

## PO-PSO MAPPING

### COURSE: MTECH (EEE)

#### Power Systems Specialization

##### 1<sup>st</sup> Semester

EESA0048	Power System Analysis
EESD0049	Power System Dynamics-I
ECRM0042	Research Methodology and IPR
EEHP0050	High Power Converters
EEWS0051	Wind and Solar Systems
EEPD0052	Electrical Power Distribution System
EEMM0053	Mathematical Methods for Power Engineering
EES6033	Power System Steady State Analysis Lab
EERE6034	Renewable Energy Lab
LSRW0041	English for Research Paper Writing

##### 2<sup>nd</sup> Semester

EEDP0060	Digital Protection of Power System
EEPD0061	Power System Dynamics-II
EERP0062	Restructured Power Systems
EEAS0063	Advanced Digital Signal Processing
EEAS0064	Power System Transients
EEFC0065	FACTS and Custom Power Devices
EEPL6037	Power System Protection Lab
EIPA6038	Power Electronics Applications to Power Systems Lab
EEMP6041	Mini Project
EDCI0100	Constitution of India

##### 3<sup>rd</sup> Semester

EESC0058	SCADA system and Applications
EEMC0087	Advanced Micro-Controller Based Systems
EEPQ0088	Power Quality
EEWE0092	Waste to Energy
EEDI6050	Dissertation Phase-I

##### 4<sup>th</sup> Semester

EEDI6051	Dissertation Phase-II
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### **Programme Outcomes (POs) - Power Systems Specialization**

- PO1:** Ability to apply the enhanced knowledge in advanced technologies for modeling, analyzing and solving contemporary issues in power sector with a global perspective.
- PO2:** Ability to critically analyze and carry out detailed investigation on multifaceted complex Problems in area of Power Systems and envisage advanced research in thrust areas.
- PO3:** Ability to identify, analyze and solve real-life engineering problems in the area of Power Systems and provide strategic solutions satisfying the safety, cultural, societal and environmental aspects/ needs.
- PO4:** Ability for continued pursuance of research and to design, develop and propose theoretical and practical methodologies towards research and development support for the Power System infrastructure.
- PO5:** Ability to develop and utilize modern tools for modeling, analyzing and solving various Engineering problems related to Power Systems.
- PO6:** Willingness and ability to work in a team of engineers/ researchers with mutual understandings to take unsophisticated challenges, in the field of Power Systems, lead Model Curriculum of Engineering & Technology PG Courses and motivate the group to inculcate multidisciplinary and collaborative approach.
- PO7:** Willingness and ability to take up administrative challenges including the management of various projects of interdisciplinary nature and carry out the same in an efficient manner giving due consideration to societal, environmental, economical and financial factors.
- PO8:** Ability to express ideas clearly and communicate orally as well as in writing with other in an effective manner, adhering to various national and international standards and practices for the documentation and presentation of the contents.

### **Programme-Specific Outcomes (PSO) of M.Tech. in Electrical and Electronics Engineering (Specialization- Power Systems)**

- PSO1:** Ability to apply the enhanced knowledge in advanced technologies for modeling, analyzing and solving contemporary issues in power sector with a global perspective and to carry out detailed and independent investigation on multifaceted complex problems in the area of power systems and to envisage advanced research in allied thrust areas.
- PSO2:** Ability to critically analyze and identify real-life engineering problems in the area of power systems, and professionally and ethically provide strategic solutions satisfying the safety, societal, cultural, financial and environmental aspects/ needs with an eagerness for continued pursuance of research to design, develop or propose theoretical and practical methodologies towards the research and development support for the power system infrastructure.
- PSO3:** Ability to utilize and develop modern tools for modeling, analyzing and solving various scientific problems related to power systems and to take up technical/administrative challenges including

the management of various projects of interdisciplinary nature, working in a team with mutual understandings to take unsophisticated challenges leading and motivating the group to inculcate multidisciplinary and collaborative approach.

**PSO4:** Ability to express ideas clearly and communicate orally as well as in writing with others in an effective manner, adhering to various national and international standards and practices for the documentation and presentation of the contents.

## Control Systems Specialization

### 1<sup>st</sup> Semester

EEMC0054	Mathematical Methods in Control
EENS0055	Non-Linear Systems
ECRM0042	Research Methodology and IPR
ECRM0042 1.1	Robotics and Automation
EECL0056	Digital Control
EENC0057	Non Linear Control
EENC00571.2	Systems Biology
EESC0058	SCADA system and Applications
EEDA0059	Design Aspects in Control
EECT6035	Control Lab 1
EECL6036	Control Lab 2
LSRW0041	English for Research Paper Writing

### 2<sup>nd</sup> Semester

EEOC0066	Optimal Control Theory
EESF0067	Stochastic Filtering and Identification
EECS0068	Advance Control System
2.1	Advanced Robotics
EEAL0069	Adaptive Learning and Control
EEMR0070	Model Reduction in Control
EERC0071	Robust Control
2.2	Networked and Multi-agent Control Systems
2.3	Advanced DSP
EEAL6039	Advanced Control Lab 1
EEAC6040	Advanced Control Lab 2
EEMP6041	Mini Project
EDCI0100	Constitution of India

