



# **RSR RUNGTA COLLEGE OF ENGINEERING & TECHNOLOGY**

Rungta Knowledge City

Kohka – Kurud Road, Bhilai (C.G.)-490024

Recognized by AICTE, New Delhi and Affiliated to CSVTU, Bhilai.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Mathematics – III**

**Semester: III**

**Course Code : B000311(014)**

Course Objectives:

- CO1. After studying the contents of the syllabus in detail the students will be able to: Define (mathematically) unit step unit impulse
- CO2. Laplace transform its properties, inverse and applications to solve ordinary differential equations and find Numerical solution of differential equations, which may be arising due to mathematical modelling based on engineering problems.
- CO3. These Mathematical topics will make them equipped to prepare for higher studies through competitive examinations

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Electrical Machines – I**

**Semester: III**

**Course Code : B024313(024)**

- CO1: Calculate various magnetic circuit variables and app for force/torque generation.
- CO2: Develop equivalent circuit, phasor diagram of transformer and use them for performance analysis.
- CO3: Analyze different type of connections of single and three phase transformers.
- CO4: Appreciate various tests on transformer and DC machines.
- CO5: Analyze the performance and operation of transformer and DC machines.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Electrical Circuit Analysis**

**Semester: III**

**Course Code : B024312(024)**

CO1: Evaluate the responses by applying network theorems to electrical circuits.

CO2: Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).

CO3: Obtain and analyze the transient and steady-state response of electrical circuits.

CO4: Obtain and analyze the response of electrical circuits using Laplace Transform for standard inputs.

CO5: Analyze two port circuit behavior with different parameters.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Digital Electronics**

**Semester: III**

**Course Code : B0324314(024)**

CO1: Understand working of logic gates.

CO2: Design and implement Combinational logic circuits.

CO3: Design and implement Sequential logic circuits.

CO4: Analyze Analog to Digital conversion and Digital to Analog Convertor circuit.

CO5: Construct a small memory subsystem.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Numerical Methods**

**Semester: III**

**Course Code : B032415(024)**

1. CO1: Determine roots of polynomials by various methods.
2. CO2: Solve system of equations by numerical methods.
3. CO3: Estimate polynomial values by various numerical methods.
4. CO4: Determine integration and integration from tabulated values of a function.
5. CO5: Solve ordinary differential equations by numerical methods.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Electromagnetic Fields**

**Semester: IV**

**Course Code : B024411(024)**

1. CO1: Compute electric field intensity for various charge distribution.
2. CO2: Compute electric potential, potential difference and energy density in the electrostatic field.
3. CO3: Use the solution of Laplace and Poisson's equations for the calculation of potential and electric field intensity.
4. CO4: Compute magnetic field intensity, magnetic flux density, force and torque for various current carrying elements.
5. CO5: Analyze the time varying electric and magnetic field using Maxwell's equations under time varying conditions.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Power Systems – I (Apparatus and Modeling)

**Semester: IV**

**Course Code :** B024412(024)

1. CO1: Describe the concept of national grid and smart grid.
2. CO2: Calculate various line parameters for different configurations of transmission lines.
3. CO3: Perform the analysis of short, medium and long transmission lines.
4. CO4: Solve the problems related to insulation resistance and capacitance calculation in underground cables.
5. CO5: Calculate energy, power, reflection and refraction coefficients for different terminations of transmission lines.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Electrical Machines – II

**Semester: IV**

**Course Code :** B024413(024)

1. CO1: Apply the concepts of AC machine windings.
2. CO2: Analyze the concepts of rotating magnetic fields and operation of three phase Induction Motors.
3. CO3: Understand the working of Single-phase induction motors.
4. CO4: Analyze the performance, and operation of A.C Commutator motor and special motors.
5. CO5: Analyze the performance, characteristics and operation of ac machines.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Signals and Systems

**Semester: IV**

**Course Code :** B024414(024)

1. CO1: Understand the concepts of continuous time and discrete time systems.
2. CO2: Analyze the behavior of continuous time and discrete time systems.
3. CO3: Evaluate and analyze the solution of systems using z-Transforms.
4. CO4: Analyze and design systems in complex frequency domain.
5. CO5: Understand sampling theorem and its implications.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Analog Electronics

**Semester: IV**

**Course Code :** B024415(024)

1. CO1: Design and analyze various rectifier circuits and understand the characteristics of transistors.
2. CO2: Design and analyze amplifier circuits.
3. CO3: Understand the functioning of op-amp.
4. CO4: Analyze the linear applications of op-amp.
5. CO5: Design op-amp based circuits for various operations.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Control System Engineering

**Semester: V**

**Course Code :** C024511(024)

CO1: Classify, model and obtain simplified representation in blocks and signal flow graphs.

