# SCIENT INSTITUTE OF TECHNOLOGY

**Khanapur (vi), Ibrahimpatnam, R.R. District – 501506**
**(Affiliated to JNTUH, Hyderabad & Approved by AICTE, New Delhi)**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

**Academic year 2017-2018**

**Course outcomes**

**YEAR: I** **Semester: I** **Regulation: R16**

**Course Name: Mathematics -I** **Course Code: MA101BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Solve the first and higher order differential equations by various methods choosing the right method in different engineering problems | L2 |
| **CO2** | Write the matrix representation of a set of linear equations and to analyze solutions of system of equations | L2 |
| **CO3** | Find the Eigen values and Eigen vectors which come across under linear transformations | L2 |
| **CO4** | Find the extreme values of functions of two variables with/ without constraints | L2 |
| **CO5** | Formation of the partial differential equations and solving the first order equations and standard type equations | L5 |

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**Course Name: Engineering Chemistry** **Course Code: CH102BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | **Generalize knowledge of atomic, molecular and electronic changes, band theory related to conductivity** | **L3** |
| CO2 | Predict knowledge about importance of water and understanding its treatments methods | L4 |
| CO3 | Explain the principles and concepts of electrochemistry, Corrosion. | L2 |
| CO4 | State the Skills to get clear concepts on basicspectroscopy and application to medical and other fields. | L1 |
| CO5 | Determine the configurational and conformational analysis of molecules and reaction mechanisms. | L4 |

**Course Name: Engineering Physics-I** **Course Code: PH103BS**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Identify the importance of light phenomena in thin films and resolution. | L2 |
| CO2 | Detect the principle and working of various laser systems. | L4 |
| CO3 | Examine the principle and working of various optical fibers and light propagation through optical fibers | L4 |
| CO4 | Distinguish various crystal systems and understand atomic packing factor | L4 |
| CO5 | Relate the various defects in crystals | L3 |

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**Course Name: Professional Communication in English** **Course Code: EN104HS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Improve Techniques for Effective Reading and writing and to be aware of Logical, Lexical and Grammatical Devices | L1 |
| CO2 | Comprehend the Technical vocabulary , Principles and Practice and to respond appropriately | L2 |
| CO3 | Analysis the Good Comprehension Skills & Techniques | L4 |
| CO4 | Demonstrate Steps in Effective Precis Writing | L3 |
| CO5 | Enhance the proficiency in the acquisition of language skill to Communicate confidently in formal and informal contexts. | L1 ,L4 |

**Course Name: Engineering Mechanics** **Course Code: ME105ES**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Relate the basic force system. Determine the equilibrium of a particle in space using principle of laws of mechanics. | L3 |
| CO2 | Apply the principles of particle kinematics; compute the equilibrium of rigid bodies in two dimensions and in the three dimensions. | L3 |
| CO3 | Detect the concept of particle dynamics; calculate the principle moment of inertia of plane areas And Mass Moment of inertiaof composite sections. Find the location of centroid and calculate moment of inertia of a givensection. | L4 |
| CO4 | Evaluate the general equations of equilibrium. Understand the kinetics and kinematics of a body undergoing rectilinear,curvilinear, rotatory motion and rigid body motion | L4 |
| CO5 | Estimate the methods of minimization of potential energy solve the problems of simple system with sliding friction and calculate linear and angular acceleration of moving body in general plane motion. Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration. | L3 |

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**Course Name: Basic Electrical &Electronics Engineering** **Course Code: EE106ES**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Analyse the concept of electrical circuits and its components | L4 |
| CO2 | Illustrate and solve problems of electrical circuits using network laws and theorems | L2 |
| CO3 | Describe the concepts of diodes and transistors | L2 |
| CO4 | Demonstrate the knowledge of various configurations, characteristics and applications | L3 |
| CO5 | Identify and characterize diodes and various types of transistors | L2 |

**Course Name: English Language Communication Skills Lab** **Course Code: EN107HS**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Understanding the nuances of English speech sounds, word accent, intonation and rhythm | L1,L3 |
| CO2 | Identify the strategies in communication through audio- visual experience and group activities | L2,L4 |
| CO3 | Improve the fluency in spoken English and Neutralize their mothertongue influence | L1,L2,L3 |
| CO4 | Enhance Listening skills by listening and Practicing to eminent personalities' Presentations/Speeches | L1,L2,L3,L5 |
| CO5 | Use the language appropriately & with clarity and confidence which in turn enhances their employability skills for public speaking and Interviews | L1,L3 |

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**Course Name: Engineering Workshop** **Course Code: ME108ES**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Analyze machine tools and their operations | L4 |
| CO2 | Recognize manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding | L4 |
| CO3 | Identify and apply suitable tools for different trades of Engineering processes includingdrilling, material removing, measuring, chiseling. | L2 |
| CO4 | Apply basic electrical engineering knowledge for house wiring practice | L3 |


**YEAR: I** **Semester:II** **Regulation: R16**

**Course Name: Engineering Physics-II** **Course Code: PH201BS**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Recognize the importance of behavior of a particle quantum mechanically | L4 |
| CO2 | Determine the concentration estimation of charge carriers in semi conductors | L4 |
| CO3 | Describe various magnetic dielectric properties and apply them in engineering applications. | L2,L3 |
| CO4 | Describe magnetic properties of the materials and know the basic principles of Superconductors. | L2 |
| CO5 | Identify the basic principles and applications of nano materials | L2 |

**Course Name: Mathematics -II** **Course Code: MA202BS**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxanomy Level |
|---|---|---|
| **CO1** | Use Laplace transform techniques for solving DE's | L2 |
| **CO2** | Evaluate integrals using Beta and Gamma functions | L4 |
| **CO3** | Evaluate multiple integrals and can apply these concepts to find areas, volumes,<br>moment of inertia etc of regions on a plane or in space | L4 |
| **CO4** | Find Gradient, Divergence, Curl and their physical and geometrical interpretation, Laplacian operator, Vector identities | L2 |
| **CO5** | Evaluate the line, surface and volume integrals and converting them from one to another | L2 |


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**Course Name: Mathematics -III** **Course Code: MA203BS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Differentiate among random variables involved in the probability models which are useful for all branches of engineering | L4 |
| **CO2** | Calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a large data | L4 |
| **CO3** | Solve the tests of ANOVA for classified data | L3 |
| **CO4** | Find the root of a given algebraic and transcendental equations andsolution of a system of equations | L 2 |
| **CO5** | Fit a curve for a given data and ,find the numerical solutions for a given first order initial value problem | L2 |

**Course Name: Computer Programming in C** **Course Code: CS204ES**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Demonstrate the basic knowledge of computer hardware and software. | L3 |
| **CO2** | State algorithms for solving problems. | L1 |
| **CO3** | Draw flowcharts for solving problems. | L5 |
| **CO4** | Code a given logic in C programming language. | L5 |
| **CO5** | Use knowledge in using C language for solving problems. | L3 |

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**Course Name: Engineering Graphics** **Course Code: ME205ES**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Discuss about section and orthographic views of engineering components | L3 |
| CO2 | Draw the projection points ,lines and planes | L5 |
| CO3 | Classify solids and projection of solids at different positions | L4 |
| CO4 | Outline the section views of solids and development of surfaces | L2 |
| CO5 | Draw the isometric projection and perspective views of object / solids Apply the concept of drawing in practical application | L5 |

**Course Name: Engineering Chemistry Lab** **Course Code: CH206BS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| *CO1* | Determination of parameters like hardness and chloride content in water. | L4 |
| CO2 | Estimation of rate constant of a reaction from concentration – time relationships | L3 |
| CO3 | Determination of physical properties like adsorption and viscosity. | L4 |
| CO4 | Calculation of Rf values of some organic molecules by TLC technique. | L4 |
| CO5 | Prepare the drug molecules and check the purity of organic molecule. | L5 |

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**Course Name: Engineering Physics Lab** **Course Code: PH207BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Develop various Experimental skills which is very essential for an Engineering student | L5 |
| CO2 | Use the various tools like Screw gauge, Vernier Calipers, Physical Balance, Spectrometer and Microscope | L3 |
| CO3 | Determine the concept of error and its analysis. Develop experimental skills to design new experiments in Engineering | L4 |
| CO4 | compare the theory and correlate with experiment | L5 |

**Course Name: Computer Programming in C Lab** **Course Code: CS208ES**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| **CO1** | Design and test programs to solve mathematical and scientific problems. | L5 |
| **CO2** | List the structured programs using control structures. | L1 |
| **CO3** | List the Structured programs using functions. | L1 |
| **CO4** | Develop the structured programs using sorting methods. | L5 |
| **CO5** | Produce Programs in C using structured programming approach tosolve the problems. | L5 |

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**DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**

## Academic year 2017-2018

### Course outcomes

**YEAR : II  Semester: I  Regulation:R16**

**Course Name: Mathematics-IV  Course Code: MA301BS**

**At the end of this course each student should be able to:**

| S. No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the complex functions with reference to their analyticity, integration. | L4 |
| CO2 | Determine Cauchy's integral theorem find the Taylor's and Laurent's series expansion of complex functions | L4 |
| CO3 | Prepare The bilinear transformation | L5 |
| CO4 | Explain any periodic function in term of sine's and cosines | L2 |
| CO5 | Compute non-periodic function as integral representation | L3 |

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**Course Name: Electromagnetic Fields** **Course Code: EE302ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply vector calculus to static electric – magnetic fields. | L3 |
| CO2 | Compute the force, potential & Energy for different charge & current configurations and Evaluate capacitance in static electric field. | L3 |
| CO3 | Solve Electromagnetic Relation using Maxwell Formulae. | L4 |
| CO4 | Compute the force, potential & Energy for different charge & current configurations and Evaluate Inductance. | L3 |
| CO5 | Analyze moving charges on Magnetic fields | L4 |


**Course Name: Electrical Machines-I** **Course Code: EE303ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | classify different parts of a DC machine & understand DC generator operation, methods of excitation. | L1 |
| CO2 | Understand the operation of DC motor, Torque equation ,characteristics of different types of DC motors | L2 |
| CO3 | Analyze different testing methods to predetermine the efficiency of DC machines. | L3 |
| CO4 | classify different parts of a transformer & understand its operation. | L4 |
| CO5 | Perform the tests for Transformers ,understand the auto-transformer and poly phase transformers | L6 |


**Course Name: Network Theory** **Course Code: EE304ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze the Electrical Circuits with the concept of Network topology and Apply the concepts of Magnetic circuit & Analyze Magnetic circuits | L4 |
| CO2 | Understand the importance of three phase circuits and analyze the three phase circuits | L2 |
| CO3 | Analyze the transient behaviour of electrical networks for various excitations | L4 |
| CO4 | Calculate the various network parameters for the given two port networks | L4 |
| CO5 | design of various filters. | L5 |


**Course Name: Electronic Circuits** **Course Code: EE305ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply the knowledge of BJT to design practical amplifier circuits. | L3 |
| CO2 | Design electronic sub systems such as feedback amplifiers, oscillators to meet the required specifications. | L5 |
| CO3 | Design of power amplifiers | L5 |
| CO4 | Calculate linear and non-linear wave shaping circuits with different inputs | L4 |
| CO5 | Analyze multi vibrators using transistors and switching characteristics of devices. | L4 |


**Course Name: Electrical Machines Lab - I** **Course Code: EE306ES**

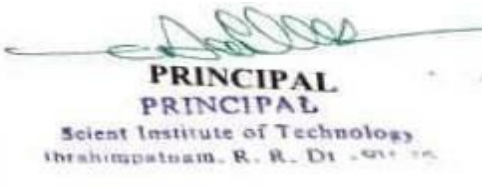
**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Illustrate performance characteristics of DC Generators | L2 |
| CO2 | Identify performance characteristics of DC Motors | L3 |
| CO3 | Determine starting and speed control methods of different DC Machines. | L4 |
| CO4 | Assess the efficiency of DC machines using different testing methods. | L6 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |


**Course Name: Electronic Devices & Circuits Lab** **Course Code: EC306ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Determine real-time problems. | L4 |
| CO2 | Compute frequency response of various amplifiers. | L3 |
| CO3 | Determine starting and speed control methods of different DC Machines. | L4 |
| CO4 | Assess the efficiency of DC machines using different testing methods. | L6 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |

**Course Name: Networks Lab** **Course Code: EE307ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze complex DC and AC linear circuits | L4 |
| CO2 | Apply concepts of electrical circuits across engineering | L3 |
| CO3 | Evaluate response in a given network by using theorems | L4 |
| CO4 | Design, construct & analyze oscillator circuits to generate signals in various frequency ranges | L5 |
| CO5 | Classify different types of power amplifiers for practical applications of desired specifications | L4 |


**Course Name: Environmental Science and Technology** **Course Code: MC300ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development | L4 |
| CO2 | Illustrate ecosystem and also about its functions like Food chain, Ecological pyramids etc., | L3 |
| CO3 | Classify different types of resources like land, water, mineral and energy and also about the effects of environment by the usage of the resources. | L4 |
| CO4 | Analyze the ecosystem diversity, its values and also about the importance of the endemic species. | L4 |
| CO5 | Compute the information about EIA-Environmental Impact Assessment in which the student will get the knowledge about the projects and the process involved in getting the projects. | L3 |

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**YEAR II** **SEMESTER:II** **REGULATION:R16**

**Course Name: Switching Theory & Logic Design** **Course Code: EC401ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray and BCD. | L3 |
| CO2 | Perform simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions. | L6 |
| CO3 | design and Analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits. | L5 |
| CO4 | Design small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits. | L5 |
| CO5 | Evaluate larger sequential circuits using FSM such as Melay and Moore. | L4 |

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**Course Name: Power Systems - I** **Course CodeEE402ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze the layout of hydro power plant, thermal power station, Nuclear power plant and gas power plant and explain its operation | L3 |
| CO2 | Analyze the layout of hydro power plant and explain its operation and types of hydraulic turbines | L3 |
| CO3 | Describe A.C. and D.C. distribution systems and its voltage drop calculations | L2 |
| CO4 | compare air insulated and gas insulated substations. | L4 |
| CO5 | Illustrate various economic aspects of the power plant erection, operation and different tariff methods | L3 |

**Course Name: Electrical Machines – II** **Course Code: EE403ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Describe the construction and working of 3-φ Induction machines | L2 |
| CO2 | Compute the characteristics and different speed control methods of 3-φ Induction motor. | L3 |
| CO3 | Perform the construction and working of Alternator and Analyze different methods to find the regulation of alternators.. | L6 |
| CO4 | Determine the parallel operation of alternators and operation of synchronous motor | L4 |
| CO5 | Analyze operation of different 1-φ Induction motors | L4 |

**Course Name: Control Systems** **Course Code: EE404PC**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze the operation of open loop and closed loop systems, transfer functions for electro-dynamic plants and machines, with electrical, electro-mechanical, electro-pneumatic, and electro-hydraulic elements from plant site collected data. | L4 |
| CO2 | Assess the system performance using time domain analysis and methods for improving it | L6 |
| CO3 | Understand and analyze the stability of a system in s – domain. | |
| CO4 | Analyze the control systems in the frequency domain and solve the problems related to compensation techniques. | L4 |
| CO5 | Design system Controllability and Observability using state space representation and applications of state space representation to various systems. | L5 |

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**Course Name: Business Economics and Financial Analysis** **Course Code: SM405MS**

**At the end of this course each student should be able to:**

| S. No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the various Forms of Business and the impact of economic variables on the Business | L4 |
| CO2 | Analyze the significance of demand, its analysis, measurement of demand and its fore casting. Learnt the Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. | L4 |
| CO3 | Illustrate the firm's financial position by analyzing the Financial Statements of a Company. | L3 |
| CO4 | Perform the Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance | L6 |
| CO5 | Detect the optimal decisions for acquiring the knowledge on financial accounting, management accounting and ratio analysis. | L4 |

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**Course Name: Control Systems Lab** **Course Code: EE406ES**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Justify the system performance by selecting a suitable controller and/or a compensator for a specific application | L6 |
| CO2 | Apply various time domain and frequency domain techniques to assess the system performance | L3 |
| CO3 | Apply various control strategies to different applications | L3 |
| CO4 | Compute system controllability and Observability using state space representation and applications of state space representation to various systems | L3 |
| CO5 | Design various controllers and compensators to improve system performance | L5 |

**Course Name: Electrical Machines Lab - II** **Course Code: EE407PC**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Design the performance of different machines using different testing methods | L5 |
| CO2 | Compare Phase from three phase to two phase and vice versa | L4 |
| CO3 | Analyze Compensate the changes in terminal voltages of synchronous generator after estimating the change by different methods | L4 |
| CO4 | Classify different machines and control the speed and power factor | L4 |
| CO5 | Compute the active and reactive power flows in synchronous machines | L3 |

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**Course Name: Electronic Circuits Lab** **Course Code: EE408PC**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply the concepts of amplifiers in the design of Public Addressing System | L3 |
| CO2 | Explain the Sinusoidal wave forms | L2 |
| CO3 | Design stable system using feedback concepts | L5 |
| CO4 | Perform multi vibrator using transistor | L6 |
| CO5 | Design and simulate linear and non linear wave shaping circuits | L5 |

**Course Name:** **Gender Sensitization Lab** **Course Code:** **MC400HS**

**At the end of this course each student should be able to:**

| S. No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Integrate better understanding of important issues related to gender in contemporary India. | L6 |
| CO2 | Analyze basic dimensions of the biological, sociological, psychological and legal aspects of gender. Attain a finer grasp of how gender discrimination works in our society and how to counter it. | L4 |
| CO3 | Explain insight into the gendered division of lab our and its relation to politics and economics. | L2 |
| CO4 | Explain sense of appreciation of women in all walks of life. | L2 |
| CO5 | Justify Men and women students and professionals will be better equipped to work and live together as equals. | L6 |

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**YEAR III** **SEMESTER I** **REGULATION:R15**

**Course Name: IC Applications** **Course Code: A50423**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Distinguish between the CMOS and different transistor logic families. |
| CO2 | Analyze the internal structure and characteristics of the operational amplifier |
| CO3 | Design various analog circuits using IC 741 Op-Amp |
| CO4 | Choose appropriate regulator based on the type of application |
| CO5 | Use IC 555 and IC 565 for different analog applications, Differentiate between various types of data converters |


**Course Name: Management Science** **Course Code : A50014**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze the evolutionary development of management and its principles. |
| CO2 | Apply marketing concepts and tools for successful launch of a product |
| CO3 | Understand the inventory management tools in managing inventory. |
| CO4 | Determine HR functions in the administration. |
| CO5 | Apply project management tools to manage projects, Analyze the steps involved in corporate planning. |

**Course Name: Power Systems-II** **Course Code: A50221**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Compute transmission line parameters for different configurations. |
| CO2 | Examine performance of transmission lines using equivalent circuit models. |
| CO3 | Analyze the effects of transients using wave theory. |
| CO4 | Evaluate the insulators of over head lines based on performance. |
| CO5 | Compute sag and tension of transmission lines at different conditions, Differentiate parameters of overhead lines and underground cables for power transmission |


**Course Name: Control Systems** **Course Code :A50211**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Evaluate the types of control systems for real time applications. |
| CO2 | Compute transfer function of a system by different techniques. |
| CO3 | Examine Servo motors and Synchros for different applications. |
| CO4 | Evaluate the time response of systems for standard input signals. |
| CO5 | Determine the performance of systems with controllers, Probe the stability of system through time and frequency domain approach. |

**Course Name: Power Electronics** **Course Code: A50220**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze the characteristics and working of power semi conductor devices. |
| CO2 | Assess the power electronic converters for AC/DC conversion |
| CO3 | Evaluate control techniques and protection schemes for power electronic devices |
| CO4 | Analyze the power electronic converters for AC/AC conversion |
| CO5 | Determine voltage, current and frequency parameters of dc-dc converters by applying control strategies, Illustrate various control techniques for thyristor and transistor based inverters |


**Course Name: Electrical Machines-III** **Course Code :A50218**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Illustrate the construction and working principle of Synchronous Machines |
| CO2 | Evaluate the voltage regulation of Alternators using different methods |
| CO3 | Assess the single phase motors for different applications |
| CO4 | Analyze the effect of variation in excitation on a synchronous machine |
| CO5 | Evaluate the performance of synchronous generators for parallel operation and load Sharing, Examine the starting methods and performance of synchronous motors. |

