●				
Design of CMOS Mixed-Signal Integrated Circuits	090245525	3(3-0-6)	●	●		●		●				
Integrated Circuit Physical Design Methodologies	090245526	3(3-0-6)	●	●		●		●				
IC Testing and Design for Testability	090245527	3(3-0-6)	●	●		●		●				