CO2: Appreciate the role of feedback in the systems

CO3: Explain the working of different control devices like Servo Motor, Synchros and Tacho Generator

CO4: Analyze the physical systems in time domain and Construct the root locus plot.

CO5: Determine the stability of systems using frequency response techniques.

CO6: Design different compensators for system.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Power System Analysis

**Semester: V**

**Course Code :** C024512(024)

CO1: Develop reactance diagram and estimate fault current for three phase short circuit fault on Power System.

CO2: Develop sequence networks of power system using the sequence networks of different components like transformers, transmission line, alternators etc.

CO3: Evaluate the fault currents for different unsymmetrical faults on Power System.

CO4: Apply numerical methods to analyze a power system in steady state

CO5: Apply stability criterion to analyze stability of Power Systems



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Power Electronics

**Semester: V**

**Course Code :** C024513(024)

CO1: Describe and compare the operating characteristics of different power semiconductor switching devices.

CO2: Analyze the operation and performance of different types AC to DC Converters.

CO3: Analyze the operation and performance of different types of DC to DC Converters.

CO4: Analyze the operation and performance of different types DC to AC Converters

CO5: Analyze the operation and performance of different types AC to AC Converters.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Electrical  
Measurements & Measuring Instruments

**Semester: V**

**Course Code :** C024514(024)

CO1: Make use of suitable methods for the measurement of resistance.

CO2: Derive the balance equations of an AC bridge and evaluate unknown parameters by balancing the bridge.

CO3: Perform amplitude, frequency, and phase measurements using an oscilloscope and to make use of Lissajous figures for phase and frequency measurements.

CO4: Distinguish between the types of measuring instruments and use them for the measurement of Electrical quantities.

CO5: Test and calibrate ammeter, voltmeter, and wattmeter and energy meter.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : : Power Plant Engineering  
(Professional Elective)**

**Semester: V**

**Course Code : C024533(024)**

CO1: Illustrate the working of Coal Based Thermal Power Plants

CO2: Explain the Gas Turbine and Combined Cycle Power Plants

CO3: Explain the functioning of Nuclear Power Plants

CO4: Distinguish and classify Renewable Energy sources.

CO5 Evaluate related to plant economics, and propose pollution control techniques

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Instrumentation Techniques**

**Semester: VI**

**Course Code : C024611(024)**

CO1: Distinguish between CT, PT and Evaluate error presents in instruments

CO2: Measure of linear displacement, Angular displacement, pressure, force, temperature, strain by Transducers.

CO3: Make use of DAS and about varies Recorders used in industries.

CO4: Explain the architecture and I/O module of PLC.

CO5: Develop and Execute Ladder Programming in PLC.





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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Switchgear & Protection

**Semester: VI**

**Course Code :** C024612(024)

CO1: Explain working of various protective relays.

CO2: Design suitable Protection Schemes for Alternators.

CO3: Design the required Protection Schemes for various Transformers, Feeders & Transmission Lines according to their usage.

CO4: Design various Comparators for designing various relays.

CO5 Analyze various types of the circuit breakers, the arc quenching phenomena and the protection against over voltages.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Microprocessor and its applications

**Semester: VI**

**Course Code :** C024613(024)

CO1: Explain the architecture and Software model of Intel's 8085 8-bit Microprocessor.

CO2: Develop and Execute 8085 assembly level programs and manually translate them to Machine Language Programs

CO3: Design interfacing circuit for memory and I/Os using MSI ICs.

CO4: Apply 8085 interrupt system to interface peripheral and IOs in interrupt driven data transfer mode.

CO5: Select various peripheral ICs like 8255, 8155, 8256, 8253, 8254 with 8085 Microprocessor.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Hybrid Electric Vehicles

(Professional Elective-II)

**Semester: VI**

**Course Code :** C024633(024)

CO1: Choose a suitable drive scheme for developing an electric hybrid vehicle depending on resources

CO2: Illustrate and explain basic schemes of electric vehicles and hybrid electric vehicles.