**Course Name: Electrical Machines lab –II** **Course Code : A50289**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze the performance of a single phase transformer. |
| CO2 | Understand the scott connection and Load sharing of transformers. |
| CO3 | Examine the performance of Induction motor at different loading conditions. |
| CO4 | Appraise the performance of synchronous machines by using different methods. |
| CO5 | Examine the performance of Induction motor at different loading conditions. |

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**Course Name: Advanced Communication Skills Lab** **Course Code :A50086**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Build sound vocabulary and its proper use contextually |
| CO2 | Make use of functional English effectively in formal and informal contexts |
| CO3 | Develop effective speaking skills and Maximize job prospects |
| CO4 | Plan and make different forms of presentation using various techniques |
| CO5 | Develop effective speaking skills and Maximize job prospects |

**YEAR III** **SEMESTER II** **REGULATION:R15**

**Course Name: Electrical and Electronics Instrumentation** **Course Code: A60223**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Categorize measuring instruments based on their operating principle |
| CO2 | Distinguish measuring instruments based on their construction |
| CO3 | Assess the errors in measuring instruments with relevant solution |
| CO4 | Define Resistance, Capacitance, Inductance, Power and energy |
| CO5 | Determine nonelectrical quantities with the concept of Transducers, Analyze the working principle of CRO with its applications |

**Course Name: Static Drives** **Course Code: A60225**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze the performance of DC drive fed by controlled rectifiers. |
| CO2 | Assess different braking modes of DC drives for specific control requirements |
| CO3 | Explain closed loop control of converter fed DC drives |
| CO4 | Assess the static and dynamic performance characteristics of AC drives |
| CO5 | Examine performance of AC drives fed by variable voltage and frequency supplies, Illustrate various power electronic converters to control the speed of synchronous motor |

**Course Name: Computer Methods in Power Systems** **Course Code: A60222**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Calculate impedance and admittance matrices for power system networks. |
| CO2 | Evaluate load flow parameters using Numerical Methods. |
| CO3 | Determine per unit quantities for power system networks. |
| CO4 | Assess the effects of symmetrical and unsymmetrical faults on the power system networks. |
| CO5 | Analyze dynamic, transient and steady state behavior of power system networks, Estimate and improve the stability of power system networks. |

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**Course Name: Microprocessors and Interfacing Devices** **Course Code:A60430**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Differentiate architectural features and modes of operation of microprocessors and microcontrollers. |
| CO2 | Summarize the addressing modes and instruction set of 8086 microprocessor and 8051microcontroller. |
| CO3 | Write assembly language programs for implementing various operations. |
| CO4 | Interface various peripheral devices with 8086 microprocessor. |
| CO5 | Interpret the operation of peripheral devices like DMA and interrupt controllers, Understand the internal memory organization of 8051 Microcontroller |

**Course Name: Environmental Studies** **Course Code : A60009**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Discover knowledge regarding environment and its components. |
| CO2 | Understand the classification, importance and conservation of natural resources. |
| CO3 | Perceive the knowledge regarding different Bio -Geo classification of India. |
| CO4 | Examine impacts of pollution on the environment and their control measures. |
| CO5 | Analyze Environmental laws and Environmental Impact Assessments, Determine sustainable development that aims to meet raising human needs. |

**Course Name: Disaster Management** **Course Code: A60117**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Apply integrating management principles in disaster mitigation work |
| CO2 | Distinguish between the different approaches needed to manage pre-disaster and post disaster periods |
| CO3 | Identify natural and man-made disasters. |
| CO4 | Analyze the effects of endogenous hazards |
| CO5 | Analyze the effects of exogenous hazards, Categorize the Emerging approaches in Disaster Management |

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**Course Name: Control Systems and Simulation Lab** **Course Code : A60290**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Design the state space model of a linear system using simulation. |
| CO2 | Analyze the response of systems in frequency & time domain. |
| CO3 | Calculate the transfer function and observe the effect of feedback on the systems |
| CO4 | Examine the effect of controllers & Compensators on the system. |
| CO5 | Calculate the transfer function and observe the effect of feedback on the systems |

**Course Name: Power Electronics and Simulation Lab** **Course Code : A60291**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Examine the characteristics of SCR, MOSFET and IGBT |
| CO2 | Analyze different firing techniques to Turn-on and Turn-off of an SCR |
| CO3 | Understand power electronic converters by varying gate pulses. |
| CO4 | Design Power Electronic converters using simulation tools |
| CO5 | Analyze power electronic converters by varying gate pulses |

**YEAR IV SEMESTER I REGULATION:R15**

**Course Name: Switch Gear and Protection Course Code: A70231**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Evaluate the construction and working of circuit breakers for real time applications. |
| CO2 | Classify the types of relays based on their operating principle along with their usage. |
| CO3 | Design the protection schemes for generation and transmission systems during faults. |
| CO4 | Classify the types of grounding for the power system. |
| CO5 | Categorize over voltage protection schemes, Illustrate insulation coordination for power system protection. |

**Course Name: Utilization of Electrical Energy Course Code: A70232**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Understand the electric drives based on their characteristics for industrial applications. |
| CO2 | Categorize the electric heating methods based on nature of charge. |
| CO3 | Assess welding methods based on properties of metals. |
| CO4 | Design lighting schemes for given specifications. |
| CO5 | Evaluate speed time curves for different services, Determine specific energy consumption of electric locomotives for a given run. |

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**Course Name: Digital Signal Processing Course Code: A70230**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Determine the behavior of LTI systems by solving difference equations. |
| CO2 | Analyze digital signals in frequency domain using DFS and DFT |
| CO3 | Apply different FFT algorithms for DFT computations. |
| CO4 | Design IIR and FIR filters for given specifications. |
| CO5 | Construct various digital filter structures, Interpret the concepts of finite word length and multi-rate sampling in digital systems. |

**Course Name: High Voltage Engineering Course Code: A70228**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Compute electric field stress using numerical methods. |
| CO2 | List the applications of insulating materials. |
| CO3 | Examine breakdown mechanisms in different states of matter. |
| CO4 | Analyze the circuits used to generate and measure high voltages and currents. |
| CO5 | Point out the causes and effects of over voltages, Categorize high voltage testing of materials and apparatus. |

**Course Name: Electrical Distribution Systems Course Code: A70226**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Assess characteristics and various factors for different types of loads. |
| CO2 | Classify distribution feeders based on design considerations |
| CO3 | Design substation under specified constraints related to distribution systems |
| CO4 | Categorize various protective devices and their coordination. |
| CO5 | Estimate the line drop and power factor in distribution systems, Assess the type of capacitor and suitable location for voltage control and its regulation. |

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**Course Name: Microprocessors and Interfacing Devices Lab Course Code: A70498**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Demonstrate the assembly language program execution using hardware. |
| CO2 | Debug assembly language programs using assembler. |
| CO3 | Interface various peripheral devices to 8086 microprocessor. |
| CO4 | Use Keil software for 8051 assembly language programming. |
| CO5 | Design Debug assembly language programs using assembler. |

**Course Name: Electrical Measurements Lab Course Code: A70293**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Determine unknown electrical parameters using bridges |
| CO2 | Measure active and reactive power using various methods |
| CO3 | Calibrate various measuring instruments. |
| CO4 | Examine electrical parameters and characteristics of electrical instruments. |
| CO5 | Manipulate active and reactive power using different methods |

**YEAR IV** **SEMESTER:II** **REGULATION:R15**

**Course Name: Fundamentals of HVDC and FACTS Devices Course Code: A80237**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze HVDC system with Gratez circuit. |
| CO2 | Evaluate Converter control characteristics for different control schemes. |
| CO3 | Understand AC and DC filters for different types of harmonics. |
| CO4 | Discuss Reactive power control and Power Flow analysis in HVDC system. |
| CO5 | Elucidate the operation of FACTS controllers, Select a compensator for efficient power transmission |

**Course Name: Renewable Energy Sources Course Code: A80324**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | List the significance and role of renewable energy sources |
| CO2 | Elucidate the principles and types of Solar Energy collection, storage and applications |
| CO3 | Understand the concepts to harness Wind Energy |
| CO4 | Expound the concepts of bio-mass and geothermal energy conversion |
| CO5 | Outline the conversion techniques available for Ocean thermal energy conversion, Explicate the essentials for Direct Energy Conversion and limitations. |

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**Course Name: EHV AC Transmission** **Course Code: A80235**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Analyze the issues of concern with EHVAC transmission |
| CO2 | Compute the Inductance and capacitance of two conductor and multi conductor lines |
| CO3 | Understand the effect of corona, electrostatic field of EHVAC lines |
| CO4 | Compute the surface gradient on two conductor and bundle with more than 3 sub conductors |
| CO5 | Design grounding systems for EHVAC transmission lines, Assess the type of capacitor and suitable location for voltage control and its regulation. |

**Course Name: Industry Oriented Mini Project** **Course Code: A80087**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Apply practical knowledge within the chosen area of technology for project development |
| CO2 | identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach. |
| CO3 | contribute as an individual or in a team in development of technical projects |
| CO4 | Develop effective communication skills for presentation of project related activities |
| CO5 | understand need of project management and project management life cycle. |

**Course Name: Seminar** **Course Code: A80089**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Identify emerging topic specific to the programme. |
| CO2 | Extract the information relevant to the chosen topic. |
| CO3 | Deliver the knowledge using multimedia. |
| CO4 | Answer the queries with appropriate explanation and elaboration. |
| CO5 | Compile an effective technical report, providing conclusions and proposing an appropriate future scope. |

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**Course Name: Project Work Course Code: A80088**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Identify problem, conduct relevant literature survey and formalize it. |
| CO2 | Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools(if necessary) and processes. |
| CO3 | Implement the design and demonstrate the functionality of developed model |
| CO4 | Evaluate the results to derive the conclusion and provide scope for future enhancement. |
| CO5 | Exhibit good interpersonal and leadership skills in meeting project deadlines with individual contribution towards progress of the project. |

**Course Name: Comprehensive Viva-Voce Course Code: A80090**

**At the end of this course each student should be able to:**

| | |
|---|---|
| CO1 | Elaborate the subject knowledge through illustrations and explanations |
| CO2 | Apply the concepts gained, to various real time applications including societal and environmental issues. |
| CO3 | Analyze different case-studies using quantitative and qualitative data |
| CO4 | Justify the usage of emerging technologies in disseminating knowledge |
| CO5 | Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way. |


**Course Name: Major Project Work** **Course Code: A80088**

## At the end of this course each student should be able to:

| | |
|---|---|
| CO1 | Identify problem, conduct relevant literature survey and formalize it. |
| CO2 | Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools (if necessary) and processes. |
| CO3 | Implement the design and demonstrate the functionality of developed model |
| CO4 | Evaluate the results to derive the conclusion and provide scope for future enhancement. |
| CO5 | Exhibit good interpersonal and leadership skills in meeting project deadlines with individual contribution towards progress of the project. |

# SCIENT INSTITUTE OF TECHNOLOGY

**Khanapur (vi), Ibrahimpatnam, R.R. District – 501506**
**(Affiliated to JNTUH, Hyderabad & Approved by AICTE, New Delhi)**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

**Academic year 2018-2019**

**Course outcomes**

**YEAR : I** **Semester:I** **Regulation:R18**

**Course Name: MATHEMATICS-I** **Course Code: MA101BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxanomy Level |
|---|---|---|
| CO1 | Determine the Rank, Echelon form and analyse the solution system of equations for consistency and inconsistency | L2 |
| CO2 | Find the Eigen values and vectors of a matrix and reduce the quadratic form to canonical form by orthogonal transformation | L4 |
| CO3 | Analyze the nature of sequence and series, Test the convergence of a series by applying the different tests | L4 |
| CO4 | Interpret the applicability of mean value theorems. Evaluate multiple integrals, measure the area and volume of given regions. Evaluate integrals by using Beta, Gamma functions. | L2 |
| CO5 | Analyze the problems related to Partial Differentials and relate its applications to engineering subjects | L2 |

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**Course Name: English** **Course Code: EN105HS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Apply basic grammar principles and synthesize and transform sentences | L1,L3 |
| CO2 | Acquire basic proficiency in English including reading and listening comprehension,writing and speaking skills. | L1,L3 |
| CO3 | Self introspect and self vigilance to achieve high quality of life, strength and sovereignty of a developed nation | L4 |
| CO4 | Improve the exposure to universal happenings | L1 |
| CO5 | Envision the dangers of scientific and technological innovations | L4,L6 |

**Course Name: Engineering Chemistry** **Course Code: CH102BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Describe the atomic, molecular and electronic changes, band theory related to conductivity | L2 |
| CO2 | Identify the knowledge about importance of water and understanding its treatments methods | L2 |
| CO3 | Determine the principles and concepts of electrochemistry, corrosion. | L4 |
| CO4 | Explain the skills to get clear concepts on basic spectroscopy and application to medical and other fields. | L2 |
| CO5 | Predict the configurational and conformational analysis of molecules and reaction mechanisms | L4 |

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**Course Name: Basic Electrical Engineering** **Course Code: EE103ES**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Analyse and Solve electrical circuits using network laws and theorems | L4 |
| CO2 | Demonstrate and analyse the AC circuits | L3 |
| CO3 | Discuss the working principle, EMF equation, phasor diagram, losses, efficiency, regulation of 1-phase transformer ,working principle of Auto-transformer | L2 |
| CO4 | Determine the working principles of Electrical Machines | L4 |
| CO5 | Develop various switches and batteries | L5 |

**Course Name: Engineering Chemistry Lab** **Course Code: CH106BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Determination of parameters like hardness and chloride content in water | L4 |
| CO2 | Estimation of rate constant of a reaction from concentration – time relationships – time relationships | L3 |
| CO3 | Determination of physical properties like adsorption and viscosity | L4 |
| CO4 | Calculation of Rfvalues of some organic molecules by TLC technique | L4 |
| CO5 | Determine the synthesis of drug preparation | L5 |

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**Course Name: Basic Electrical Engineering Lab** **Course Code: EE108ES**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Express the basic electrical laws. | L2 |
| CO2 | Analyze the response of different types of electrical circuits to different excitations. | L4 |
| CO3 | Formulate the measurement, calculation and relation between the basic electrical parameters | L5 |
| CO4 | Determine the basic characteristics of transformers and electrical machines. | L4 |

**Course Name: English Language Communication Skills Lab** **Course Code: EN107HS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Interpret the nuances of English speech sounds, word accent, intonation and rhythm | L4 |
| CO2 | Apply the nuances of English language through audio- visual experience and group activities | L2,L4 |
| CO3 | Improve the fluency in spoken English and Neutralization their mother tongue influence of accent for intelligibility | L1,L2,L3 |
| CO4 | Develop Speaking skills with clarity and confidence which in turn enhances their employability skills | L1,L3 |
| CO5 | Use language appropriately for public speaking and Interviews | L3,L5 |

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**Course Name: Engineering Workshop** **Course Code: ME105ES**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Describe machine tools and their operations | L2 |
| CO2 | Produce components using workshop trades including pluming, fitting, carpentry, and foundry, house wiring and welding. | L5 |
| CO3 | Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling | L2,L3 |
| CO4 | Apply basic electrical engineering knowledge for house wiring practice | L3 |
| CO5 | Use various type of measuring and gauging instrument for different type of operation | L3 |


**YEAR : I** **Semester: II** **Regulation:R18**

**Course Name: Mathematics -II** **Course Code: MA201BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Solve the first order differential equations by various methods choosing the right method in different engineering problems | L2 |
| CO2 | Solve the higher differential equation and apply the concept of different equation to real world problems | L4 |
| CO3 | Apply the knowledge of multiple integrals to find the area's, volume's, moment of inertia in region on a plane or in space | L3 |
| CO4 | Understand the concept of scalar& vector point functions, vector operators, divergence, curl gradient and their physical and geometrical interpretation | L2 |
| CO5 | Apply the knowledge of line, surface &volume integrals and converting them from one to another like Gauss divergence, Greens & Stokes theorems | L2 |

**Course Name: Applied Physics** **Course Code: AP202BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Identify the fundamental concepts on Quantum behavior of matter in its micro state. | L4 |
| CO2 | Analyze fundamentals of Semiconductor Physics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| CO3 | Predict fundamentals of Opto electronics, lasers and fiber optics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| CO4 | Design and prepare new materials for various engineering applications. | L5 |
| CO5 | Describe the phenomena of electromagnetism, magnetic materials and dielectric materials. | L2 |

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**Course Name: Programming for Problem Solving** **Course Code: CS203ES**

**At the end of this course each student should be able to:**

| S.No. | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Describe basics of computer system, algorithms and basics of C language | L2 |
| CO2 | Use Arrays, strings , structures, pointers to develop programs | L3 |
| CO3 | Analyze the concept of preprocessing and file handling in C programming | L4 |
| CO4 | Express the knowledge in developing structured programs using functions which are used to decompose a problem into different modules , developing programs using recursions and a concept of dynamic memoryallocation. | L2,L5 |
| CO5 | Identify the searching and sorting algorithms and to convert the algorithms into C programs. | L2 |

**Course Name: Environmental Science** **Course Code: MC209ES**

**At the end of this course each student should be able to:**

| S.No. | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance of natural resources | L4 |
| CO2 | Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity | L2 |
| CO3 | Identification, assessment andquantification of global environmental issues in order to create awareness about the international conventions for mitigating global environmentalproblems | L4 |
| CO4 | Develop the raising human needs of the present and future generations through preserving the environment | L5 |
| CO5 | Outline green environmental issue provides an opportunity to overcomethe current Global environmental issues by implementing modern techniques like CDM, green building, green computing etc. Global environmental issues in order to create awareness | L2 |

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**Course Name: Engineering Graphics** **Course Code: ME204ES**

**At the end of this course each student should be able to:**

| S.NO | COURSE OUTCOMES | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Discuss about section and orthographic views of engineering components | L2 |
| CO2 | Draw the projection points ,lines and planes | L5 |
| CO3 | Classify solids and projection of solids at different positions | L4 |
| CO4 | Show the section views of solids and development of surfaces | L1 |
| CO5 | Draw the isometric projection and perspective views of object / solids Apply the concept of drawing in practical application | L5 |

**Course Name: Applied physics Lab** **Course Code: AP205BS**

**At the end of this course each student should be able to:**

| S.NO. | COURSE OUTCOMES | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Examine the usage of different components. | L4 |
| CO2 | Construct the electrical circuits. | L5 |
| CO3 | Compare the theory and co-relate with experiment | L4 |
| CO4 | Recognize the applications of physics experiments in day – to – day life | L4 |

**Course Name: Programming for Problem Solving Lab** **Course Code: CS206ES**

**At the end of this course each student should be able to:**

| S.NO. | COURSE OUTCOMES | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Formulate the algorithms for simple problems, and translate given algorithms to a working and correct program | L5 |
| CO2 | Correct syntax errors as reported by the compilers and identify andcorrect logical errors encountered during execution | L4 |
| CO3 | Represent and manipulate data with arrays, strings and structures use pointers of different types | L1 |
| CO4 | Create, read and write to and from simple text and binary files | L5 |

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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## Academic year 2018-2019

**YEAR : II Semester: I Regulation:R16**

### Course outcomes

**Name: Mathematics-IV** **Course Code:MA301BS**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the complex functions with reference to their analyticity, integration. | L3 |
| CO2 | Determine Cauchy's integral theoremfind the Taylor's and Laurent's series expansion of complex functions | L4 |
| CO3 | Analyze The bilinear transformation | L4 |
| CO4 | Express any periodic function in term of sine's and cosines | L2 |
| CO5 | Determine non-periodic function as integral representation | L4 |

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**Course Name: Electromagnetic Fields** **Course Code: EE302ES**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply vector calculus to static electric – magnetic fields. | L3 |
| CO2 | Compute the force, potential & Energy for different charge & current configurations and Evaluate capacitance in static electricfield. | L3 |
| CO3 | Solve Electromagnetic Relation using Maxwell Formulae. | L4 |
| CO4 | Explain the force, potential & Energy for different charge & current configurations and EvaluateInductance. | L2 |
| CO5 | Analyze moving charges on Magnetic fields | L4 |

