



# SRI RAAJA RAAJAN COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Anna University)

1/6, 4th, Amravathi Village,  
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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### PROGRAMME OUTCOMES:

1. Apply the Mathematical knowledge and the basics of Science and Engineering to solve the problems pertaining to Electronics and Instrumentation Engineering.
2. Identify and formulate Electrical and Electronics Engineering problems from research literature and be able to analyze the problem using first principles of Mathematics and Engineering Sciences.
3. Come out with solutions for the complex problems and to design system components or process that fulfil the particular needs taking into account public health and safety and the social, cultural and environmental issues.
4. Draw well-founded conclusions applying the knowledge acquired from research and research methods including design of experiments, analysis and interpretation of data and synthesis of information and to arrive at significant conclusion.
5. Form, select and apply relevant techniques, resources and Engineering and IT tools for Engineering activities like electronic prototyping, modelling and control of systems and also being conscious of the limitations.
6. Understand the role and responsibility of the Professional Electrical and Electronics Engineer and to assess societal, health, safety issues based on the reasoning received from the contextual knowledge.
7. Be aware of the impact of professional Engineering solutions in societal and environmental contexts and exhibit the knowledge and the need for Sustainable Development.
8. Apply the principles of Professional Ethics to adhere to the norms of the engineering practice and to discharge ethical responsibilities.
9. Function actively and efficiently as an individual or a member/leader of different teams and multidisciplinary projects.
10. Communicate efficiently the engineering facts with a wide range of engineering community and others, to understand and prepare reports and design documents; to make effective presentations and to frame and follow instructions.
11. Demonstrate the acquisition of the body of engineering knowledge and insight and Management Principles and to apply them as member / leader in teams and multidisciplinary environments.
12. Recognize the need for self and life-long learning, keeping pace with technological challenges in the broadest sense.

### PROGRAM SPECIFIC OUTCOMES (PSOs):

1. Foundation of Electrical Engineering: Ability to understand the principles and working of electrical components, circuits, systems and control that are forming a part of power generation, transmission, distribution, utilization, conservation and energy saving. Students can assess the power management, auditing, crisis and energy saving aspects.
2. Foundation of Mathematical Concepts: Ability to apply mathematical methodologies to solve problems related with electrical engineering using appropriate engineering tools and algorithms.
3. Computing and Research Ability: Ability to use knowledge in various domains to identify research gaps and hence to provide solution which leads to new ideas and innovations.



  
PRINCIPAL

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## COLLEGE OF ENGINEERING AND TECHNOLOGY

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### EE8391 ELECTROMAGNETIC THEORY

#### COURSE OUTCOMES:

CO1: Visualize and explain Gradient, Divergence, and Curl operations on electromagnetic vector field and identify the electromagnetic sources and their effects.

CO2: Compute and analyse electrostatic fields, electric potential, and energy density along with their applications.

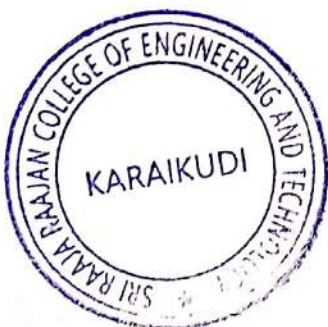
CO3: Compute and analyse magneto static fields, magnetic flux density, vector potential along with their applications.

CO4: Explain different methods of emf generation and Maxwell's equations

CO5: Explain the concept of electromagnetic waves and characterizing parameters.

#### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	3	1	-	-	-	1	3	2	1
CO2	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO3	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO4	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO5	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
Avg	3	2	1	2	-	-	1.4	1	-	-	-	1	3	2	1



  
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## EE830 ELECTRICAL MACHINES – I

### COURSE OUTCOMES:

- CO1: Apply the laws governing the electromechanical energy conversion for singly and multiple Excited systems.
- CO2: Explain the construction and working principle of DC machines.
- CO3: Interpret various characteristics of DC machines.
- CO4: Compute various performance parameters of the machine, by conducting suitable tests.
- CO5: Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.
- CO6: Describe the working principle of auto transformer, three phase transformer with Different types of connections.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	1	-	-	1	-	-	-	1	3	2	2
CO2	3	3	1	1	1	-	-	1	-	-	-	1	3	1	1
CO3	3	3	1	1	1	-	-	1	-	-	-	1	3	1	1
CO4	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
CO5	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
CO6	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
Avg	3	3	1	1	1	-	-	1	-	-	-	1	3	3	3



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## EE8402 TRANSMISSION AND DISTRIBUTION

### COURSE OUTCOMES:

CO1: Understand the structure of power system, computation of transmission line parameters for different configurations.

CO2: Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona on line performance.

CO3: Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system.

CO4: Design the underground cables and understand the performance analysis of underground cable.

CO5: Understand the modelling, performance analysis and modern trends in distribution system.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	-	-	1	-	-	-	-	3	1	1
CO2	3	2	1	1	-	1	-	2	-	-	-	-	3	2	1
CO3	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
CO4	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
CO5	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
Avg	2.8	1.8	1	1		1	-	1.8					3	2.4	1



  
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**EE8403 MEASUREMENTS AND INSTRUMENTATION**

**COURSE OUTCOMES:**

CO1: Ability to understand the fundamental art of measurement in engineering.

CO2: Ability to understand the structural elements of various instruments.

CO3: Ability to understand the importance of bridge circuits.

CO4: Ability to understand about various transducers and their characteristics by experiments.

CO5: Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.