### **3<sup>rd</sup>Semester**

EEMD0089	Modeling and Control of Distributed Parameter Systems
EESC0090	Stochastic Control
EECM0091	Computational Methods
EEWE0092	Waste to Energy
EEDI6050	Dissertation Phase-I

### **4<sup>th</sup> Semester**

EEDI6051	Dissertation Phase-II
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### **Programme Outcomes(POs) – Control Systems Specialization**

At the end of Post Graduate Program, students will have

- PO1:** An ability to apply knowledge of mathematics, allied sciences, and engineering to problems related to System Engineering and Control.
- PO2:** An ability to conduct independent research both of an academic and applied nature in the area of mathematical and applied control theory.
- PO3:** An ability to use the techniques, skills, and modern control engineering tools necessary for engineering practice.
- PO4:** An ability to be conversant with practical control system.
- PO5:** Design, operation, control, and testing issues. An ability to communicate effectively to convey the ideas acquired through research.
- PO6:** Enhanced knowledge and skill set required in control.
- PO7:** Engineering program for problem solving so as to arrive at appropriate technological solutions.
- PO8:** An understanding of professional and ethical responsibility.

### **Programme-Specific Outcomes (PSO) of M.Tech. in Electrical and Electronics Engineering (Specialization- Control Systems)**

- PSO1:** Ability to apply the enhanced knowledge in advanced technologies for modeling, analyzing and solving contemporary issues in system and control engineering with a global perspective and to carry out detailed and independent investigation on multifaceted complex problems in the area of system engineering and control and to envisage advanced research in allied thrust areas.
- PSO2:** Ability to critically analyze and identify real-life engineering problems in the area of control systems; and professionally as well as ethically provide strategic solutions satisfying the safety, societal, cultural, financial and environmental aspects/ needs with an eagerness for continued pursuance of research to design, develop or propose methodologies, both of academic and applied nature, in the area of mathematical and applied control systems.
- PSO3:** Ability to use the techniques, skills and modern control engineering tools necessary for engineering practices and to take up technical/administrative challenges including the

management of various projects of interdisciplinary nature, while working in a team with mutual understandings to take unsophisticated challenges leading and motivating the group to inculcate multidisciplinary and collaborative approach.

**PSO4:** Ability to express ideas clearly and communicate orally as well as in writing with others in an effective manner, adhering to various national and international standards and practices for the documentation and presentation of the contents.

## Mapping of Courses to PO/PSO

Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
EESA0048	H	H	L	H	M				H	L	M	
EESD0049	H	M		M					H			
ECRM0042		L	H	H		L	M	H		H		H
EEHP0050	H		M	L	L				H	M	L	
EEWS0051			H	M	M	L				H	M	
EEPD0052		L	H	L						H		
EEMM0053	H	M	L	H	M				H	L	M	
EESS6033	H	M	M		H	H	L	M	H	M	H	M
EERE6034	M		H		H	H	L	M	M	H	H	M
LSRW0041			H	H			L	H		H		H
EEDP0060	M	H	H	L	M				M	H	M	
EEPD0061	H	M	L	M					H	L		
EERP0062	M	H	H	L					M	H		
EEAS0063	H	M	L	M					H	L		
EEAS0064	M	H	M	L					M	M		
EEFC0065		H	L	L	H					L	H	
EEPL6037		M	H		H	H	L	M		H	H	M
EEPA6038	M		H		H	H	L	M	M	H	H	M
EEMP6041	L	H	H	M	H	H		H	L	H	H	H
EDCI0100			H				M			H		
EESC0058	L	M	M	H	M				L	M	M	
EEMC0087	L	M		H					L			
EEPQ0088	L	H	L	H	M				L	L	M	
EEWE0092			H	M		M				H		
EEDI6050	H	H	H	H	H	M		H	H	H	H	H
EEDI6051	H	H	H	H	H	M		H	H	H	H	H
EEMC0054	H					M	M		H		M	
EENS0055	M					M			M			
ECRM0042 (II)		M		H		M			M			
EECL0056	H	M	H	M		H			M		M	

EENC0057	H	M		H		H			M			
EENC0057 (II)		L		M		M			H	H		
EEDA0059	M	H	H	M	H	H			H	M		
EECT6035				M			H	M	M		H	M
EECL6036				M			H	M	M		H	M
EEOC0066	H	H	H	M		H			H			
EESF0067	H	H		M		M			H			
EECS0068	H	H	H	M		H			H			
EECS0068 (II)	M	H		H		H			H			
EEAL0069	H	H		H		H						L
EEMR0070	M	H	M	M		M	L		M	H		L
EERC0071	H	H	M	M	H	H			H			
EERC0071 (II)	L	M	M	H	M	M		L		H		
EERC0071 (III)	M	H	M	M	M	M						
EEAL6039				M			H	M	M		H	
EEAC6040				M			H	M	M		H	
EEMD0089	M	H	M	H	M	M	M		H	M		
EESC0090	H	H	M	H	M	M				M		L
EECM0091	H	H		L	H	M			H	H		