**Course Name:Electrical Machines-I** **Course Code: EE303ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Classify different parts of a DC machine & understand DC generator operation, methods of excitation. | L4 |
| CO2 | Explain the operation of DC motor, Torque equation ,characteristics of different types of DC motors | L2 |
| CO3 | Explain different testing methods to predetermine the efficiency of DC machines. | L2 |
| CO4 | classify different parts of a transformer & understand its operation. | L4 |
| CO5 | Perform the tests for Transformers ,understand the auto-transformer and poly phase transformers | L6 |


**Course Name:Network Theory** **Course Code: EE304ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze the Electrical Circuits with the concept of Network topology and Apply the concepts of Magnetic circuit & Analyze Magnetic circuits | L4 |
| CO2 | Explain the importance of three phase circuits and analyze the three phase circuits | L2 |
| CO3 | Analyze the transient behaviour of electrical networks for various excitations | L4 |
| CO4 | Outline the various network parameters for the given two port networks | L3 |
| CO5 | Design various filters. | L5 |

**Course Name: Electronic Circuits** **Course Code: EE305ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply the knowledge of BJT to design practical amplifier circuits. | L3 |
| CO2 | Design electronic sub systems such as feedback amplifiers, oscillators to meet the required specifications. | L5 |
| CO3 | Design of power amplifiers | L5 |
| CO4 | Explain linear and non-linear wave shaping circuits with different inputs | L2 |
| CO5 | Analyze multi vibrators using transistors and switching characteristics of devices. | L4 |


**Course Name:Electrical Machines Lab - I** **Course Code: EE306ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain performance characteristics of DC Generators | L2 |
| CO2 | Identify performance characteristics of DCMotors | L2 |
| CO3 | Analyze the starting and speed control methods of different DCMachines. | L4 |
| CO4 | Classify the efficiency of DC machines using different testing methods. | L4 |
| CO5 | Analyze different conditions required to be satisfied for self- excitation of DC Generators. | L4 |

**Course Name:Electronic Devices & Circuits Lab** **Course Code: EC306ES**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply knowledge on real-time problems. | L3 |
| CO2 | Compute frequency response of various amplifiers. | L3 |
| CO3 | Explain starting and speed control methods of different DC Machines. | L2 |
| CO4 | Assess the efficiency of DC machines using different testing methods. | L6 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |

**Course Name:Networks Lab** **Course Code: EE307ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze complex DC and AC linear circuits | L4 |
| CO2 | Apply concepts of electrical circuits across engineering | L3 |
| CO3 | Evaluate response in a given network by using theorems | L4 |
| CO4 | Design, construct & analyze oscillator circuits to generate signals in various frequency ranges | L5 |
| CO5 | Design different types of power amplifiers for practical applications of desired specifications | L5 |

**Course Name: Environmental Science and Technology** **Course Code: MC300ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development | L4 |
| CO2 | Analyze ecosystem and also about its functions like Food chain, Ecological pyramids etc., | L4 |
| CO3 | Classify different types of resources like land, water, mineral and energy and also about the effects of environment by the usage of theseresources. | L4 |
| CO4 | Explain about the ecosystem diversity, its values and also about the importance of the endemic species. | L2 |
| CO5 | computethe information about EIA- Environmental Impact Assessment in which the student will get the knowledge about the projects and the process involved in getting the projects. | L3 |

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**YEAR : III** **Semester: I** **Regulation:R16**

**Course Name: Electrical Measurements & Instrumentation Course Code: EE501PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Classify different types of measuring instruments, their construction, operation and characteristics | L4 |
| CO2 | Identify the instruments suitable for typical measurements | L2 |
| CO3 | Apply the knowledge about transducers and instrumenttransformers to use them effectively | L3 |
| CO4 | Analyze deal with the measurement of voltage, current, Power factor, power, energy and magneticmeasurements. | L4 |
| CO5 | Explain the basic principles of all measuringinstruments | L2 |


**Course Name: Power Systems - II** **Course Code: EE502PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Compare inductance and capacitance for different configurations of transmission lines | L4 |
| CO2 | analyze the performance of transmission lines | L4 |
| CO3 | Explain transient's phenomenon of transmission lines. | L2 |
| CO4 | Determine sag and tension calculations. | L4 |
| CO5 | Discuss overhead line insulators and underground cables. | L2 |

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**Course Name: Microprocessors and Microcontrollers** **Course Code: EI503PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the basic concepts of microprocessor, internal architecture& organization of 8086 | L2 |
| CO2 | Analyze the basic different of microprocessor and microcontroller ,8051 architecture and real time control of 8051 | L4 |
| CO3 | design the various interfacing techniques of 8086 and 8051 and & develop assembly language programming | L5 |
| CO4 | Perform the internal architecture & organization of ARM processor | L6 |
| CO5 | Compute the CORETEX processor architecture & OMAP processor architecture &advanced pipeline technology | L3 |


**Course Name: Fundamentals of Management** **Course Code: SM504MS**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the nature and scope, functions and roles in the management and evolutions in management. | L2 |
| CO2 | Design framework for planning and management objectives for business development and decision making and problem solving in the business process. | L5 |
| CO3 | Analyze principles of organization and its structure and empowerment of organization culture and human resource management tasks. | L4 |
| CO4 | List the leadership management skills and crisis management and handling team. | L1 |
| CO5 | identify types and strategies for control process in the business process and establishing control systems and finding various methods. | L2 |


**Course Name: Open Elective -I Database Management SystemsCourse Code: CS512OE**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply knowledge on database system applications and database design | L3 |
| CO2 | Describe knowledge on relational model, views and relational algebra | L2 |
| CO3 | Explain SQL queries, schema refinement | L2 |
| CO4 | Analyze concepts on transaction management | L4 |
| CO5 | List file organization and indexing. | L1 |


**Course Name: Electrical Measurements & InstrumentationLab Course Code: EE505PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Classify instruments | L4 |
| CO2 | Design instrument | L4 |
| CO3 | Describe the accuracy of any instrument by performing experiment | L2 |
| CO4 | Explain PMMC instrument using D.C potentiometer | L2 |
| CO5 | Determine the ratio and phase angle errors of current transformer and potential transformer. | L4 |


**Course Name: Basic Electrical simulation Lab** **Course Code: EE506PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO2 | Explain the Generation of Various Signals and Sequences | L2 |
| CO3 | Apply convolution for Signals and sequences. | L3 |
| CO4 | Analyze linearity and time invariance properties. | L4 |
| CO5 | Analyze waveform synthesis using Laplace Transform. | L4 |
| CO2 | List Generation of Various Signals and Sequences | L1 |


**Course Name: Microprocessors and Microcontrollers Lab Course Code: EI507PC**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify the Architecture of 8086 microprocessor addressing modes | L4 |
| CO2 | Explain the design aspects of I/O and Memory Interfacing circuits. | L2 |
| CO3 | Design the Architecture of 8051 microcontroller | L5 |
| CO4 | Applydifferent communication methods between two microprocessorkits. | L3 |
| CO5 | Analyze Interfacing to 8086 and programming to control steppermotor. | L4 |


**Course Name: Professional Ethics** **Course Code: MC500HS**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the importance of Values and Ethics in their personal lives and professional careers. | L2 |
| CO2 | List the rights and responsibilities as an employee, team member and a global citizen. | L1 |
| CO3 | Prepare the rights and responsibilities as an employee, team member and a globalcitizen. | L5 |
| CO4 | Analyze the importance of Values and Ethics in their personal lives and professional careers. | L4 |
| CO5 | Determine Global issues in Professional Ethics, Intellectual PropertyRights | L4 |

**YEAR II** **SEMESTER:II** **REGULATION:R16**

**Course Name: Switching Theory & Logic Design** **Course Code: EC401ES**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray and BCD. | L3 |
| CO2 | Manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions. | L3 |
| CO3 | Design and Analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits. | L5 |
| CO4 | Analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits. | L4 |
| CO5 | Evaluate larger sequential circuits using FSM such as Melay and Moore. | L4 |

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**Course Name: Power Systems - I** **Course CodeEE402ES**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the layout of hydro power plant, thermal power station, Nuclear power plant and gas power plant and explain its operation | L2 |
| CO2 | Design the layout of hydro power plant and explain its operation and types of hydraulic turbines | L5 |
| CO3 | Describe A.C. and D.C. distribution systems and its voltage drop calculations | L2 |
| CO4 | Compare air insulated and gas insulated substations. | L4 |
| CO5 | Illustrate various economic aspects of the power plant erection, operation and different tariff methods | L2 |


**Course Name:Electrical Machines – II** **Course Code: EE403ES**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the construction and working of 3-φ Induction machines | L2 |
| CO2 | Compute the characteristics and different speed control methods of 3-φ Induction motor. | L3 |
| CO3 | Design the construction and working of Alternator andAnalyze different methods to find the regulation of alternators.. | L5 |
| CO4 | Analyze the parallel operation of alternators and operation of synchronous motor | L4 |
| CO5 | Perform operation of different 1-φ Induction motors | L6 |


**Course Name: Control Systems** **Course Code: EE404PC**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the operation of open loop and closed loop systems, transfer functions for electro-dynamic plants and machines, with electrical, electro-mechanical, electro-pneumatic, and electro-hydraulic elements from plant site collected data. | L4 |
| CO2 | Assess the system performance using time domain analysis and methods forimproving it | L6 |
| CO3 | Analyze the stability of a system in s – domain. | L4 |
| CO4 | Design the control systems in the frequency domain and solve the problems related to compensation techniques. | L3 |
| CO5 | Justify Controllability and Observability using state space representation and applications of state space representation to various systems. | L6 |

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**Course Name:Business Economics and Financial Analysis Course Code: SM405MS**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the various Forms of Business and the impact of economic variables on the Business | L2 |
| CO2 | Analyze the significance of demand, its analysis, measurement of demand and its forecasting.Learnt the Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. | L4 |
| CO3 | List the firm's financial position by analyzing the Financial Statements of a Company. | L1 |
| CO4 | Design the Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal,Posting to Ledger, Preparation of Trial Balance | L5 |
| CO5 | Explain the optimal decisions for acquiring the knowledge on financial accounting, management accounting and ratio analysis. | L2 |

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**Course Name:Control Systems Lab** **Course Code: EE406ES**

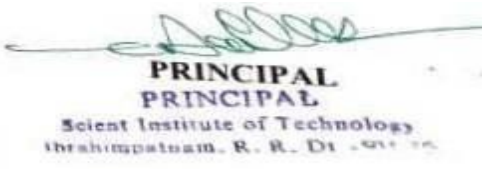
**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the system performance by selecting a suitable controller and/or a compensator for a specific application | L2 |
| CO2 | Apply various time domain and frequency domain techniques to assess the system performance | L3 |
| CO3 | Apply various control strategies to different applications | L3 |
| CO4 | Define system controllability and Observability using state space representation and applications of state space representation to various systems | L1 |
| CO5 | Design various controllers and compensators to improve system performance | L5 |


**Course Name: Electrical Machines Lab - II** **Course Code: EE407PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Assess the performance of different machinesusingdifferent testingmethods | L6 |
| CO2 | Explain the Phase from three phase to two phase and viceversa | L2 |
| CO3 | Consider and Compensate the changes in terminal voltages of synchronous generator after estimating the change by different methods | L6 |
| CO4 | Classify different machines and control the speed and power factor | L4 |
| CO5 | Determine the active and reactive power flows in synchronous machines | L4 |

**Course Name:Electronic Circuits Lab** **Course Code: EE408PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Apply the concepts of amplifiers in the design of Public Addressing System | L3 |
| CO2 | Explain the Sinusoidal wave forms | L2 |
| CO3 | Design stable system using feedback concepts | L5 |
| CO4 | Analyze multi vibrator using transistor | L4 |
| CO5 | Design and simulate linear and non linear wave shaping circuits | L5 |


**Course Name:** **Gender Sensitization Lab** **Course Code:** **MC400HS**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Illustrate a better understanding of important issues related to gender in contemporary India. | L2 |
| CO2 | Explain the sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. Attain a finer grasp of how gender discrimination works in our society and how to counter it. | L2 |
| CO3 | Describe the insight into the gendered division of labour and its relation to politics and economics. | L2 |
| CO4 | Analyze a sense of appreciation of women in all walks oflife. | L4 |
| CO5 | List Men and women students and professionals will be better equipped to work and live together as equals. | L1 |

**YEAR:III** **SEMESTER:II** **REGULATION:R16**

**Course Name: Power Systems Analysis** **Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Analyze load flow for various requirements of the power system | L4 |
| CO2 | Explain the Decoupled load flow method and its assumptions, Fast Decoupled load method and its assumptions | L2 |
| CO3 | List Decoupled load flow method and its assumptions, Fast Decoupled load method and its assumptions | L1 |
| CO4 | Analyze short circuit studies for the protection of power system | L4 |
| CO5 | Estimate stability and instability in power systems | L3 |

**Course Name: Power Electronics** **Course Code: EE602PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Describe the characteristics of basic elements, turn on and turn off methods of SCR, protection, ratings of SCRs and series parallel operations of SCRs | L2 |
| CO2 | Discuss the operation of single phase, three phase rectifiers and single phase, three phase dual converters | L2 |
| CO3 | Analyze the principle of operation of AC voltage controllers and cyclo converters | L4 |
| CO4 | Explain principle of operation of chopper, classification of choppers, AC chopper and switched mode regulators | L2 |
| CO5 | State the operation of series, parallel inverters, single phase inverters, three phase inverters, voltage source inverters and current source inverter | L1 |

**Course Name: Switch Gear and Protection** **Course Code: EE603PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | List the types of Circuit breakers & appropriate protection of power system | L1 |
| CO2 | Classify the types of Relays & appropriate protection of power system | L4 |
| CO3 | Explain the existing transmission voltage levels and various means to protect the system against over voltages | L2 |
| CO4 | Identify the importance of Neutral Grounding,Methods & Practices | L2 |
| CO5 | Evaluate Voltages in Power Systems & Testing | L4 |


**Course Name: Open Elective – IIJAVA Programming Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Solve the real world problems using object oriented programming techniques | L4 |
| CO2 | Use the packages and access protections,IO streams | L3 |
| CO3 | Perform the fundamentals of exceptions and its handling mechanism in java. To understand multithreading programs and thread synchronization. | L6 |
| CO4 | Explain the java collections framework. And how to use the collection classes. | L2 |
| CO5 | Compute graphical user interface creation using java. And understand the various components of GUI programming in java | L6 |


**Course Name: Professional Elective – IElectrical and Electronics Instrumentation**

**Course Code: EE614PC**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the performance characteristics of each instrument | L4 |
| CO2 | Explain frequency, phase with Oscilloscope | L2 |
| CO3 | Classify different types of signal analyzers. | L4 |
| CO4 | List different methods available for measurement of passive elements like resistance, inductance & capacitance. | L1 |
| CO5 | Define measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure ,Vacuum, and Flow | L1 |


**Course Name: Power Systems Lab** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Perform various load flow techniques | L6 |
| CO2 | Explain Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw theconclusions. | L4 |
| CO4 | Compute The Calculations | L3 |
| CO5 | Determine the Accurate and Exact values | L4 |


**Course Name: Power Electronics Lab** **Course Code: EE605PC**

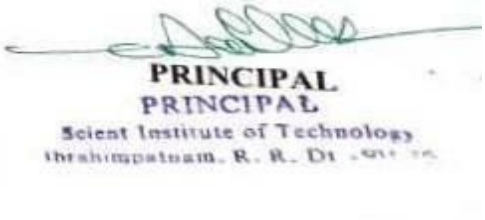
**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the operating principles of various power electronic converters. | L2 |
| CO2 | Use power electronic simulation packages& hardware to develop the power converters. | L3 |
| CO3 | Analyze and choose the appropriate converters for various applications | L4 |
| CO4 | Perform various load flowtechniques | L6 |
| CO5 | List Different protectionmethods, Analyze the experimental data and draw theconclusions**.** | L1 |


**Course Name: Advanced English Communication Skills Lab**
**Course Code: EN606HS**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Illustrate students' fluency in spoken English | L2 |
| CO2 | Praposethem to listen to English spoken at normal conversational speed | L5 |
| CO3 | Detect students develop their vocabulary | L4 |
| CO4 | Use communicate their ideas relevantly and coherentlyinwriting | L3 |
| CO5 | List the students acquire behavioral skills for their personal and professional life | L1 |

**YEAR : IV** **Semester: I** **Regulation:R15**

**Course Name: Switch Gear and Protection** **Course Code: A70231**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| **CO1** | Evaluate the construction and working of circuit breakers for real time applications. | L5 |
| **CO2** | Categorize the types of relays based on their operating principle along with their usage. | L4 |
| **CO3** | Explain the protection schemes for generation and transmission systems during faults. | L2 |
| **CO4** | Classify the types of grounding for the power system. | L4 |
| **CO5** | Categorize over voltage protection schemes. | L4 |


**Course Name: Utilization of Electrical Energy** **Course Code: A70232**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Assess the electric drives based on their characteristics for industrial applications. | L6 |
| CO2 | Categorize the electric heating methods based on nature of charge. | L4 |
| CO3 | Classify welding methods based on properties of metals. | L4 |
| CO4 | Design lighting schemes for given specifications. | L5 |
| CO5 | Evaluate speed time curves for different services.Determine specific energy consumption of electric locomotives for a given run | L4 |


**Course Name: Digital Signal Processing** **Course Code: A70421**

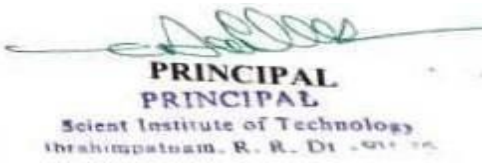
**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Determine the behavior of LTI systems by solving difference equations. | L4 |
| CO2 | Analyze digital signals in frequency domain using DFS and DFT | L3 |
| CO3 | Apply different FFT algorithms for DFT computations. | L3 |
| CO4 | Design IIR and FIR filters for given specifications. | L5 |
| CO5 | Explain the various digital filter structures.Interpret the concepts of finite word length and multi-rate sampling in digital systems. | L2 |


**Course Name: Power System Operation and Control** **Course Code: A70230**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Determine the economical scheduling of thermal generating units by considering constraints | L4 |
| CO2 | Deduce the necessary condition for optimal scheduling of hydro thermal units by considering various constraints | L5 |
| CO3 | Explain Model blocks for speed governor, turbine, Synchronous generator and Excitation system using mathematical Approach | L2 |
| CO4 | Analyze the steady state performance of single and two area systems | L4 |
| CO5 | Design PI Controller to improve steady state performance of single and two area systems, Determine the reactive power to be compensated in transmission system using various methods | L5 |

**Course Name: High Voltage Engineering** **Course Code: A70228**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute electric field stress using numerical methods. | L3 |
| CO2 | List the applications of insulating materials. | L1 |
| CO3 | Examine breakdown mechanisms in different states of matter. | L4 |
| CO4 | Analyze the circuits used to generate and measure high voltages and currents. | L4 |
| CO5 | List out the causes and effects of over voltages, Categorize high voltage testing of materials and apparatus | L1 |

**Course Name: Electrical Distribution Systems** **Course Code: A70226**

**At the end of this course each student should be able to:**

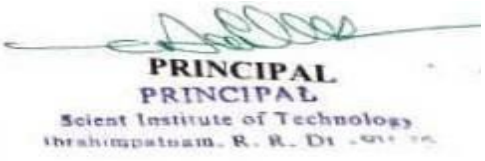
| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Assess characteristics and various factors for different types of loads. | L6 |
| CO2 | Classify distribution feeders based on design considerations | L4 |
| CO3 | Design substation under specified constraints related to distribution systems | L5 |
| CO4 | Categorize various protective devices and their coordination. | L4 |
| CO5 | Estimate the line drop and power factor in distribution systems, Assess the type of capacitor and suitable location for voltage control and its's regulation | L3 |