CO3: Choose proper energy storage systems for vehicle applications

CO4: Classify various communication protocols and technologies used in vehicle networks.

CO5: Interpretation of different energy storage system.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Energy Management & Audit

**Semester: VI**

**Course Code :** C000602(094)

CO1: Understanding basics of demand side management

CO2: Mechanisms (technical, legal or financial) that influence energy consumption

CO3: Recognizing opportunities for increasing rational use of energy

CO4: Learning the basics of energy auditing with application on different sectors.

CO5: To carryout energy accounting and balancing



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Electric Drives

**Semester: VII**

**Course Code :** D024711(024)

CO1: Illustrate the structure of Electric Drive systems and their role in various applications.

CO2: Design ratings on the basis of heating and cooling and Categorize torque, speed and position controller of motor drives.

CO3: Explain the drive motor characteristics.

CO4: Classify Speed control of DC and AC machines using Power Electronics.

CO5: Explain operation of tractions

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Power Apparatus System

**Semester: VII**

**Course Code :** D024712(024)

CO1: Acquire knowledge of overhead line insulator, string efficiency and sag and tension calculation of transmission line.

CO2: Describe different types of Distribution system.

CO3: Explain about various types of grounding system.

CO4. Explain insulation coordination and surge protection.

CO5. Correlate basic concept of reliability with Reliability of transmission and Distribution System.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : High Voltage Engineering**

**Semester: VII**

**Course Code : D024713(024)**

CO1: Illustrate the various breakdown theories for gaseous, liquid and solid dielectric.

CO2: Describe the generating methods for high DC, AC, and impulse voltages

CO3: Summarize the measuring methods for high DC, AC and impulse Voltages

CO4: Summarize the fundamentals of High Voltage Test Techniques.

CO5: Analyze the dynamic response of high voltage measurement systems.

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Power Apparatus System**

**Semester: VII**

**Course Code : D024712(024)**

CO1: Acquire knowledge of overhead line insulator, string efficiency and sag and tension calculation of transmission line.

CO2: Describe different types of Distribution system.

CO3: Explain about various types of grounding system.

CO4: Explain insulation coordination and surge protection.

CO5: Correlate basic concept of reliability with Reliability of transmission and Distribution System.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Micro Controller & Embedded System

**Semester: VII**

**Course Code :** D024736(024)

CO1: Program, build and test a microcontroller system.

CO2: Interface a microcontroller system to user controls and other electronic systems.

CO3: Describe the internal architecture of microcontroller systems, including counters, timers, ports, and memory

CO4: Understand principles of embedded systems design

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Non Conventional Energy Sources

**Semester: VII**

**Course Code :** D000724(025)

CO1: Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells.

CO2: Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation.

CO3: Explore the concepts involved in wind energy conversion system by studying its components, types and performance.

CO4: Illustrate ocean energy and explain the operational methods of their utilization.

CO5: Acquire the knowledge on geothermal energy.



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Installation Maintenance and Testing  
of Electrical Equipment

**Semester: VIII**

**Course Code :** D024811(024)

CO1: Categorize and describe the site management activities.

CO2: Categorize various transformer maintenance activities

CO3: Categorize various Switchgear and Circuit Breaker maintenance activities

CO4: Categorize various electrical rotating machines maintenance activities.

CO5: Illustrate hotline maintenance and electrical fire safety

## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name :** Flexible AC Transmission System  
(Elective)

**Semester: VIII**

**Course Code :** D024832(024)

CO1: Gain the basic knowledge of FACTS controller and its types.

CO2: Explain the operation of Voltage and Current Source Convertors.

CO3: Describe the operation of Static Shunt , Static Series and Combined Compensators



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## **Department of Electrical Engineering**

### **Course Outcomes**

**Programme: Bachelor of Technology**

**Course Name : Management Concepts & Technique**

**Semester: VIII**

**Course Code : D000823(076)**

CO1: To develop skill of project planning and management amongst students.

CO2: To understand the significance of human resource and its proper utilization for the growth of organization.

CO3: Students will learn to minimize the project cost by using effective management technique.