**MAPPING OF COs WITH POs AND PSOs:**

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	-	3	2	-	2	-	-	-	3	3	3	3
CO2	3	2	3	2	-	-	-	-	-	3	-	3	3	3	3
CO3	3	2	3	-	3	2	-	-	-	-	-	3	3	3	3
CO4	3	2	3	-	-	-	-	2	-	-	-	-	3	3	3
CO5	3	2	3	2	3	-	-	-	-	3	-	3	3	3	3
Avg	3	2	3	2	3	2	-	2	-	3	-	3	3	3	3



  
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## EE8401 ELECTRICAL MACHINES – II

### COURSE OUTCOMES:

CO1: Ability to understand the construction and working principle of Synchronous generator.

CO2: Ability to understand the construction and working principle of Synchronous Motor.

CO3: Ability to understand the construction and working principle of Three Phase Induction Motor

CO4: Acquire knowledge about the starting and speed control of induction motors.

CO5: To gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO2	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO3	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO4	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO5	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO6	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
Avg	3	3	1.6	2.3	2.6	-	-	1	-	-	-	-	3	3	2



  
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**EE8551 MICROPROCESSORS AND MICROCONTROLLERS**

**COURSE OUTCOMES:**

CO1: Ability to write assembly language program for microprocessor and microcontroller

CO2: Ability to design and implement interfacing of peripheral with microprocessor and microcontroller

CO3: Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.

CO4: Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.

CO5: Ability to understand and appreciate advanced architecture evolving microprocessor field

**MAPPING OF COs WITH POs AND PSOs:**

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO2	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO3	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO4	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO5	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO6	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
Avg	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3



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## EE8552 POWER ELECTRONICS

### COURSE OUTCOMES:

CO1: Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS

CO2: Analyze the various uncontrolled rectifiers and design suitable filter circuits

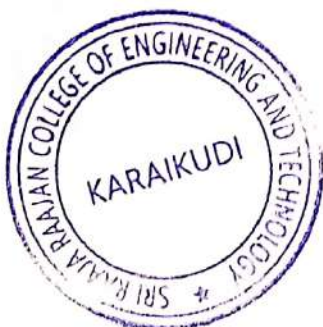
CO3: Analyze the operation of the n-pulse converters and evaluate the performance parameters

CO4: Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.

CO5: Understand the operation of AC voltage controllers and its applications.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	-	-	2	1	-	-	3	3	3	3	3
CO2	3	3	3	3	-	-		1	-	-	-	-	3	3	3
CO3	3	3	3	3	-	-	2	1	-	-	2	-	3	3	3
CO4	3	3	3	3	-	-	1	1	-	-	2	3	3	3	3
CO5	3	3	3	3	-	-	1	1	-	-	2	3	3	3	3
Avg	3	3	3	3	-	-	1.5	1	-	-	2.25	3	3	3	3



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## EE8602 PROTECTION AND SWITCHGEAR

### COURSE OUTCOMES:

CO1: Understand and select proper protective scheme and type of earthing.

CO2: Explain the operating principles of various relays.

CO3: Suggest suitable protective scheme for the protection of various power system apparatus.

CO4: Analyze the importance of static relays and numerical relays in power system protection.

CO5: Summarize the merits and demerits and application areas of various circuit breakers.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	2	1	2	1	1	1	1	2	-	3	1	-
CO2	3	1	1	2	1	2	1	1	1	1	2	-	3	1	-
CO3	3	1	1	2	1	2	1	1	1	1	2	-	3	2	-
CO4	3	1	1	2	1	2	1	1	1	1	2	-	3	2	1
CO5	3	1	1	2	2	2	1	1	1	1	2	-	3	1	1
Avg	3	1	1	2	1.2	2	1	1	1	1	2	-	3	1.4	1



  
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**EE8691 EMBEDDED SYSTEMS**

**COURSE OUTCOMES:**

- CO1: The hardware functional and software strategies required to develop various embedded systems  
CO2: The basic differences between various Bus communication standards  
CO3: The incorporation of the interface as Interrupt services  
CO4: The various scheduling algorithms through a Real-time operating system.  
CO5: The various embedded concepts for developing automation applications.

**MAPPING OF COs WITH POs AND PSOs:**

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	1	-	-	-	-	-	-	-	2	2	3
CO2	3	2	3	2	1	-	-	-	-	-	-	-	2	1	3
CO3	3	3	2	3	1	-	-	-	-	-	-	-	2	1	2
CO4	3	2	2	2	1	-	-	-	-	-	-	-	1	2	3
CO5	3	2	1	2	1	-	-	-	1	-	-	-	3	1	2
Avg	3	2.2	2	2.2	1	-	-	-	1	-	-	-	2	1.4	2.6



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## EE8701 HIGH VOLTAGE ENGINEERING

### COURSE OUTCOMES:

CO1: Explain various overvoltages and its effects on power systems.

CO2: Understand the breakdown phenomena in different medium under uniform and non-uniform fields.

CO3: Explain the methods of generating and measuring High DC, AC, Impulse voltage and currents.

CO4: Suggest and Conduct suitable HV testing of Electrical power apparatus as per Standards

CO5: Explain the Industrial Applications of Electrostatic Fields.

### MAPPING OF COs WITH POs AND PSOs:

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	1	-	-	-	-	-	-	-	-	3	-	-
CO3	2	2	3	1	-	-	-	-	-	-	2	3	3	2	-
CO4	1	2	3	1	-	-	-	1	1	-	-	3	3	2	-
CO5	2	2	1	-	-	2	-	-	-	-	2	-	3	-	2
Avg	2	2	2.33	1	-	2	-	1	1	-	2	3	3	2	2



  
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