**YEAR : IV Semester: II Regulation:R15**

**Course Name: Fundamentals of HVDC and FACTS Devices Course Code: A80237**

**At the end of this course each student should be able to:**

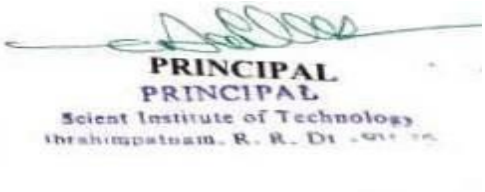
| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| **CO1** | Analyze HVDC system with Gratez circuit. | L4 |
| **CO2** | Evaluate Converter control characteristics for different control schemes. | L4 |
| **CO3** | Distinguish AC and DC filters for different types of harmonics. | L4 |
| **CO4** | Discuss Reactive power control and Power Flow analysis in HVDC system. | L2 |
| **CO5** | Explain the operation of FACTS controllers, Select a compensator for efficient power transmission | L2 |

**Course Name: Renewable Energy Sources** **Course Code: A80324**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | List the significance and role of renewable energy sources | L1 |
| CO2 | Analyze the principles and types of Solar Energy collection, storage and applications | L4 |
| CO3 | Assess the concepts to harness Wind Energy | L6 |
| CO4 | State and explain the concepts of bio-mass and geothermal energy conversion | L1 |
| CO5 | Outline the conversion techniques available for Ocean thermal energy conversion, Explicate the essentials for Direct Energy Conversion and limitations | L2 |

**Course Name: EHV AC Transmission** **Course Code: A80235**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the issues of concern with EHVAC transmission | L4 |
| CO2 | Compute the Inductance and capacitance of two conductor and multi conductor lines | L3 |
| CO3 | Explain the effect of corona, electrostatic field of EHVAC lines | L2 |
| CO4 | Illustrate the surface gradient on two conductor and bundle with more than 3 sub conductors | L2 |
| CO5 | Design grounding systems for EHVAC transmission lines, Assess the type of capacitor and suitable location for voltage control and its regulation | L5 |


**Course Name: TECHNICAL SEMINAR** **Course Code: A80089**

## At the end of this course each student should be able to:

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify emerging topic specific to the programme. | L2 |
| CO2 | List the information relevant to the chosen topic. | L1 |
| CO3 | Discuss and Deliver the knowledge using multimedia. | L2 |
| CO4 | Compute the queries with appropriate explanation and elaboration. | L3 |
| CO5 | Prepare an effective technical report, providing conclusions and proposing an appropriate future scope. | L5 |


**Course Name: COMPREHENSIVE VIVA** **Course Code: A80090**

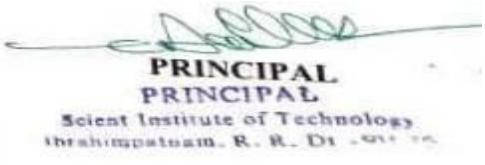
**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Explain the subject knowledge through illustrations and explanations | L2 |
| CO2 | Apply the concepts gained, to various real time applications including societal and environmental issues. | L3 |
| CO3 | Analyze different case-studies using quantitative and qualitative data | L4 |
| CO4 | Justify the usage of emerging technologies in disseminating knowledge | L6 |
| CO5 | Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way. | L4 |

**Course Name: Major Project Work** **Course Code: A80088**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Identify problem, conduct relevant literature survey and formalize it. | L2 |
| CO2 | Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools (if necessary) and processes. | L4 |
| CO3 | Design and demonstrate the functionality of developed model | L5 |
| CO4 | Evaluate the results to derive the conclusion and provide scope for future enhancement. | L4 |
| CO5 | Explain good interpersonal and leadership skills in meeting project deadlines with individual contribution towards progress of the project. | L2 |

# SCIENT INSTITUTE OF TECHNOLOGY

**Khanapur (vi), Ibrahimpatnam, R.R. District – 501506**
**(Affiliated to JNTUH, Hyderabad & Approved by AICTE, New Delhi)**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
**Academic year 2019-2020**

### Course outcomes

**YEAR : I** **Semester: I** **Regulation:R18**

**Course Name: MATHEMATICS-I** **Course Code: MA101BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Determine the Rank, Echelon form and analyse the solution system of equations for consistency and inconsistency | L2 |
| CO2 | Find the Eigen values and vectors of a matrix and reduce the quadratic form to canonical form by orthogonal transformation | L4 |
| CO3 | Analyze the nature of sequence and series, Test the convergence of a series by applying the different tests | L4 |
| CO4 | Interpret the applicability of mean value theorems. Evaluate multiple integrals, measure the area and volume of given regions. Evaluate integrals by using Beta, Gamma functions. | L2 |
| CO5 | Analyze the problems related to Partial Differentials and relate its applications to engineering subjects | L2 |

**Course Name: English** **Course Code: EN105HS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Apply basic grammar principles and synthesize and transform sentences | L1,L3 |
| CO2 | Acquire basic proficiency in English including reading and listening comprehension,writing and speaking skills. | L1,L3 |
| CO3 | Self introspect and self vigilance to achieve high quality of life, strength and sovereignty of a developed nation | L4 |
| CO4 | Improve the exposure to universal happenings | L1 |
| CO5 | Envision the dangers of scientific and technological innovations | L4,L6 |

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**Course Name: Engineering Chemistry** **Course Code: CH102BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Describe the atomic, molecular and electronic changes, band theory related to conductivity | L2 |
| CO2 | Identify the knowledge about importance of water and understanding its treatments methods | L2 |
| CO3 | Determine the principles and concepts of electrochemistry, corrosion. | L4 |
| CO4 | Explain the skills to get clear concepts on basic spectroscopy and application to medical and other fields. | L2 |
| CO5 | Predict the configurational and conformational analysis of molecules and reaction mechanisms | L4 |

**Course Name: Basic Electrical Engineering** **Course Code: EE103ES**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Analyse and Solve electrical circuits using network laws and theorems | L4 |
| CO2 | Demonstrate and analyse the AC circuits | L3 |
| CO3 | Discuss the working principle, EMF equation, phasor diagram, losses, efficiency, regulation of 1-phase transformer ,working principle of Auto-transformer | L2 |
| CO4 | Determine the working principles of Electrical Machines | L4 |
| CO5 | Develop various switches and batteries | L5 |

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**Course Name: Engineering Chemistry Lab** **Course Code: CH106BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Determination of parameters like hardness and chloride content in water | L4 |
| CO2 | Estimation of rate constant of a reaction from concentration – time relationships – time relationships | L3 |
| CO3 | Determination of physical properties like adsorption and viscosity | L4 |
| CO4 | Calculation of Rfvalues of some organic molecules by TLC technique | L4 |
| CO5 | Determine the synthesis of drug preparation | L5 |

**Course Name: Basic Electrical Engineering Lab** **Course Code: EE108ES**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Express the basic electrical laws. | L2 |
| CO2 | Analyze the response of different types of electrical circuits to different excitations. | L4 |
| CO3 | Formulate the measurement, calculation and relation between the basic electrical parameters | L5 |
| CO4 | Determine the basic characteristics of transformers and electrical machines. | L4 |

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**Course Name: English Language Communication Skills Lab** **Course Code: EN107HS**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Interpret the nuances of English speech sounds, word accent, intonation and rhythm | L4 |
| CO2 | Apply the nuances of English language through audio- visual experience and group activities | L2,L4 |
| CO3 | Improve the fluency in spoken English and Neutralization their mother tongue influence of accent for intelligibility | L1,L2,L3 |
| CO4 | Develop Speaking skills with clarity and confidence which in turn enhances their employability skills | L1,L3 |
| CO5 | Use language appropriately for public speaking and Interviews | L3,L5 |

**Course Name: Engineering Workshop** **Course Code: ME105ES**

**At the end of this course each student should be able to:**

| S.no | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Describe machine tools and their operations | L2 |
| CO2 | Produce components using workshop trades including pluming, fitting, carpentry, and foundry, house wiring and welding. | L5 |
| CO3 | Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling | L2,L3 |
| CO4 | Apply basic electrical engineering knowledge for house wiring practice | L3 |
| CO5 | Use various type of measuring and gauging instrument for different type of operation | L3 |

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**YEAR : I** **Semester: II** **Regulation: R18**

**Course Name: Mathematics -II** **Course Code: MA201BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| CO1 | Solve the first order differential equations by various methods choosing the right method in different engineering problems | L2 |
| CO2 | Solve the higher differential equation and apply the concept of differential equation to real world problems | L4 |
| CO3 | Apply the knowledge of multiple integrals to find the area's, volume's, moment of inertia in region on a plane or in space | L3 |
| CO4 | Understand the concept of scalar& vector point functions, vector operators, divergence, curl gradient and their physical and geometrical interpretation | L2 |
| CO5 | Apply the knowledge of line, surface &volume integrals and converting them from one to another like Gauss divergence, Greens & Stokes theorems | L2 |

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**Course Name: Applied Physics** **Course Code: AP202BS**

**At the end of this course each student should be able to:**

| S.No. | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Identify the fundamental concepts on Quantum behavior of matter in its micro state. | L4 |
| CO2 | Analyze fundamentals of Semiconductor Physics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| CO3 | Predict fundamentals of Opto electronics, lasers and fiber optics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| CO4 | Design and prepare new materials for various engineering applications. | L5 |
| CO5 | Describe the phenomena of electromagnetism, magnetic materials and dielectric materials. | L2 |

**Course Name: Programming for Problem Solving** **Course Code: CS203ES**

**At the end of this course each student should be able to:**

| S.No. | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Describe basics of computer system, algorithms and basics of C language | L2 |
| CO2 | Use Arrays, strings , structures, pointers to develop programs | L3 |
| CO3 | Analyze the concept of preprocessing and file handling in C programming | L4 |
| CO4 | Express the knowledge in developing structured programs usingfunctions which are used to decompose a problem into different modules , developing programs using recursions and a concept of dynamic memoryallocation. | L2,L5 |
| CO5 | Identify the searching and sorting algorithms and to convert the algorithms into C programs. | L2 |

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**Course Name: Environmental Science** **Course Code: *MC209ES**

**At the end of this course each student should be able to:**

| S.No. | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance ofnatural resources | L4 |
| CO2 | Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity | L2 |
| CO3 | Identification, assessment andquantification of global environmental issues in order to create awareness about the international conventions for mitigating global environmentalproblems | L4 |
| CO4 | Develop the raising human needs of the present and future generations through preserving the environment | L5 |
| CO5 | Outline green environmental issue provides an opportunity to overcomethe current Global environmental issues by implementing modern techniques like CDM, green building, green computing etc. Global environmental issues in order to create awareness | L2 |

**Course Name: Engineering Graphics** **Course Code: ME204ES**

**At the end of this course each student should be able to:**

| **S.NO** | **COURSE OUTCOMES** | **Blooms Taxonomy Level** |
|---|---|---|
| CO1 | Discuss about section and orthographic views of engineering components | L2 |
| CO2 | Draw the projection points ,lines and planes | L5 |
| CO3 | Classify solids and projection of solids at different positions | L4 |
| CO4 | Show the section views of solids and development of surfaces | L1 |
| CO5 | Draw the isometric projection and perspective views of object / solids Apply the concept of drawing in practical application | L5 |

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**Course Name: Applied physics Lab** **Course Code: AP205BS**

**At the end of this course each student should be able to:**

| S.NO. | COURSE OUTCOMES | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Examine the usage of different components. | L4 |
| CO2 | Construct the electrical circuits. | L5 |
| CO3 | Compare the theory and co-relate with experiment | L4 |
| CO4 | Recognize the applications of physics experiments in day – to – day life | L4 |

**Course Name: Programming for Problem Solving Lab** **Course Code: CS206ES**

**At the end of this course each student should be able to:**

| S.NO. | COURSE OUTCOMES | Blooms Taxonomy Level |
|---|---|---|
| CO1 | Formulate the algorithms for simple problems, and translate given algorithms to a working and correct program | L5 |
| CO2 | Correct syntax errors as reported by the compilers and identify andcorrect logical errors encountered during execution | L4 |
| CO3 | Represent and manipulate data with arrays, strings and structures use pointers of different types | L1 |
| CO4 | Create, read and write to and from simple text and binary files | L5 |

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# SCIENTINSTITUTEOF TECHNOLOGY

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## DEPARTMENTOFELECTRICALANDELECTRONICSENGINEERING

## ACADEMIC YEAR 2019-2020

## Course Outcomes

**YEAR : II Semester: I** **Regulation:R18**

**Course name: Engineering Mechanics** **Course Code: EE301ES**

**At the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the basic force system. | L2 |
| CO2 | Apply the principles of particle kinematics | L3 |
| CO3 | Compute the concept of particle dynamics. | L3 |
| CO4 | Evaluate the general equations of equilibrium | L5 |
| CO5 | List out methods of minimization of potential energy. | L1 |

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**Course name: Electrical Circuit Analysis Course Code: EE302PC**

**At the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply Thevenin's and Norton's theorems to analyze and design for maximum power transfer and the concept of linearity and the associated technique of superposition to circuits and network. | L3 |
| CO2 | Analyze the transient response of series and parallel circuits with DC and AC excitation using differential approach | L4 |
| CO3 | Explain the single phase AC circuits and apply steady state analysis to time varying circuits. | L2 |
| CO4 | Analyze the transient response of series and parallel circuits with DC and Ac excitation using laplace transform approach | L4 |
| CO5 | Discuss features of two port networks and to obtain their equivalent circuits. | L2 |

**Course name: Analog Electronics** **Course Code: EE303PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the characteristics, utilization of various components | L2 |
| CO2 | List the biasing techniques | L1 |
| CO3 | Design and analyze various rectifiers, small signal amplifier circuits. | L5 |
| CO4 | Apply sinusoidal and non-sinusoidal oscillators | L3 |
| CO5 | Illustrate the functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits | L2 |

**Course name: Electrical Machines - I** **Course Code: EE304PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify different parts of a DC machine & understand its operation, methods of improving commutation | L4 |
| CO2 | Apply different testing methods to predetermine the efficiency of DC machines, Armature reaction and commutation | L3 |
| CO3 | List out the different excitation and starting methods of DC machines | L1 |
| CO4 | Compute the voltage and speed of a DC machines | L3 |
| CO5 | Analyze single phase and three phase transformers circuits. | L4 |

**Course name: Electro magnetic Fields** **Course Code: EE305PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| *CO1* | Apply vector calculus to static electric – magnetic fields. | L3 |
| CO2 | Compute the force, potential & Energy for different charge & current configurations and Evaluate capacitance in static electric field. | L3 |
| CO3 | Solve Electromagnetic Relation using Maxwell Formulae. | L4 |
| CO4 | Compute the force, potential & Energy for different charge & current configurations and Evaluate Inductance. | L3 |
| CO5 | Explain moving charges on Magnetic fields<br>Analyze Maxwell's equation in different forms (Differential and integral) in Electro Magnetic time varying fields. | L2 |

**Course name: Electrical Circuits Lab** **Course Code: EE308PC**

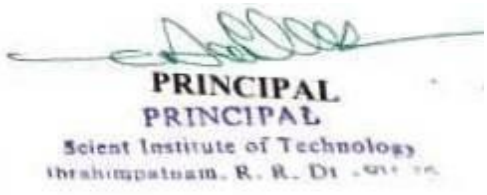
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design electrical systems | L5 |
| CO2 | Analyze a given network by applying various Network Theorems, Apply concepts of electrical circuits across engineering | L4 |
| CO3 | Explain the three phase Active and Reactive power. | L2 |
| CO4 | Illustrate the locus diagrams | L2 |
| CO5 | Evaluate response in a given network by using theorems | L4 |

**Course name: Electrical Machines Lab - I** **Course Code: EE306PC**

**At the end of this course each student should be able to:**

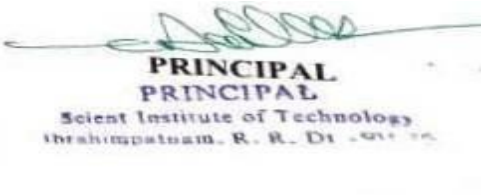
| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the performance characteristics of DC Generators | L4 |
| CO2 | Identify performance characteristics of DC Motors | L2 |
| CO3 | Determine starting and speed control methods of different DC Machines. | L4 |
| CO4 | Analyze the efficiency of DC machines using different testing methods. | L4 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |

**Course name: Analog Electronics Lab** **Course Code: EE307PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze various transistor amplifier circuits and their freq. responses at low, mid and high frequencies | L4 |
| CO2 | Designing amplifier circuits using BJTs | L5 |
| CO3 | Analyze the concepts of both positive and negative feedback in electronic circuits | L4 |
| CO4 | Design, construct & analyze oscillator circuits to generate signals in various frequency ranges | L5 |
| CO5 | Explain different types of power amplifiers for practical applications of desired specifications | L2 |

**Course name: Gender Sensitization Lab** **Course Code: MC309**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute developed a better understanding of important issues related to gender in contemporary India. | L3 |
| CO2 | Analyze sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film. | L4 |
| CO3 | Apply to attain a finer grasp of how gender discrimination works in our society and how to counter it. | L3 |
| CO4 | Explain the gendered division of lab our and its relation to politics and economics. | L2 |
| CO5 | Analyze Men and women students and professionals will be better equipped to work and live together as equals. | L4 |

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**Year: II** **Semester: II** **Regulation: R18**

**Course name: Laplace Transforms, Numerical Methods & Complex variables**

**Course Code: MA401BS**

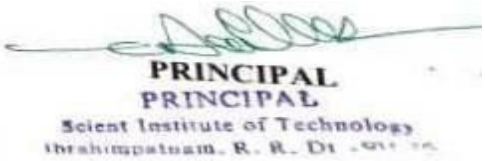
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Solve the Laplace transforms techniques for solving ODE'S | L4 |
| CO2 | Estimate the value for the given data using interpolation and find the root of a given equation | L3 |
| CO3 | Determine the numerical solutions for a given ODE'S | L4 |
| CO4 | Analyze the complex function with reference their analyticity | L4 |
| CO5 | Explain the integration using Cauchy's integral and residue theorems and Taylor's and Laurent's series expansions of complex Function | L2 |


**Course name: Electrical Machines – II** **Course Code EE402PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the construction and working of 3-φ Induction machines. | L4 |
| CO2 | Explain the characteristics and different speed control methods of 3-φ Induction motor. | L2 |
| CO3 | Compute the construction and working and Analyze different methods to find the regulation of alternators. | L3 |
| CO4 | Select the parallel operation of alternators and operation of synchronous motor. | L4 |
| CO5 | List out the operation of different 1-φ Induction motors. | L1 |

**Course name: Digital Electronics Course Code: EE403PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain working of logic families and logic gates | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits | L5 |
| CO3 | Analyze Sequential Circuits and Systems, synchronous counters, counters design using flip flops | L4 |
| CO4 | Apply the process of Analog to Digital conversion and Digital to Analog conversion | L3 |
| CO5 | Compute the use PLDs to implement the given logical problem. | L3 |


**Course name: Control Systems** **Course Code: EE404PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the operation of open loop and closed loop systems. | L4 |
| CO2 | Apply transfer functions for electro-dynamic plants and machines, with electrical, electro-mechanical, electro-pneumatic, and electro-hydraulic elements from plant site collected data. | L3 |
| CO3 | Analyze the stability of a system in s – domain. | L4 |
| CO4 | Compute the control systems in the frequency domain and solve the problems related to compensation techniques. | L3 |
| CO5 | Evaluate the problems relating to stability of control systems and formulate state model to electrical and electro mechanical plants and evaluate plant response to particular inputs. | L4 |


**Course name: Power System - I** **Course Code: EE405PC**

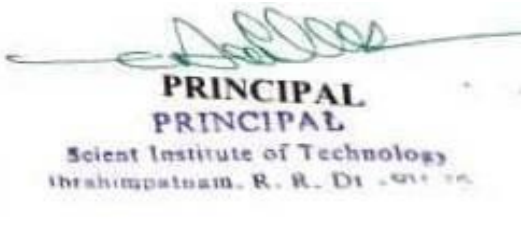
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze to the concepts of power systems. Understand the operation of conventional generating stations and renewable sources of electrical power | L4 |
| CO2 | Evaluate the power tariff method | L4 |
| CO3 | Determine the electrical circuit parameters of transmission lines, Capacitance of a single core and three core cables | L4 |
| CO4 | Analyze Line conductors, Factors affecting corona loss and methods of reducing corona loss | L4 |
| CO5 | Explain the layout of substation and underground cables and corona | L2 |


**Course name: Digital Electronics Lab** **Course Code: EE406PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the working of logic families and logic gates. | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits. | L5 |
| CO3 | Illustrate the process of Analog to Digital conversion and Digital to Analog conversion. | L2 |
| CO4 | Analyze use of PLDs to implement the given logical problem. | L4 |
| CO5 | Review to implement synchronous state machines using flip-flops. | L6 |

**Course name: Electrical Machines Lab - II** **Course Code: EE407PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assess the performance of different machines using different testing methods | L6 |
| CO2 | Explain the Phase from three phase to two phase and vice versa | L2 |
| CO3 | Analyze Compensate the changes in terminal voltages of synchronous generator | L4 |
| CO4 | Apply Control the active and reactive power flows in synchronous machines | L3 |
| CO5 | Explain different machines and control the speed and power factor | L2 |


**Course name: Control Systems Lab Course Code: EE408PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the system performance by selecting a suitable controller and/or a compensator for a specific application | L2 |
| CO2 | Apply various time domain and frequency domain techniques to assess the system performance | L3 |
| CO3 | List various control strategies to different applications(example: Power systems, electrical drives etc) | L1 |
| CO4 | Compute the system controllability and Observability using state space representation and applications of state space representation to various systems | L3 |
| CO5 | Apply various time domain an frequency domain techniques to assess the system performance | L3 |


**Course name: Constitution of India Course Code: *MC409**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the Meaning of the constitution law and constitutionalism, Historical perspective of the Constitution of India | L4 |
| CO2 | Explain the Salient features and characteristics of the Constitution of India, Scheme of the fundamental rights | L2 |
| CO3 | Compute The Directive Principles of State Policy – Its importance and implementation. Federal structure and distribution of legislative and financial powers between the Union and the States | L3 |
| CO4 | Apply The historical perspectives of the constitutional amendments in India. Emergency Provisions: National Emergency, President Rule, Financial Emergency | L3 |
| CO5 | Out line the Scheme of the Fundamental Right to certain Freedom under Article19. Scope of the Right to Life and Personal Liberty under Article21 | L2 |

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**YEAR : III Semester: I** **Regulation:R16**

**Course name: Electrical Measurements & Instrumentation**

**Course Code: EE501PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | List different types of measuring instruments, their construction, operation and characteristics | L1 |
| CO2 | Identify the instruments suitable for typical measurements | L2 |
| CO3 | Apply the knowledge about transducers and instrument transformers to use them effectively | L3 |
| CO4 | Detect with the measurement of voltage, current, Power factor, power, energy and magnetic measurements. | L4 |
| CO5 | Analyze the basic principles of all measuring instruments | L4 |


**Course name: Power Systems - II** **Course Code: EE502PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute inductance and capacitance for different configurations of transmission lines | L3 |
| CO2 | Analyze the performance of transmission lines | L4 |
| CO3 | Explain transient's phenomenon of transmission lines. | L2 |
| CO4 | calculate sag and tension calculations. | L4 |
| CO5 | Discuss about an overhead line insulators and underground cables. | L2 |


**Course name: Microprocessors and Microcontrollers Course Code: EI503PC**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the basic concepts of microprocessor, internal architecture& organization of 8086 | L2 |
| CO2 | Analyze the basic different of microprocessor and microcontroller ,8051 architecture and real time control of 8051 | L4 |
| CO3 | Design the various interfacing techniques of 8086 and 8051 and & develop assembly language programming | L5 |
| CO4 | Illustrate the internal architecture & organization of ARM processor | L2 |
| CO5 | Apply the CORETEX processor architecture & OMAP processor architecture &advanced pipeline technology | L3 |


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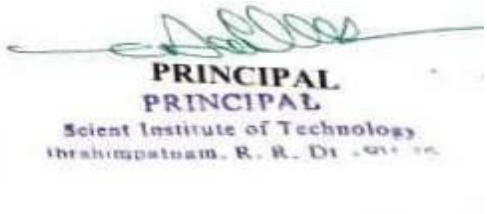
**Course name: Fundamentals of Management Course Code: SM504MS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the nature and scope, functions and roles in the management and evolutions in management. | L2 |
| CO2 | Compute the frame work for planning and management objectives for business development and decision making and problem solving in the business process. | L3 |
| CO3 | Analyze principles of organization and its structure and empowerment of organization culture and human resource management tasks. | L4 |
| CO4 | Compute leadership management skills and crisis management and handling team. | L3 |
| CO5 | List out types and strategies for control process in the business process and establishing control systems and finding various methods. | L1 |

**Course name: Open Elective - I**

**Database Management Systems Course Code: CS512OE**

**At the end of this course each student should be able to:**

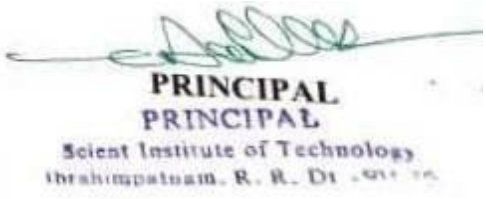
| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Use knowledge on database system applications and database design | L3 |
| CO2 | Apply knowledge on relational model, views and relational algebra | L3 |
| CO3 | Perform to attain knowledge on SQL queries, schema refinement | L6 |
| CO4 | Compute the concepts on transaction management | L3 |
| CO5 | Analyze knowledge on file organization and indexing. | L4 |


**Course name: Electrical Measurements & Instrumentation Lab**

**Course Code: EE505PC**

**At the end of this course each student should be able to:**

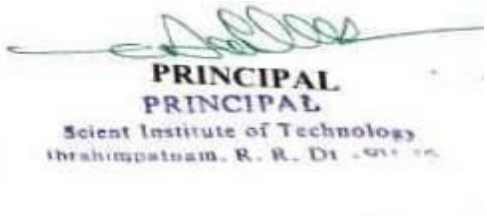
| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify instruments | L4 |
| CO2 | Analyze instruments | L4 |
| CO3 | Explain the accuracy of any instrument by performing experiment | L2 |
| CO4 | Conclude the Calibrate PMMC instrument using D.C potentiometer | L4 |
| CO5 | Apply the ratio and phase angle errors of current transformer and potential transformer. | L3 |

**Course name: Basic Electrical simulation Lab  Course Code: EE506PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain various simulations to real time problems. | L2 |
| CO2 | Define Generation of Various Signals and Sequences | L1 |
| CO3 | Explain the convolution for Signals and sequences. | L2 |
| CO4 | Compute linearity and time invariance properties. | L3 |
| CO5 | Analyze waveform synthesis using Laplace Transform. | L4 |

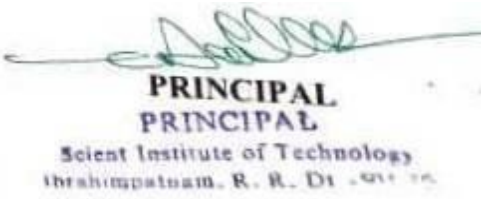



**Course name: Microprocessors and Microcontrollers Lab**

**Course Code: EI507PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the Architecture of 8086 microprocessor. | L2 |
| CO2 | Discuss the Construct and design aspects of I/O and Memory Interfacing circuits. | L2 |
| CO3 | Analyze the Architecture of 8051 microcontroller | L4 |
| CO4 | Apply different communication methods between two microprocessor kits. | L3 |
| CO5 | Design Interfacing to 8086 and programming to control stepper motor. | L5 |

**Course name: Professional Ethics** **Course Code: *MC500HS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Illustrate the importance of Values and Ethics in their personal lives and professional careers. | L2 |
| CO2 | Compute the rights and responsibilities as an employee, team member and a global citizen. | L3 |
| CO3 | List out rights and responsibilities as an employee, team member and a global citizen | L1 |
| CO4 | Perform the importance of Values and Ethics in their personal lives and professional careers. | L6 |
| CO5 | Classify Global issues in Professional Ethics, Intellectual Property Rights | L4 |


**YEAR: III YEAR SEMESTER -II REGULATION:R16**

**Course name: Power Systems Analysis Course Code: EE601PC**

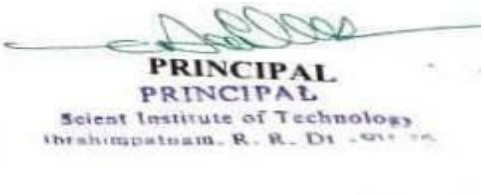
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze load flow for various requirements of the power system | L4 |
| CO2 | Explain Decoupled load flow method and its assumptions, Fast Decoupled load method and its assumptions | L2 |
| CO3 | Classify different load flow methods | L4 |
| CO4 | Illustrate short circuit studies for the protection of power system | L2 |
| CO5 | Define stability and instability in power systems | L1 |


**Course name: Power Electronics** **Course Code: EE602PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply the characteristics of basic elements, turn on and turn off methods of SCR, protection, ratings of SCRs and series parallel operations of SCRs | L3 |
| CO2 | Explain the operation of single phase, three phase rectifiers and single phase, three phase dual converters | L2 |
| CO3 | Analyze the principle of operation of AC voltage controllers and cyclo converters | L4 |
| CO4 | Design the principle of operation of chopper, classification of choppers, AC chopper and switched mode regulators | L5 |
| CO5 | Compute the operation of series, parallel inverters, single phase inverters, three phase inverters, voltage source inverters and current source inverter | L3 |

**Course name: Switch Gear and Protection** **Course Code: EE603PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify the types of Circuit breakers & appropriate protection of power system | L4 |
| CO2 | Explain the types of Relays & appropriate protection of power system | L2 |
| CO3 | Analyze the existing transmission voltage levels and various means to protect the system against over voltages | L4 |
| CO4 | Describe the importance of Neutral Grounding, Methods & Practices | L2 |
| CO5 | Illustrate Over Voltages in Power Systems & Testing | L2 |


**Course name: Open Elective – II**

**JAVA Programming Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Solve the real world problems using object oriented programming techniques | L4 |
| CO2 | Use the packages and access protections, IO streams | L3 |
| CO3 | Analyze the fundamentals of exceptions and its handling mechanism in java. To understand multithreading programs and thread synchronization. | L4 |
| CO4 | Design the java collections framework. And how to use the collection classes. | L5 |
| CO5 | Classify the graphical user interface creation using java. And understand the various components of GUI programming in java | L4 |


**Course name: Professional Elective - I**

**Electrical and Electronics Instrumentation Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the performance characteristics of each instrument | L4 |
| CO2 | Evaluate measure frequency, phase with Oscilloscope | L4 |
| CO3 | Classify different types of signal analyzers. | L4 |
| CO4 | Compute different methods available for measurement of passive elements like resistance, inductance & capacitance. | L3 |
| CO5 | Apply measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure ,Vacuum, and Flow | L3 |


**Course name: Power Systems Lab** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Perform various load flow techniques | L6 |
| CO2 | Explain Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw the conclusions. | L4 |
| CO4 | Design CT and PT | L5 |
| CO5 | Compute Transmission lines and A B C and D parameters | L3 |


**Course name: Power Electronics Lab** **Course Code: EE605PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the operating principles of various power electronic converters. | L2 |
| CO2 | Use power electronic simulation packages& hardware to develop the power converters. | L3 |
| CO3 | Analyze and choose the appropriate converters for various applications | L4 |
| CO4 | Perform various load flow techniques | L6 |
| CO5 | Compute Different protection methods, Analyze the experimental data and draw the conclusions**.** | L3 |


**Course name: Advanced English Communication Skills Lab**
**Course Code: EN606HS**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Modify students' fluency in spoken English | L5 |
| CO2 | Explain them to listen to English spoken at normal conversational speed | L2 |
| CO3 | Discuss students develop their vocabulary | L2 |
| CO4 | Design their ideas relevantly and coherentlyin writing | L5 |
| CO5 | Analyze acquire behavior skills for their personal and professional life | L4 |


**Year:IV** **Semester: I** **Regulation:R16**

**Course name: Power Semiconductor Drives** **Course Code: EE701PC**

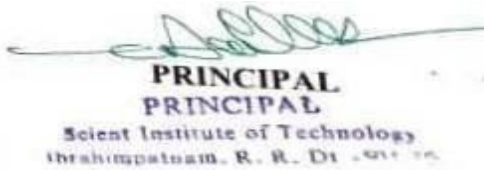
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the speed control of DC motors with phase controlled rectifiers | L4 |
| CO2 | Describe the four quadrant operation of DC Drive with dual converter and operation of DC drives with choppers | L2 |
| CO3 | Apply the variable voltage and variable frequency operation of induction motors with suitable converters | L3 |
| CO4 | Explain the speed control of induction motor through static rotor resistance control and vector control | L2 |
| CO5 | Demonstrate the speed control of synchronous motor with suitable converters | L3 |


**Course name: Power System Operation and control  Course Code: EE702PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the optimal scheduling of power plants, static analysis of uncontrolled case | L4 |
| CO2 | Compute Reactive Power – Voltage Control, Describe reactive power control of a power system | L3 |
| CO3 | Apply Economic Load Dispatch, Statement of economic dispatch problem solution by direct method and λ-iteration method. | L3 |
| CO4 | Explain Unit Commitment, Priority-list methods forward dynamic programming approach | L2 |
| CO5 | Compute Computer Control of Power Systems, system monitoring - data acquisition and control | L3 |

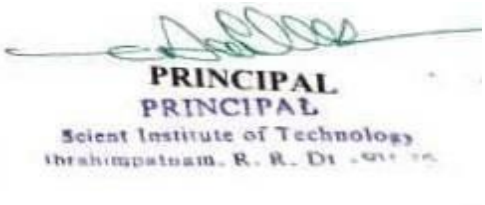



**Course name: Professional Elective – II**

**HVDC Transmission** **Course Code: EE722PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify EHVAC and HVDC System and to describe various types of HVDC links, Analysis of HVDC Converters | L4 |
| CO2 | Analyze Converters and HVDC System control, Reactive power control in HVDC | L4 |
| CO3 | Perform Power flow analysis in AC/DC systems, DC Converters, P.U.system | L6 |
| CO4 | Explain Converters faults and protection, Surge arresters, DC breakers | L2 |
| CO5 | Illustrate Harmonics, filters, calculations of voltage and current on harmonics | L2 |

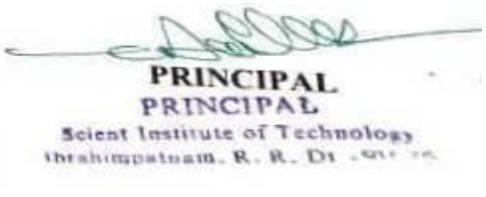



**Course name: Professional Elective – III**

**Power Quality** **Course Code: EE732PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute the Severity of Power quality problems in Distribution System | L3 |
| CO2 | Perform the Origin of Interruptions | L6 |
| CO3 | Explain the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage) | L2 |
| CO4 | Analyze the Power Quality Considerations in Industrial Power Systems | L4 |
| CO5 | Outline the Overview of mitigation of power quality issues by VSI Converters | L2 |

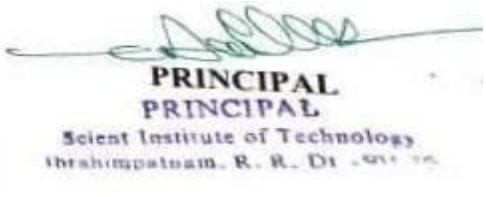



**Course name: Professional Elective - IV**

**EHV AC Transmission Systems Course Code: EE742PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss the basic concepts of EHV AC transmission | L2 |
| CO2 | Design EHV transmission line inductance and capacitance | L5 |
| CO3 | Compute the voltage gradients of conductor<br>Identify corona effects on transmission lines | L3 |
| CO4 | Explain the electrostatic fields of EHVAC lines and its effects Analyze travelling waves | L2 |
| CO5 | Evaluate various compensators for voltage control | L4 |

**Course name: Electrical Systems Simulation Lab Course Code: EE703PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design and Analyze electrical systems in time and frequency domain | L5 |
| CO2 | Analyze various transmission lines and perform fault analysis | L4 |
| CO3 | Integrate Model Load frequency control of Power Systems | L4 |
| CO4 | Design various Power Electronic Converters and Drives. | L5 |
| CO5 | Explain the performance of feedback and load frequency control of the systems | L2 |


**Course name: Electrical Workshop Course Code: EE704PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss about the practical knowledge related to electrical | L2 |
| CO2 | Analyze Fabricate basic electrical circuit elements/networks | L4 |
| CO3 | Explain the Trouble shoot the electrical circuits | L2 |
| CO4 | Design filter circuit for application | L5 |
| CO5 | Perform hardware skills such as soldering, winding etc. | L6 |


**Course Name: Industry Oriented Mini Project  Course Code:  EE705PC**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss the practical knowledge within the chosen area of technology for project development | L2 |
| CO2 | Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach. | L2 |
| CO3 | Design and contribute as an individual or in a team in development of technical projects | L4 |
| CO4 | Compute an effective communication skills for presentation of project related activities | L3 |
| CO5 | Explain the need of project management and project management life cycle. | L2 |


**Course name: Seminar Course Code: EE706PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assess and enhance the capability of the student to present a seminar on a technical topic | L6 |
| CO2 | Integrate To assess and enhance the capability of the student to present a seminar on a technical topic | L4 |
| CO3 | Explain the learning and critical thinking about a technical topic | L2 |
| CO4 | Discuss the literature from different traditions to help the students appreciate the universal importance social trust, truth telling and mutual obligations | L2 |
| CO5 | Explain how to document and present a technical reports | L2 |


**Year: IV** **Semester: II** **Regulation:R16**

**Course name: Open Elective – III**

**DISASTER MANAGEMENT Course Code: CE511OE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain disasters and its types, hazards its assessment, vulnerability factors and some of the vulnerabilities of disasters like floods, earthquakes. | L2 |
| CO2 | Analyzing the concepts of risk and crisis management, and understanding the various levels in disaster management cycle | L4 |
| CO3 | Design the legislative support at the state and national levels and capacity building, its assessment, counter disaster resources | L5 |
| CO4 | Compute the coping strategies and need of safety plan at industries in order to avoid industrial disasters, the survival kits that need to be used during the disasters, the role of mass media | L3 |
| CO5 | Perform the strategies for disaster management, disaster risk reduction plan, Acts, policies of disaster management in India. | L6 |

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**Course name: Professional Elective-V**

**Electrical Distribution Systems Course Code: EE852PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Distinguish between transmission, and distribution line and design the feeders | L4 |
| CO2 | Compute power loss and voltage drop of the feeders | L3 |
| CO3 | Design protection of distribution systems | L5 |
| CO4 | Analyze the importance of voltage control and power factor improvement | L4 |
| CO5 | Classify the power factor improvement and voltage control | L4 |


**Course name: Professional Elective-VI**

**Utilization of Electric Power** **Course Code: EE863PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the operating principles and characteristics of traction motors with respect to speed, temperature, loading condition | L2 |
| CO2 | Analyze to acquaint with the different types of heating and welding techniques | L4 |
| CO3 | Perform the basic principles of illumination and its measurement | L6 |
| CO4 | Discuss the basic principle of electric traction including speed–time curves of different traction services | L2 |
| CO5 | Apply the method of calculation of various traction system for braking, acceleration and other related parameters, including demand side management. | L3 |


**Course name: Major Project** **Course Code: EE801PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss an opportunity to pursue their interest in Electrical Engineering, through design, research, theoretical, and experimental approach. | L2 |
| CO2 | Use of fundamental knowledge and skills in engineering and apply it effectively on a project. | L3 |
| CO3 | Compare To effectively communicate by making an oral presentation before an evaluation committee. | L4 |
| CO4 | Analyze how to apply technology for the real time problems. | L4 |
| CO5 | Explain how to apply technology for the real time problems | L2 |

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**Course Name: TECHNICAL SEMINAR** **Course Code: EE706PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify emerging topic specific to the programme. | L2 |
| CO2 | Apply the information relevant to the chosen topic. | L3 |
| CO3 | Analyze the knowledge using multimedia. | L4 |
| CO4 | Explain the queries with appropriate explanation and elaboration. | L2 |
| CO5 | Design an effective technical report, providing conclusions and proposing an appropriate future scope. | L5 |


# SCIENT INSTITUTE OF TECHNOLOGY

Ibrahimpatnam, R.R Dist 501506

(NAAC Accredited, Approved by AICTE & Affiliated to JNTUH)

## DEPARTMENTOF ELECTRICAL AND ELECTRONICS ENGINEERING

## Academic Year 2020-21

## Course outcomes

**YEAR: I** **Semester: I** **Regulation: R18**

**Course Name: Mathematics -I** **Course Code: MA101BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Determine the Rank, Echelon form and analyse the solution system of equations for consistency and inconsistency | L2 |
| CO2 | Find the Eigen values and vectors of a matrix and reduce the quadratic form to canonical form by orthogonal transformation | L4 |
| CO3 | Analyze the nature of sequence and series, Test the convergence of a series by applying the different tests | L4 |
| CO4 | Interpret the applicability of mean value theorems. Evaluate multiple integrals, measure the area and volume of given regions. Evaluate integrals by using Beta, Gamma functions. | L2 |
| CO5 | Analyze the problems related to Partial Differentials and relate its applications to engineering subjects | L2 |

**Course Name: English** **Course Code: EN105HS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Apply basic grammar principles and synthesize and transform sentences | L1,L3 |
| CO2 | Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills. | L1,L3 |
| CO3 | Self introspect and self vigilance to achieve high quality of life, strength and sovereignty of a developed nation | L4 |
| CO4 | Improve the exposure to universal happenings | L1 |
| CO5 | Envision the dangers of scientific and technological innovations | L4,L6 |

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**Course Name: Engineering Chemistry** **Course Code: CH202BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Describe the atomic, molecular and electronic changes, band theory related to conductivity | L2 |
| CO2 | Identify the knowledge about importance of water and understanding its treatments methods | L2 |
| CO3 | Determine the principles and concepts of electrochemistry, corrosion. | L4 |
| CO4 | Explain the skills to get clear concepts on basic spectroscopy and application to medical and other fields. | L2 |
| CO5 | Predict the configurational and conformational analysis of molecules and reaction mechanisms | L4 |

**Course Name: Basic Electrical Engineering** **Course Code: EE203ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Analyse and Solve electrical circuits using network laws and theorems | L4 |
| CO2 | Demonstrate and analyse the AC circuits | L3 |
| CO3 | Discuss the working principle, EMF equation, phasor diagram, losses, efficiency, regulation of 1-phase transformer ,working principle of Auto-transformer | L2 |
| CO4 | Determine the working principles of Electrical Machines | L4 |
| CO5 | Develop various switches and batteries | L5 |

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**Course Name: Engineering Chemistry Lab** **Course Code: CH206BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| *CO1* | Determination of parameters like hardness and chloride content in water | L4 |
| CO2 | Estimation of rate constant of a reaction from concentration – time relationships – time relationships | L3 |
| CO3 | Determination of physical properties like adsorption and viscosity | L4 |
| CO4 | Calculation of Rfvalues of some organic molecules by TLC technique | L4 |
| CO5 | Determine the synthesis of drug preparation | L5 |

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**Course Name: Basic Electrical Engineering Lab** **Course Code: EE108ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Express the basic electrical laws. | L2 |
| CO2 | Analyze the response of different types of electrical circuits to different excitations. | L4 |
| CO3 | Formulate the measurement, calculation and relation between the basic electrical parameters | L5 |
| CO4 | Determine the basic characteristics of transformers and electrical machines. | L4 |
| CO5 | Express the basic electrical laws. | L2 |

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**Course Name: English Language and Communication skills Lab** **Course Code: EN107HS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Interpret the nuances of English speech sounds, word accent, intonation and rhythm | L4 |
| CO2 | Apply the nuances of English language through audio- visual experience and group activities | L2,L4 |
| CO3 | Improve the fluency in spoken English and Neutralization their mother tongue influence of accent for intelligibility | L1,L2,L3 |
| CO4 | Develop Speaking skills with clarity and confidence which in turn enhances their employability skills | L1,L3 |
| CO5 | Use language appropriately for public speaking and Interviews | L3,L5 |

**Course Name: Engineering Workshop** **Course Code:ME205ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Describe machine tools and their operations | L2 |
| CO2 | Produce components using workshop trades including pluming, fitting, carpentry, and foundry, house wiring and welding. | L5 |
| CO3 | Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling | L2,L3 |
| CO4 | Apply basic electrical engineering knowledge for house wiring practice | L3 |
| CO5 | Use various type of measuring and gauging instrument for different type of operation | L3 |

**YEAR: I** **Semester: II** **Regulation: R18**

**Course Name: Mathematics -II** **Course Code: MA201BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Solve the first order differential equations by various methods choosing the right method in different engineering problems | L4 |
| **CO2** | Solve the higher differential equation and apply the concept of differential equation to real world problems | L4 |
| **CO3** | The knowledge of multiple integrals to find the area's, volume's, moment of inertia in region on a plane or in space. | L2 |
| **CO4** | Understand the concept of scalar& vector point functions, vector operators, divergence, curl gradient and their physical and geometrical interpretation | L2 |
| **CO5** | Apply the knowledge of line, surface &volume integrals and converting them from one to another like Gauss divergence, Greens & Stokes theorems | L2 |

**Course Name: Applied Physics** **Course Code: AP202BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Identify the fundamental concepts on Quantum behavior of matter in its micro state. | L4 |
| **CO2** | Analyze fundamentals of Semiconductor Physics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| **CO3** | Predict fundamentals of Opto electronics, lasers and fiber optics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| **CO4** | Design and prepare new materials for various engineering applications. | L5 |
| **CO5** | Describe the phenomena of electromagnetism, magnetic materials and dielectric materials. | L2 |

**Course Name: Programming for Problem Solving** **Course Code: CS103ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Describe basics of computer system, algorithms and basics of C language | L2 |
| **CO2** | Use Arrays, strings , structures, pointers to develop programs | L3 |
| **CO3** | Analyze the concept of preprocessing and file handling in C programming | L4 |
| **CO4** | Express the knowledge in developing structured programs using functions which are used to decompose a problem into different modules , developing programs using recursions and a concept of dynamic memory allocation. | L2,L5 |
| **CO5** | Identify the searching and sorting algorithms and to convert the algorithms into C programs. | L2 |

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**Course Name: Environmental Science** **Course Code: *MC109ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance ofnatural resources | L4 |
| **CO2** | Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity | L2 |
| **CO3** | Identification, assessment and quantification of global environmental issues in order to create awareness about the international conventions for mitigating global environmentalproblems | L4 |
| **CO4** | Develop the raising human needs of the present and future generations through preserving the environment | L5 |
| **CO5** | Outline green environmental issue provides an opportunity to overcome the current Global environmental issues by implementing modern techniques like CDM, green building, green computing etc. Global environmental issues in order to create awareness | L2 |

**Course Name: Engineering Graphics** **Course Code: ME104ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Discuss about section and orthographic views of engineering components | L2 |
| **CO2** | Draw the projection points ,lines and planes | L5 |
| **CO3** | Classify solids and projection of solids at different positions | L4 |
| **CO4** | Show the section views of solids and development of surfaces | L1 |
| **CO5** | Draw the isometric projection and perspective views of object / solids Apply the concept of drawing in practical application | L5 |

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**Course Name: Applied physics Lab** **Course Code: AP205BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Examine the usage of different components. | L4 |
| **CO2** | Construct the electrical circuits. | L5 |
| **CO3** | Compare the theory and co-relate with experiment | L4 |
| **CO4** | Recognize the applications of physics experiments in day – to – day life | L4 |

**Course Name: Programming for Problem Solving Lab**

**Course Code: CS206ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Formulate the algorithms for simple problems, and translate given algorithms to a working and correct program | L5 |
| **CO2** | Correct syntax errors as reported by the compilers and identify and correct logical errors encountered during execution | L4 |
| **CO3** | Represent and manipulate data with arrays, strings and structures use pointers of different types | L1 |
| **CO4** | Create, read and write to and from simple text and binary files | L5 |

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**YEAR : II Semester: I** **Regulation:R18**

**Course name: Engineering Mechanics** **Course Code: EE301ESAt**

**the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the basic force system. | L2 |
| CO2 | Apply the principles of particle kinematics | L3 |
| CO3 | Compute the concept of particle dynamics. | L3 |
| CO4 | Evaluate the general equations of equilibrium | L5 |
| CO5 | List out methods of minimization of potential energy. | L1 |

**Course name: Electrical Circuit Analysis** **Course Code: EE302PC**

**At the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply Thevenin's and Norton's theorems to analyze and design for maximum power transfer and the concept of linearity and the associated technique of superposition to circuits and network. | L3 |
| CO2 | Analyze the transient response of series and parallel circuits with DC and AC excitation using differential approach | L4 |
| CO3 | Explain the single phase AC circuits and apply steady state analysis to time varying circuits. | L2 |
| CO4 | Analyze the transient response of series and parallel circuits with DC and Ac excitation using laplace transform approach | L4 |
| CO5 | Discuss features of two port networks and to obtain their equivalent circuits. | L2 |

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**Course name: Analog Electronics** **Course Code: EE303PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the characteristics, utilization of various components | L2 |
| CO2 | List the biasing techniques | L1 |
| CO3 | Design and analyze various rectifiers, small signal amplifier circuits. | L5 |
| CO4 | Apply sinusoidal and non-sinusoidal oscillators | L3 |
| CO5 | Illustrate the functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits | L2 |

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**Course name: Electrical Machines - I** **Course Code: EE304PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify different parts of a DC machine & understand its operation, methods of improving commutation | L4 |
| CO2 | Apply different testing methods to predetermine the efficiency of DC machines, Armature reaction and commutation | L3 |
| CO3 | List out the different excitation and starting methods of DC machines | L1 |
| CO4 | Compute the voltage and speed of a DC machines | L3 |
| CO5 | Analyze single phase and three phase transformers circuits. | L4 |

**Course name: Electromagnetic Fields Course Code: EE305PCT**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| *CO1* | Apply vector calculus to static electric – magnetic fields. | L3 |
| CO2 | Compute the force, potential & Energy for different charge & current configurations and Evaluate capacitance in static electric field. | L3 |
| CO3 | Solve Electromagnetic Relation using Maxwell Formulae. | L4 |
| CO4 | Compute the force, potential & Energy for different charge & current configurations and Evaluate Inductance. | L3 |
| CO5 | Explain moving charges on Magnetic fields Analyze Maxwell's equation in different forms (Differential and integral) in Electro Magnetic time varying fields. | L2 |

**Course name: Electrical Circuits Lab** **Course Code: EE308PCAT**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design electrical systems | L5 |
| CO2 | Analyze a given network by applying various Network Theorems, Apply concepts of electrical circuits across engineering | L4 |
| CO3 | Explain the three phase Active and Reactive power. | L2 |
| CO4 | Illustrate the locus diagrams | L2 |
| CO5 | Evaluate response in a given network by using theorems | L4 |

**Course name: Electrical Machines Lab – I Course Code: EE306PC**

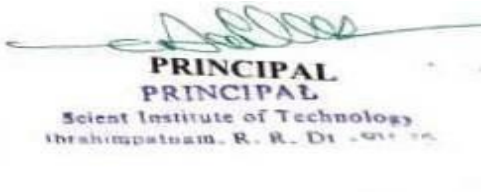
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the performance characteristics of DC Generators | L4 |
| CO2 | Identify performance characteristics of DC Motors | L2 |
| CO3 | Determine starting and speed control methods of different DC Machines. | L4 |
| CO4 | Analyze the efficiency of DC machines using different testing methods. | L4 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |


**Course name: Analog Electronics Lab** **Course Code: EE307PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze various transistor amplifier circuits and their freq. responses at low, mid and high frequencies | L4 |
| CO2 | Designing amplifier circuits using BJTs | L5 |
| CO3 | Analyze the concepts of both positive and negative feedback in electronic circuits | L4 |
| CO4 | Design, construct & analyze oscillator circuits to generate signals in various frequency ranges | L5 |
| CO5 | Explain different types of power amplifiers for practical applications of desired specifications | L2 |

**Course name: Gender Sensitization Lab** **Course Code: MC309**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute developed a better understanding of important issues related to gender in contemporary India. | L3 |
| CO2 | Analyze sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film. | L4 |
| CO3 | Apply to attain a finer grasp of how gender discrimination works in our society and how to counter it. | L3 |
| CO4 | Explain the gendered division of lab our and its relation to politics and economics. | L2 |
| CO5 | Analyze Men and women students and professionals will be better equipped to work and live together as equals. | L4 |

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**Year: II** **Semester: II** **Regulation: R18**

**Course name: Laplace Transforms, Numerical Methods &Complex variables**

**Course Code: MA401BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Solve the Laplace transforms techniques for solving ODE'S | L4 |
| CO2 | Estimate the value for the given data using interpolation and find the root of a given equation | L3 |
| CO3 | Determine the numerical solutions for a given ODE'S | L4 |
| CO4 | Analyze the complex function with reference their analyticity | L4 |
| CO5 | Explain the integration using Cauchy's integral and residue theorems and Taylor's and Laurent's series expansions of complex Function | L2 |


**Course name: Electrical Machines – II** **Course Code EE402PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the construction and working of 3-φ Induction machines. | L4 |
| CO2 | Explain the characteristics and different speed control methods of 3-φ Induction motor. | L2 |
| CO3 | Compute the construction and working and Analyze different methods to find the regulation of alternators. | L3 |
| CO4 | Select the parallel operation of alternators and operation of synchronous motor. | L4 |
| CO5 | List out the operation of different 1-φ Induction motors. | L1 |


**Course name: Digital Electronics** **Course Code: EE403PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain working of logic families and logic gates | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits | L5 |
| CO3 | Analyze Sequential Circuits and Systems, synchronous counters, counters design using flip flops | L4 |
| CO4 | Apply the process of Analog to Digital conversion and Digital to Analog conversion | L3 |
| CO5 | Compute the use PLDs to implement the given logical problem. | L3 |


**Course name: Control Systems** **Course Code: EE404PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the operation of open loop and closed loop systems. | L4 |
| CO2 | Apply transfer functions for electro-dynamic plants and machines, with electrical, electro-mechanical, electro-pneumatic, and electro-hydraulic elements from plant site collected data. | L3 |
| CO3 | Analyze the stability of a system in s – domain. | L4 |
| CO4 | Compute the control systems in the frequency domain and solve the problems related to compensation techniques. | L3 |
| CO5 | Evaluate the problems relating to stability of control systems and formulate state model to electrical and electro mechanical plants and evaluate plant response to particular inputs. | L4 |


**Course name: Power System - I** **Course Code: EE405PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze to the concepts of power systems. Understand the operation of conventional generating stations and renewable sources of electrical power | L4 |
| CO2 | Evaluate the power tariff method | L4 |
| CO3 | Determine the electrical circuit parameters of transmission lines, Capacitance of a single core and three core cables | L4 |
| CO4 | Analyze Line conductors, Factors affecting corona loss and methods of reducing corona loss | L4 |
| CO5 | Explain the layout of substation and underground cables and corona | L2 |


**Course name: Digital Electronics Lab** **Course Code: EE406PC**

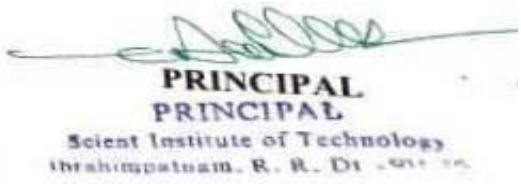
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the working of logic families and logic gates. | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits. | L5 |
| CO3 | Illustrate the process of Analog to Digital conversion and Digital to Analog conversion. | L2 |
| CO4 | Analyze use of PLDs to implement the given logical problem. | L4 |
| CO5 | Review to implement synchronous state machines using flip-flops. | L6 |


**Course name: Electrical Machines Lab - II** **Course Code: EE407PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assess the performance of different machines using different testing methods | L6 |
| CO2 | Explain the Phase from three phase to two phase and vice versa | L2 |
| CO3 | Analyze Compensate the changes in terminal voltages of synchronous generator | L4 |
| CO4 | Apply Control the active and reactive power flows in synchronous machines | L3 |
| CO5 | Explain different machines and control the speed and power factor | L2 |

**Course name: Control Systems Lab** **Course Code: EE408PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the system performance by selecting a suitable controller and/or a compensator for a specific application | L2 |
| CO2 | Apply various time domain and frequency domain techniques to assess the system performance | L3 |
| CO3 | List various control strategies to different applications(example: Power systems, electricaldrives etc) | L1 |
| CO4 | Compute the system controllability and Observability using state space representation and applications of state space representation to various systems | L3 |
| CO5 | Apply various time domain an frequency domain techniques to assess the system performance | L3 |


**Course name: Constitution of India** **Course Code: *MC409**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the Meaning of the constitution law and constitutionalism, Historical perspective of the Constitution of India | L4 |
| CO2 | Explain the Salient features and characteristics of the Constitution of India, Scheme of the fundamental rights | L2 |
| CO3 | Compute The Directive Principles of State Policy – Its importance and implementation. Federal structure and distribution of legislative and financial powers between the Union and the States | L3 |
| CO4 | Apply The historical perspectives of the constitutional amendments in India. Emergency Provisions: National Emergency, President Rule, Financial Emergency | L3 |
| CO5 | Out line the Scheme of the Fundamental Right to certain Freedom under Article19. Scope of the Right to Life and Personal Liberty under Article21 | L2 |

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**Year: III** **Semester: I** **Regulation: R18**

**Course name: Power Systems-II** **Course Code: EE502PE**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze transmission line performance | L4 |
| CO2 | Apply load compensation techniques to control reactive power | L3 |
| CO3 | Understand the application of per unit quantities | L2 |
| CO4 | Design over voltage protection and insulation coordination | L6 |
| CO5 | Determine the fault currents for symmetrical and unbalanced faults | L4 |


**Course name: Power Electronics** **Course Code: EE501PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's TaxonomyLevels |
|---|---|---|
| CO1 | Understand the differences between signal level and power level devices | L2 |
| CO2 | Analyze controlled rectifier circuits | L4 |
| CO3 | Analyze the operation of DC-DC choppers | L4 |
| CO4 | Analyze the operation of voltage source inverters. | L4 |


**Course Name: High Voltage Engineering** **Course Code:** EE512PE

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the basic physics related to various breakdown processes in solid, liquid and gaseous insulating materials | L2 |
| CO2 | Knowledge of generation and measurement of D. C., A.C., & Impulse voltages. | L1 |
| CO3 | Knowledge of tests on H. V. equipment and on insulating materials, as per the standards | L1 |
| CO4 | Knowledge of how over-voltages arise in a power system, and protection against these over voltages. | L1 |


**Course name: Measurements and Instrumentation** **Course Code: EE503PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand different types of measuring instruments, their construction, operation and characteristics | L2 |
| CO2 | Identify the instruments suitable for typical measurements | L1 |
| CO3 | Apply the knowledge about transducers and instrument transformers to use them effectively | L3 |
| CO4 | Apply the knowledge of smart and digital metering for industrial applications | L3 |


**Course name: Business economics and financial analysis Course Code: SM504MS**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | The students will understand the various Forms of Business and the impact of economic variables on the Business | L2 |
| CO2 | The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. | L2 |
| CO3 | The Students can study the firm's financial position by analyzing the Financial Statements of a Company. | L4 |


**Course Name: Power Systems Lab** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Perform various load flow techniques | L6 |
| CO2 | Explain Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw theconclusions. | L4 |
| CO4 | Compute The Calculations | L3 |
| CO5 | Determine the Accurate and Exact values | L4 |


**Course name: Power system simulation lab** **Course Code: EE505PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Perform various transmission line calculations | L2 |
| CO2 | Understand Different circuits time constants | L2 |
| CO3 | Analyze the experimental data and draw the conclusions. | L4 |
| CO4 | understand the high frequency transients | L2 |
| CO5 | calculate Time constant calculations | L4 |


**Course name: Measurements and instrumentation lab**

**Course Code: EE507PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | the student is able to choose instruments | L2 |
| CO2 | Test any instrument | L3 |
| CO3 | Find the accuracy of any instrument by performing experiment | L4 |
| CO4 | Calibrate PMMC instrument using D.C potentiometer | L4 |


**Course name: Advanced Communication Skills Lab  Course Code: EN508HS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Build sound vocabulary and its proper use contextually | L3 |
| CO2 | Use of functional English effectively in formal and informal contexts | L4 |
| CO3 | Develop effective speaking skills and Maximize job prospects | L5 |
| CO4 | Plan and make different forms of presentation using various techniques | L2 |
| CO5 | Understand an effective speaking skills and Maximize job prospects. | L2,L3 |


**Year: III** **Semester: II** **Regulation: R18**

**Course name: Power system protection** **Course Code: EE603PC**

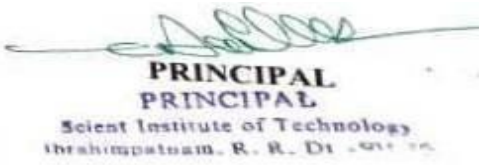
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compare and contrast electromagnetic, static and microprocessor-based relays. | L4 |
| CO2 | Apply technology to protect power system components. | L3 |
| CO3 | Select relay settings of over current and distance relays | L1 |
| CO4 | Analyze quenching mechanisms used in air, oil and vacuum circuit breakers | L4 |


**Course name: Microprocessors & Microcontrollers** **Course Code: EE602PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's TaxonomyLevels |
|---|---|---|
| CO1 | Understands the internal architecture, organization and assembly language programming of 8086 processors. | L2 |
| CO2 | Understands the internal architecture, organization and assembly language programming of 8051/controllers | L2 |
| CO3 | Understands the interfacing techniques to 8086 and 8051 based systems | L2 |
| CO4 | Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors. | L2 |

**Course Name: Signals and systems** **Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Differentiate various signal functions. | L2 |
| CO2 | Understand the characteristics of linear time invariant systems. | L2 |
| CO3 | Represent any arbitrary signal in time and frequency domain. | L3 |
| CO4 | Analyze the signals with different transform technique. | L4 |


**Course name: Power system operation and control** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand operation and control of power systems. | L2 |
| CO2 | Analyze various functions of Energy Management System (EMS) functions. | L4 |
| CO3 | Analyze whether the machine is in stable or unstable position | L4 |
| CO4 | Understand power system deregulation and restructuring. | L2 |


**Course name: Power Semiconductor Drives** **Course Code: EE612PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify the drawbacks of speed control of motor by conventional methods. | L1 |
| CO2 | Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits | L2 |
| CO3 | Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits | L2 |
| CO4 | Describe Slip power recovery schemes | L1 |


**Course Name: Power Systems Lab** **Course Code: EE605PC**

**At the end of this course each student should be able to:**

| S.No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Perform various load flow techniques | L2 |
| CO2 | Understand Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw the conclusions | L4 |


**Course name: Microprocessors & Microcontrollers lab**

**Course Code: EE606PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assembly Language Programs to Perform Arithmetic (Both Signed and Unsigned) 16 Bit Data Operations, Logical Operations (Byte and Bit Level Operations), Rotate, Shift, Swap and Branch Instructions. | L2 |
| CO2 | Time delay Generation Using Timers of 8051. | L2 |
| CO3 | Serial Communication from / to 8051 to / from I/O devices. | L3 |
| CO4 | Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer 0 8051 in 8 bit Auto reload Mode and Connect a 1 HZ Pulse to INT1 pin and Display on Port 0. Assume Crystal Frequency as 11.0592 MHZ | L3 |


**Course name: Signals and systems lab**

**Course Code: EE607PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the concepts of continuous time and discrete time systems. | L2 |
| CO2 | Analyze systems in complex frequency domain. | L4 |
| CO3 | Understand sampling theorem and its implications. | L2 |


**Year: IV** **Semester: I** **Regulation: R16**

**Course name: Power Semiconductor Drives** **Course Code: EE701PC**

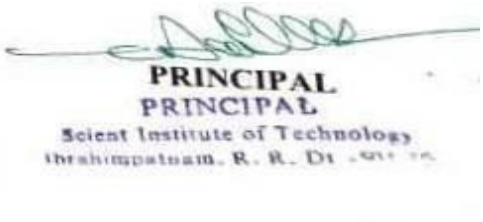
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the speed control of DC motors with phase controlled rectifiers | L4 |
| CO2 | Describe the four quadrant operation of DC Drive with dual converter and operation of DC drives with choppers | L2 |
| CO3 | Apply the variable voltage and variable frequency operation of induction motors with suitable converters | L3 |
| CO4 | Explain the speed control of induction motor through static rotor resistance control and vector control | L2 |
| CO5 | Demonstrate the speed control of synchronous motor with suitable converters | L3 |


**Course name: Power System Operation and control** **Course Code: EE702PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the optimal scheduling of power plants, static analysis of uncontrolled case | L4 |
| CO2 | Compute Reactive Power – Voltage Control, Describe reactive power control of a power system | L3 |
| CO3 | Apply Economic Load Dispatch, Statement of economic dispatch problem solution by direct method and λ-iteration method. | L3 |
| CO4 | Explain Unit Commitment, Priority-list methods forward dynamic programming approach | L2 |
| CO5 | Compute Computer Control of Power Systems, system monitoring - data acquisition and control | L3 |

**Course name: Professional Elective – II**

**HVDC Transmission** **Course Code: EE722PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify EHVAC and HVDC System and to describe various types of HVDC links, Analysis of HVDC Converters | L4 |
| CO2 | Analyze Converters and HVDC System control, Reactive power control in HVDC | L4 |
| CO3 | Perform Power flow analysis in AC/DC systems, DC Converters, P.U.system | L6 |
| CO4 | Explain Converters faults and protection, Surge arresters, DC breakers | L2 |
| CO5 | Illustrate Harmonics, filters, calculations of voltage and current on harmonics | L2 |


**Course name: Professional Elective – III**

**Power Quality** **Course Code: EE732PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute the Severity of Power quality problems in Distribution System | L3 |
| CO2 | Perform the Origin of Interruptions | L6 |
| CO3 | Explain the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage) | L2 |
| CO4 | Analyze the Power Quality Considerations in Industrial Power Systems | L4 |
| CO5 | Outline the Overview of mitigation of power quality issues by VSI Converters | L2 |


**Course name: Professional Elective - IV**

**EHV AC Transmission Systems** **Course Code: EE742PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss the basic concepts of EHV AC transmission | L2 |
| CO2 | Design EHV transmission line inductance and capacitance | L5 |
| CO3 | Compute the voltage gradients of conductor<br>Identify corona effects on transmission lines | L3 |
| CO4 | Explain the electrostatic fields of EHVAC lines and its effects Analyze travelling waves | L2 |
| CO5 | Evaluate various compensators for voltage control | L4 |


**Course name: Electrical Systems Simulation Lab** **Course Code: EE703PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design and Analyze electrical systems in time and frequency domain | L5 |
| CO2 | Analyze various transmission lines and perform fault analysis | L4 |
| CO3 | Integrate Model Load frequency control of Power Systems | L4 |
| CO4 | Design various Power Electronic Converters and Drives. | L5 |
| CO5 | Explain the performance of feedback and load frequency control of the systems | L2 |


**Course name: Electrical Workshop** **Course Code: EE704PC**

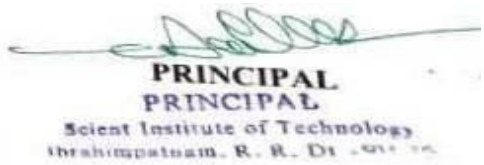
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss about the practical knowledge related to electrical | L2 |
| CO2 | Analyze Fabricate basic electrical circuit elements/networks | L4 |
| CO3 | Explain the Trouble shoot the electrical circuits | L2 |
| CO4 | Design filter circuit for application | L5 |
| CO5 | Perform hardware skills such as soldering, winding etc. | L6 |


**Course Name: Industry Oriented Mini Project** **Course Code: EE705PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss the practical knowledge within the chosen area of technology for project development | L2 |
| CO2 | Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach. | L2 |
| CO3 | Design and contribute as an individual or in a team in development of technical projects | L4 |
| CO4 | Compute an effective communication skills for presentation of project related activities | L3 |
| CO5 | Explain the need of project management and project management life cycle. | L2 |

**Course name: Seminar** **Course Code: EE706PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assess and enhance the capability of the student to present a seminar on a technical topic | L6 |
| CO2 | Integrate To assess and enhance the capability of the student to present a seminar on a technical topic | L4 |
| CO3 | Explain the learning and critical thinking about a technical topic | L2 |
| CO4 | Discuss the literature from different traditions to help the students appreciate the universal importance social trust, truth telling and mutual obligations | L2 |
| CO5 | Explain how to document and present a technical reports | L2 |


**Year: IV** **Semester: II** **Regulation: R16**

**Course name: Open Elective – III**

**DISASTER MANAGEMENT** **Course Code: CE511OE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain disasters and its types, hazards its assessment, vulnerability factors and some of the vulnerabilities of disasters like floods, earthquakes. | L2 |
| CO2 | Analyzing the concepts of risk and crisis management, and understanding the various levels in disaster management cycle | L4 |
| CO3 | Design the legislative support at the state and national levels and capacity building, its assessment, counter disaster resources | L5 |
| CO4 | Compute the coping strategies and need of safety plan at industries in order to avoid industrial disasters, the survival kits that need to be used during the disasters, the role of mass media | L3 |
| CO5 | Perform the strategies for disaster management, disaster risk reduction plan, Acts, policies of disaster management in India. | L6 |

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**Course name: Professional Elective-V**

**Electrical Distribution Systems** **Course Code: EE852PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Distinguish between transmission, and distribution line and design the feeders | L4 |
| CO2 | Compute power loss and voltage drop of the feeders | L3 |
| CO3 | Design protection of distribution systems | L5 |
| CO4 | Analyze the importance of voltage control and power factor improvement | L4 |
| CO5 | Classify the power factor improvement and voltage control | L4 |


**Course name: Professional Elective-VI**

**Utilization of Electric Power** **Course Code: EE863PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the operating principles and characteristics of traction motors with respect to speed, temperature, loading condition | L2 |
| CO2 | Analyze to acquaint with the different types of heating and welding techniques | L4 |
| CO3 | Perform the basic principles of illumination and its measurement | L6 |
| CO4 | Discuss the basic principle of electric traction including speed–time curves of different traction services | L2 |
| CO5 | Apply the method of calculation of various traction system for braking, acceleration and other related parameters, including demand side management. | L3 |


**Course name: Major Project** **Course Code: EE801PC**

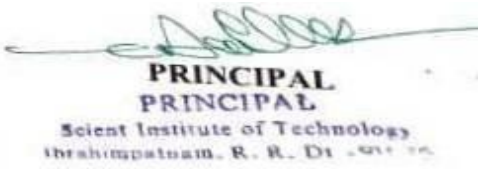
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Discuss an opportunity to pursue their interest in Electrical Engineering, through design, research, theoretical, and experimental approach. | L2 |
| CO2 | Use of fundamental knowledge and skills in engineering and apply it effectively on a project. | L3 |
| CO3 | Compare To effectively communicate by making an oral presentation before an evaluation committee. | L4 |
| CO4 | Analyze how to apply technology for the real time problems. | L4 |
| CO5 | Explain how to apply technology for the real time problems | L2 |


**Course Name: TECHNICAL SEMINAR** **Course Code: EE706PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify emerging topic specific to the programme. | L2 |
| CO2 | Apply the information relevant to the chosen topic. | L3 |
| CO3 | Analyze the knowledge using multimedia. | L4 |
| CO4 | Explain the queries with appropriate explanation and elaboration. | L2 |
| CO5 | Design an effective technical report, providing conclusions and proposing an appropriate future scope. | L5 |

# SCIENT INSTITUTE OF TECHNOLOGY

Ibrahimpatnam, R.R Dist 501506

(NAAC Accredited, Approved by AICTE & Affiliated to JNTUH)

## DEPARTMENTOF ELECTRICAL AND ELECTRONICS ENGINEERING

## Academic Year 2021-22

## Course outcomes

**YEAR: I** **Semester: I** **Regulation: R18**

**Course Name: Mathematics -I** **Course Code: MA101BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Determine the Rank, Echelon form and analyse the solution system of equations for consistency and inconsistency | L2 |
| CO2 | Find the Eigen values and vectors of a matrix and reduce the quadratic form to canonical form by orthogonal transformation | L4 |
| CO3 | Analyze the nature of sequence and series, Test the convergence of a series by applying the different tests | L4 |
| CO4 | Interpret the applicability of mean value theorems. Evaluate multiple integrals, measure the area and volume of given regions. Evaluate integrals by using Beta, Gamma functions. | L2 |
| CO5 | Analyze the problems related to Partial Differentials and relate its applications to engineering subjects | L2 |

**Course Name: English** **Course Code: EN105HS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Apply basic grammar principles and synthesize and transform sentences | L1,L3 |
| CO2 | Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills. | L1,L3 |
| CO3 | Self introspect and self vigilance to achieve high quality of life, strength and sovereignty of a developed nation | L4 |
| CO4 | Improve the exposure to universal happenings | L1 |
| CO5 | Envision the dangers of scientific and technological innovations | L4,L6 |

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**Course Name: Engineering Chemistry** **Course Code: CH202BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Describe the atomic, molecular and electronic changes, band theory related to conductivity | L2 |
| CO2 | Identify the knowledge about importance of water and understanding its treatments methods | L2 |
| CO3 | Determine the principles and concepts of electrochemistry, corrosion. | L4 |
| CO4 | Explain the skills to get clear concepts on basic spectroscopy and application to medical and other fields. | L2 |
| CO5 | Predict the configurational and conformational analysis of molecules and reaction mechanisms | L4 |

**Course Name: Basic Electrical Engineering** **Course Code: EE203ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Analyse and Solve electrical circuits using network laws and theorems | L4 |
| CO2 | Demonstrate and analyse the AC circuits | L3 |
| CO3 | Discuss the working principle, EMF equation, phasor diagram, losses, efficiency, regulation of 1-phase transformer ,working principle of Auto-transformer | L2 |
| CO4 | Determine the working principles of Electrical Machines | L4 |
| CO5 | Develop various switches and batteries | L5 |

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**Course Name: Engineering Chemistry Lab** **Course Code: CH206BS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| *CO1* | Determination of parameters like hardness and chloride content in water | L4 |
| CO2 | Estimation of rate constant of a reaction from concentration – time relationships – time relationships | L3 |
| CO3 | Determination of physical properties like adsorption and viscosity | L4 |
| CO4 | Calculation of Rfvalues of some organic molecules by TLC technique | L4 |
| CO5 | Determine the synthesis of drug preparation | L5 |

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**Course Name: Basic Electrical Engineering Lab** **Course Code:EE108ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Express the basic electrical laws. | L2 |
| CO2 | Analyze the response of different types of electrical circuits to different excitations. | L4 |
| CO3 | Formulate the measurement, calculation and relation between the basic electrical parameters | L5 |
| CO4 | Determine the basic characteristics of transformers and electrical machines. | L4 |
| CO5 | Express the basic electrical laws. | L2 |

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**Course Name: English Language and Communication skills Lab** **Course Code: EN107HS**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Interpret the nuances of English speech sounds, word accent, intonation and rhythm | L4 |
| CO2 | Apply the nuances of English language through audio- visual experience and group activities | L2,L4 |
| CO3 | Improve the fluency in spoken English and Neutralization their mother tongue influence of accent for intelligibility | L1,L2,L3 |
| CO4 | Develop Speaking skills with clarity and confidence which in turn enhances their employability skills | L1,L3 |
| CO5 | Use language appropriately for public speaking and Interviews | L3,L5 |

**Course Name: Engineering Workshop** **Course Code:ME205ES**

**At the end of this course each student should be able to:**

| | | |
|---|---|---|
| CO1 | Describe machine tools and their operations | L2 |
| CO2 | Produce components using workshop trades including pluming, fitting, carpentry, and foundry, house wiring and welding. | L5 |
| CO3 | Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling | L2,L3 |
| CO4 | Apply basic electrical engineering knowledge for house wiring practice | L3 |
| CO5 | Use various type of measuring and gauging instrument for different type of operation | L3 |

**YEAR: I** **Semester: II** **Regulation: R18**

**Course Name: Mathematics -II** **Course Code: MA201BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Solve the first order differential equations by various methods choosing the right method in different engineering problems | L4 |
| **CO2** | Solve the higher differential equation and apply the concept of differential equation to real world problems | L4 |
| **CO3** | The knowledge of multiple integrals to find the area's, volume's, moment of inertia in region on a plane or in space. | L2 |
| **CO4** | Understand the concept of scalar& vector point functions, vector operators, divergence, curl gradient and their physical and geometrical interpretation | L2 |
| **CO5** | Apply the knowledge of line, surface &volume integrals and converting them from one to another like Gauss divergence, Greens & Stokes theorems | L2 |

**Course Name: Applied Physics** **Course Code: AP202BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Identify the fundamental concepts on Quantum behavior of matter in its micro state. | L4 |
| **CO2** | Analyze fundamentals of Semiconductor Physics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| **CO3** | Predict fundamentals of Opto electronics, lasers and fiber optics and apply to various systems like communications, solar cell, photo cells and so on. | L3 |
| **CO4** | Design and prepare new materials for various engineering applications. | L5 |
| **CO5** | Describe the phenomena of electromagnetism, magnetic materials and dielectric materials. | L2 |

**Course Name: Programming for Problem Solving** **Course Code: CS103ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Describe basics of computer system, algorithms and basics of C language | L2 |
| **CO2** | Use Arrays, strings , structures, pointers to develop programs | L3 |
| **CO3** | Analyze the concept of preprocessing and file handling in C programming | L4 |
| **CO4** | Express the knowledge in developing structured programs using functions which are used to decompose a problem into different modules , developing programs using recursions and a concept of dynamic memory allocation. | L2,L5 |
| **CO5** | Identify the searching and sorting algorithms and to convert the algorithms into C programs. | L2 |

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**Course Name: Environmental Science** **Course Code: *MC109ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance ofnatural resources | L4 |
| **CO2** | Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity | L2 |
| **CO3** | Identification, assessment and quantification of global environmental issues in order to create awareness about the international conventions for mitigating global environmentalproblems | L4 |
| **CO4** | Develop the raising human needs of the present and future generations through preserving the environment | L5 |
| **CO5** | Outline green environmental issue provides an opportunity to overcome the current Global environmental issues by implementing modern techniques like CDM, green building, green computing etc. Global environmental issues in order to create awareness | L2 |

**Course Name: Engineering Graphics** **Course Code: ME104ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Discuss about section and orthographic views of engineering components | L2 |
| **CO2** | Draw the projection points ,lines and planes | L5 |
| **CO3** | Classify solids and projection of solids at different positions | L4 |
| **CO4** | Show the section views of solids and development of surfaces | L1 |
| **CO5** | Draw the isometric projection and perspective views of object / solids Apply the concept of drawing in practical application | L5 |

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**Course Name: Applied physics Lab** **Course Code: AP205BS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Examine the usage of different components. | L4 |
| **CO2** | Construct the electrical circuits. | L5 |
| **CO3** | Compare the theory and co-relate with experiment | L4 |
| **CO4** | Recognize the applications of physics experiments in day – to – day life | L4 |

**Course Name: Programming for Problem Solving Lab**

**Course Code: CS206ES**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Level |
|---|---|---|
| **CO1** | Formulate the algorithms for simple problems, and translate given algorithms to a working and correct program | L5 |
| **CO2** | Correct syntax errors as reported by the compilers and identify and correct logical errors encountered during execution | L4 |
| **CO3** | Represent and manipulate data with arrays, strings and structures use pointers of different types | L1 |
| **CO4** | Create, read and write to and from simple text and binary files | L5 |

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**YEAR : II Semester: I** **Regulation:R18**

**Course name: Engineering Mechanics** **Course Code: EE301ES**

**At the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the basic force system. | L2 |
| CO2 | Apply the principles of particle kinematics | L3 |
| CO3 | Compute the concept of particle dynamics. | L3 |
| CO4 | Evaluate the general equations of equilibrium | L5 |
| CO5 | List out methods of minimization of potential energy. | L1 |

**Course name: Electrical Circuit Analysis** **Course Code: EE302PCAt**

**the end of this course each student should be able to :**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply Thevenin's and Norton's theorems to analyze and design for maximum power transfer and the concept of linearity and the associated technique of superposition to circuits and network. | L3 |
| CO2 | Analyze the transient response of series and parallel circuits with DC and AC excitation using differential approach | L4 |
| CO3 | Explain the single phase AC circuits and apply steady state analysis to time varying circuits. | L2 |
| CO4 | Analyze the transient response of series and parallel circuits with DC and Ac excitation using laplace transform approach | L4 |
| CO5 | Discuss features of two port networks and to obtain their equivalent circuits. | L2 |

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**Course name: Analog Electronics** **Course Code: EE303PCAt**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the characteristics, utilization of various components | L2 |
| CO2 | List the biasing techniques | L1 |
| CO3 | Design and analyze various rectifiers, small signal amplifier circuits. | L5 |
| CO4 | Apply sinusoidal and non-sinusoidal oscillators | L3 |
| CO5 | Illustrate the functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits | L2 |

**Course name: Electrical Machines - I** **Course Code: EE304PCAt**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Classify different parts of a DC machine & understand its operation, methods of improving commutation | L4 |
| CO2 | Apply different testing methods to predetermine the efficiency of DC machines, Armature reaction and commutation | L3 |
| CO3 | List out the different excitation and starting methods of DC machines | L1 |
| CO4 | Compute the voltage and speed of a DC machines | L3 |
| CO5 | Analyze single phase and three phase transformers circuits. | L4 |

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**Course name: Electromagnetic Fields Course Code: EE305PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| *CO1* | Apply vector calculus to static electric – magnetic fields. | L3 |
| CO2 | Compute the force, potential & Energy for different charge & current configurations and Evaluate capacitance in static electric field. | L3 |
| CO3 | Solve Electromagnetic Relation using Maxwell Formulae. | L4 |
| CO4 | Compute the force, potential & Energy for different charge & current configurations and Evaluate Inductance. | L3 |
| CO5 | Explain moving charges on Magnetic fields Analyze Maxwell's equation in different forms (Differential and integral) in Electro Magnetic time varying fields. | L2 |

**Course name: Electrical Circuits Lab** **Course Code: EE308PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design electrical systems | L5 |
| CO2 | Analyze a given network by applying various Network Theorems, Apply concepts of electrical circuits across engineering | L4 |
| CO3 | Explain the three phase Active and Reactive power. | L2 |
| CO4 | Illustrate the locus diagrams | L2 |
| CO5 | Evaluate response in a given network by using theorems | L4 |

**Course name: Electrical Machines Lab – I Course Code: EE306PC**

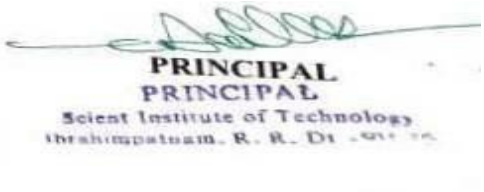
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the performance characteristics of DC Generators | L4 |
| CO2 | Identify performance characteristics of DC Motors | L2 |
| CO3 | Determine starting and speed control methods of different DC Machines. | L4 |
| CO4 | Analyze the efficiency of DC machines using different testing methods. | L4 |
| CO5 | Identify different conditions required to be satisfied for self- excitation of DC Generators. | L2 |


**Course name: Analog Electronics Lab** **Course Code: EE307PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze various transistor amplifier circuits and their freq. responses at low, mid and high frequencies | L4 |
| CO2 | Designing amplifier circuits using BJTs | L5 |
| CO3 | Analyze the concepts of both positive and negative feedback in electronic circuits | L4 |
| CO4 | Design, construct & analyze oscillator circuits to generate signals in various frequency ranges | L5 |
| CO5 | Explain different types of power amplifiers for practical applications of desired specifications | L2 |

**Course name: Gender Sensitization Lab** **Course Code: MC309**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compute developed a better understanding of important issues related to gender in contemporary India. | L3 |
| CO2 | Analyze sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film. | L4 |
| CO3 | Apply to attain a finer grasp of how gender discrimination works in our society and how to counter it. | L3 |
| CO4 | Explain the gendered division of lab our and its relation to politics and economics. | L2 |
| CO5 | Analyze Men and women students and professionals will be better equipped to work and live together as equals. | L4 |

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**Year: II** **Semester: II** **Regulation: R18**

**Course name: Laplace Transforms, Numerical Methods &Complex variables**

**Course Code: MA401BS**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Solve the Laplace transforms techniques for solving ODE'S | L4 |
| CO2 | Estimate the value for the given data using interpolation and find the root of a given equation | L3 |
| CO3 | Determine the numerical solutions for a given ODE'S | L4 |
| CO4 | Analyze the complex function with reference their analyticity | L4 |
| CO5 | Explain the integration using Cauchy's integral and residue theorems and Taylor's and Laurent's series expansions of complex Function | L2 |

**Course name: Electrical Machines – II** **Course Code EE402PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the construction and working of 3-φ Induction machines. | L4 |
| CO2 | Explain the characteristics and different speed control methods of 3-φ Induction motor. | L2 |
| CO3 | Compute the construction and working and Analyze different methods to find the regulation of alternators. | L3 |
| CO4 | Select the parallel operation of alternators and operation of synchronous motor. | L4 |
| CO5 | List out the operation of different 1-φ Induction motors. | L1 |


**Course name: Digital Electronics** **Course Code: EE403PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain working of logic families and logic gates | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits | L5 |
| CO3 | Analyze Sequential Circuits and Systems, synchronous counters, counters design using flip flops | L4 |
| CO4 | Apply the process of Analog to Digital conversion and Digital to Analog conversion | L3 |
| CO5 | Compute the use PLDs to implement the given logical problem. | L3 |


**Course name: Control Systems** **Course Code: EE404PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the operation of open loop and closed loop systems. | L4 |
| CO2 | Apply transfer functions for electro-dynamic plants and machines, with electrical, electro-mechanical, electro-pneumatic, and electro-hydraulic elements from plant site collected data. | L3 |
| CO3 | Analyze the stability of a system in s – domain. | L4 |
| CO4 | Compute the control systems in the frequency domain and solve the problems related to compensation techniques. | L3 |
| CO5 | Evaluate the problems relating to stability of control systems and formulate state model to electrical and electro mechanical plants and evaluate plant response to particular inputs. | L4 |

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**Course name: Power System - I** **Course Code: EE405PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze to the concepts of power systems. Understand the operation of conventional generating stations and renewable sources of electrical power | L4 |
| CO2 | Evaluate the power tariff method | L4 |
| CO3 | Determine the electrical circuit parameters of transmission lines, Capacitance of a single core and three core cables | L4 |
| CO4 | Analyze Line conductors, Factors affecting corona loss and methods of reducing corona loss | L4 |
| CO5 | Explain the layout of substation and underground cables and corona | L2 |


**Course name: Digital Electronics Lab** **Course Code: EE406PC**

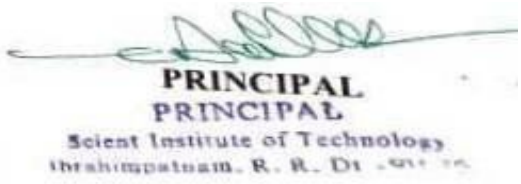
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the working of logic families and logic gates. | L2 |
| CO2 | Design and implement Combinational and Sequential logic circuits. | L5 |
| CO3 | Illustrate the process of Analog to Digital conversion and Digital to Analog conversion. | L2 |
| CO4 | Analyze use of PLDs to implement the given logical problem. | L4 |
| CO5 | Review to implement synchronous state machines using flip-flops. | L6 |


**Course name: Electrical Machines Lab - II** **Course Code: EE407PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assess the performance of different machines using different testing methods | L6 |
| CO2 | Explain the Phase from three phase to two phase and vice versa | L2 |
| CO3 | Analyze Compensate the changes in terminal voltages of synchronous generator | L4 |
| CO4 | Apply Control the active and reactive power flows in synchronous machines | L3 |
| CO5 | Explain different machines and control the speed and power factor | L2 |

**Course name: Control Systems Lab** **Course Code: EE408PC**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Explain the system performance by selecting a suitable controller and/or a compensator for a specific application | L2 |
| CO2 | Apply various time domain and frequency domain techniques to assess the system performance | L3 |
| CO3 | List various control strategies to different applications(example: Power systems, electricaldrives etc) | L1 |
| CO4 | Compute the system controllability and Observability using state space representation and applications of state space representation to various systems | L3 |
| CO5 | Apply various time domain an frequency domain techniques to assess the system performance | L3 |


**Course name: Constitution of India** **Course Code: *MC409**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze the Meaning of the constitution law and constitutionalism, Historical perspective of the Constitution of India | L4 |
| CO2 | Explain the Salient features and characteristics of the Constitution of India, Scheme of the fundamental rights | L2 |
| CO3 | Compute The Directive Principles of State Policy – Its importance and implementation. Federal structure and distribution of legislative and financial powers between the Union and the States | L3 |
| CO4 | Apply The historical perspectives of the constitutional amendments in India. Emergency Provisions: National Emergency, President Rule, Financial Emergency | L3 |
| CO5 | Out line the Scheme of the Fundamental Right to certain Freedom under Article19. Scope of the Right to Life and Personal Liberty under Article21 | L2 |

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**Year: III** **Semester: I** **Regulation: R18**

**Course name: Power Systems-II** **Course Code: EE502PE**

**the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Analyze transmission line performance | L4 |
| CO2 | Apply load compensation techniques to control reactive power | L3 |
| CO3 | Understand the application of per unit quantities | L2 |
| CO4 | Design over voltage protection and insulation coordination | L6 |
| CO5 | Determine the fault currents for symmetrical and unbalanced faults | L4 |


**Course name: Power Electronics** **Course Code: EE501PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's TaxonomyLevels |
|---|---|---|
| CO1 | Understand the differences between signal level and power level devices | L2 |
| CO2 | Analyze controlled rectifier circuits | L4 |
| CO3 | Analyze the operation of DC-DC choppers | L4 |
| CO4 | Analyze the operation of voltage source inverters. | L4 |


**Course Name: High Voltage Engineering** **Course Code:** EE512PE

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the basic physics related to various breakdown processes in solid, liquid and gaseous insulating materials | L2 |
| CO2 | Knowledge of generation and measurement of D. C., A.C., & Impulse voltages. | L1 |
| CO3 | Knowledge of tests on H. V. equipment and on insulating materials, as per the standards | L1 |
| CO4 | Knowledge of how over-voltages arise in a power system, and protection against these over voltages. | L1 |


**Course name: Measurements and Instrumentation** **Course Code: EE503PE**

**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand different types of measuring instruments, their construction, operation and characteristics | L2 |
| CO2 | Identify the instruments suitable for typical measurements | L1 |
| CO3 | Apply the knowledge about transducers and instrument transformers to use them effectively | L3 |
| CO4 | Apply the knowledge of smart and digital metering for industrial applications | L3 |


**Course name: Business economics and financial analysis Course Code: SM504MS**
**At the end of this course each student should be able to:**

| S.No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | The students will understand the various Forms of Business and the impact of economic variables on the Business | L2 |
| CO2 | The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. | L2 |
| CO3 | The Students can study the firm's financial position by analyzing the Financial Statements of a Company. | L4 |


**Course Name: Power Systems Lab** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Perform various load flow techniques | L6 |
| CO2 | Explain Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw theconclusions. | L4 |
| CO4 | Compute The Calculations | L3 |
| CO5 | Determine the Accurate and Exact values | L4 |


**Course name: Power system simulation lab** **Course Code: EE505PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Perform various transmission line calculations | L2 |
| CO2 | Understand Different circuits time constants | L2 |
| CO3 | Analyze the experimental data and draw the conclusions. | L4 |
| CO4 | understand the high frequency transients | L2 |
| CO5 | calculate Time constant calculations | L4 |


**Course name: Measurements and instrumentation lab**

**Course Code: EE507PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | the student is able to choose instruments | L2 |
| CO2 | Test any instrument | L3 |
| CO3 | Find the accuracy of any instrument by performing experiment | L4 |
| CO4 | Calibrate PMMC instrument using D.C potentiometer | L4 |


**Course name: Advanced Communication Skills Lab  Course Code: EN508HS**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Build sound vocabulary and its proper use contextually | L3 |
| CO2 | Use of functional English effectively in formal and informal contexts | L4 |
| CO3 | Develop effective speaking skills and Maximize job prospects | L5 |
| CO4 | Plan and make different forms of presentation using various techniques | L2 |
| CO5 | Understand an effective speaking skills and Maximize job prospects. | L2,L3 |


**Year: III** **Semester: II** **Regulation: R18**

**Course name: Power system protection** **Course Code: EE603PC**

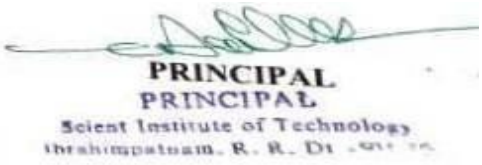
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Compare and contrast electromagnetic, static and microprocessor-based relays. | L4 |
| CO2 | Apply technology to protect power system components. | L3 |
| CO3 | Select relay settings of over current and distance relays | L1 |
| CO4 | Analyze quenching mechanisms used in air, oil and vacuum circuit breakers | L4 |


**Course name: Microprocessors & Microcontrollers** **Course Code: EE602PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's TaxonomyLevels |
|---|---|---|
| CO1 | Understands the internal architecture, organization and assembly language programming of 8086 processors. | L2 |
| CO2 | Understands the internal architecture, organization and assembly language programming of 8051/controllers | L2 |
| CO3 | Understands the interfacing techniques to 8086 and 8051 based systems | L2 |
| CO4 | Understands the internal architecture of ARM processors and basic concepts of advanced ARM processors. | L2 |

**Course Name: Signals and systems** **Course Code: EE601PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Differentiate various signal functions. | L2 |
| CO2 | Understand the characteristics of linear time invariant systems. | L2 |
| CO3 | Represent any arbitrary signal in time and frequency domain. | L3 |
| CO4 | Analyze the signals with different transform technique. | L4 |


**Course name: Power system operation and control** **Course Code: EE604PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand operation and control of power systems. | L2 |
| CO2 | Analyze various functions of Energy Management System (EMS) functions. | L4 |
| CO3 | Analyze whether the machine is in stable or unstable position | L4 |
| CO4 | Understand power system deregulation and restructuring. | L2 |


**Course name: Power Semiconductor Drives** **Course Code: EE612PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify the drawbacks of speed control of motor by conventional methods. | L1 |
| CO2 | Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits | L2 |
| CO3 | Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits | L2 |
| CO4 | Describe Slip power recovery schemes | L1 |


**Course Name: Power Systems Lab** **Course Code: EE605PC**

**At the end of this course each student should be able to:**

| S. No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Perform various load flow techniques | L2 |
| CO2 | Understand Different protection methods | L2 |
| CO3 | Analyze the experimental data and draw the conclusions | L4 |


**Course name: Microprocessors & Microcontrollers lab**

**Course Code: EE606PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Assembly Language Programs to Perform Arithmetic (Both Signed and Unsigned) 16 Bit Data Operations, Logical Operations (Byte and Bit Level Operations), Rotate, Shift, Swap and Branch Instructions. | L2 |
| CO2 | Time delay Generation Using Timers of 8051. | L2 |
| CO3 | Serial Communication from / to 8051 to / from I/O devices. | L3 |
| CO4 | Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer 0 8051 in 8 bit Auto reload Mode and Connect a 1 HZ Pulse to INT1 pin and Display on Port 0. Assume Crystal Frequency as 11.0592 MHZ | L3 |


**Course name: Signals and systems lab**

**Course Code: EE607PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the concepts of continuous time and discrete time systems. | L2 |
| CO2 | Analyze systems in complex frequency domain. | L4 |
| CO3 | Understand sampling theorem and its implications. | L2 |


**Year: IV** **Semester: I** **Regulation: R18**

**Course name: High voltage engineering** **Course Code: EE512PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the basic physics related to various breakdown processes in solid, liquid and gaseous insulating materials. | L2 |
| CO2 | Knowledge of generation and measurement of D. C., A.C., & Impulse voltages. | L2 |
| CO3 | Knowledge of tests on H. V. equipment and on insulating materials, as per the standards. | L3 |
| CO4 | Knowledge of how over-voltages arise in a power system, and protection against these over voltages. | L3 |


**Course name: Electrical and hybrid vehicles** **Course Code: EE713PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the models to describe hybrid vehicles and their performance. | L2 |
| CO2 | Understand the different possible ways of energy storage. | L2 |
| CO3 | Analyze the different strategies related to energy storage systems. | L4 |
| CO4 | Design of hybrid electric vehicle and Battery electric vehicle | L6 |


**Course name: Fundamentals of management for engineers**

**Course Code: SM701MS**

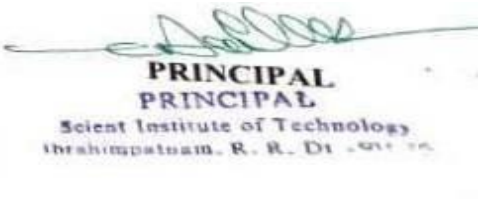
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | The students understand the significance of Management in their Profession | L2 |
| CO2 | The various Management Functions like Planning, Organizing. | L2 |
| CO3 | The students can explore the Management Practices in their domain area. | L3 |
| CO4 | The various Management Functions like Staffing, Leading, Motivation and Control aspects are learnt in this course | L3 |


**Course name: Electrical & Electronics design lab Course Code: EE701PC**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Design filter circuit for application | L6 |
| CO2 | Fabricate basic electrical circuit elements/networks | L3 |
| CO3 | Trouble shoot the electrical circuits | L5 |
| CO4 | Design filter circuit for application | L6 |
| CO5 | Get hardware skills such as soldering, winding etc | L3 |

**Course Name: Industry Oriented Mini Project** **Course Code:** EE702PC
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Apply practical knowledge within the chosen area of technology forproject development | L3 |
| CO2 | Identify, analyze, formulate and handle programming projects with acomprehensive and systematic approach. | L4 |
| CO3 | Contribute as an individual or in a team in development of technicalprojects | L3 |
| CO4 | Develop effective communication skills for presentation of project relatedactivities | L5 |
| CO5 | Understand need of project management and project management lifecycle. | L2 |

**Course Name: Seminar** **Course Code:** EE703PC
**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Identify emerging topic specific to the programme. | L1 |
| CO2 | Extract the information relevant to the chosen topic. | L3 |
| CO3 | Deliver the knowledge using multimedia. | L4 |
| CO4 | Answer the queries with appropriate explanation and elaboration. | L3,L4 |
| CO5 | Compile an effective technical report, providing conclusions andproposing an appropriate future scope. | L4 |


**Year: IV** **Semester: II** **Regulation: R18**

**Course name: Power quality and facts** **Course Code: EE811PE**

**At the end of this course each student should be able to:**

| S. No | Course Outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage) | L2 |
| CO2 | Concept of improving the power quality to sensitive load by various mitigating custom power devices | L3 |
| CO3 | Choose proper controller for the specific application based on system requirements | L3 |
| CO4 | Understand the control circuits of Shunt Controllers SVC & STATCOM for various functions viz. Transient stability Enhancement, voltage instability prevention and power oscillation damping | L2 |
| C05 | Understand the Power and control circuits of Series Controllers GCSC, TSSC and TCSC | L2 |

**Course Name: Electrical Distribution Systems** **Course Code: EE822PE**

**At the end of this course each student should be able to:**

| S. No | Course outcomes | Bloom's Taxonomy Levels |
|---|---|---|
| CO1 | Distinguish between transmission and distribution line and design the feeders. | L6 |
| CO2 | compute power loss and voltage drop of the feeders | L4 |
| CO3 | design protection of distribution systems | L6 |
| CO4 | understand the importance of voltage control and power factor improvement | L2 |


**Course Name: Major Project Work** **Course Code:** EE801PC

**At the end of this course each student should be able to:**

| S.No | **Course outcomes** | **Bloom's Taxonomy Levels** |
|---|---|---|
| CO1 | Identify problem, conduct relevant literature survey and formalize it. | L2 |
| CO2 | Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools (if necessary) and processes. | L4 |
| CO3 | Design and demonstrate the functionality of developed model | L5 |
| CO4 | Evaluate the results to derive the conclusion and provide scope for future enhancement. | L4 |
| CO5 | Explain good interpersonal and leadership skills in meeting project deadlines with Individual contribution towards progress of the project. | L2 |