Modi Institute of Technology, Kota

An Engg. College Approved by AICTE & Affiliated to RTU
Branches: B.Tech- ME / EE / ECE / CE / IT / EEE &M.Tech – Digital Communication
Nayagaon, Rawatbhata Road, Kota – 324010, Raj. M. No- 7665439788,
Website: www.mitkota.com Email: mitkota1@gmail.com

Department of Electrical Engineering

List of Course Outcomes

II Year – III Semester

3EE2-01: Advance Mathematics

After completion of this course, students will be able to:

CO1: Concept of Finite differences, operators, Interpolation.

CO2: Apply numerical methods for Differentiation, integration and Polynomials.

CO3: Concept of Laplace Transform, Properties of Laplace Transform and Finding inverse Laplace transform by different methods

CO4: Define Fourier Transform-Transform and application of Z-transform to difference equation.

CO5: Understand Complex Variable, Cauchy-Riemann equations, analytic functions and conformal mappings.

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Mr.JitendraYadvendra HOD (EE/ECE)	Mr. AbhishekChattri Dy. Registrar	Dr.Barkha Gupta HOD (ME)

Dr. Vikas Soni
Principal

Cc to:-

Hon'ble Vice-Chairman Sir for kind information.
Hon'ble Group Director Sir for kind information.
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List of Course Outcomes

II Year – III Semester

3EE1-03: Technical Communication

After completion of this course, students will be able to:

CO1: Recall and identify four basic LSRW skills for learning technical communication.

CO2: Read, understand and summarize the technical texts and documents.

CO3: Apply technical style in writing and note making.

CO4: Compose official notes, letters, emails, resume, job applications and Memo with the usage of advanced grammar.

CO5: Design, analyse and evaluate technical reports, articles and proposal in proper format.

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List of Course Outcomes

II Year – III Semester

3EE3-04: Power Generation Processes

After completion of this course, students will be able to:

CO1: Understand the Conventional Energy Generation Methods, Different types of power plants and their efficiencies.

CO2: Study the impact of various types power stations on environment, Green House Effect, electric energy generation by wind, solar and tidal.

CO3: Explain types of load and Load Curves and methods for power factor improvement.
CO4: Determine the cost of plants and depreciation and power factor, Knowledge of energy conservation

CO5: Describe the different Tariff methods, types of generating units Selection and location of power plants.

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List of Course Outcomes

II Year – III Semester

3EE4-05 Electrical Circuit Analysis

After completion of this course, students will be able to:

CO1: Concept and application of different network theorems, dependent current and voltage sources, Concept of duality and dual networks.

CO2: Solution of first and second order differential equations for Series and parallel R-L, R-C, RL- C circuits.

CO3: Analyze the Single Phase and three phase AC Circuits, Ideal Transformer.

CO4: Analysis of electrical circuits using Laplace Transform, Transfer function representation, series and parallel resonances.

CO5: Study and analysis of two port networks, interconnections of two port networks.

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Department of Electrical Engineering

List of Course Outcomes

II Year – III Semester

3EE4-06: Analog Electronics

After completion of this course, students will be able to:

CO1: Study of P-N junction diode, half wave and full-wave rectifiers, clamping and clipping circuits

CO2: Understand the working of BJT, I-V characteristics and its applications.

CO3: Design of MOSFET structure, Working and its applications.

CO4: Comprehend the concepts of differential, multi-stage and operational amplifiers.

CO5: Analysis and design of linear applications of op-amp and Nonlinear applications of op-amp.

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List of Course Outcomes

II Year – III Semester

3EE4-07: Electrical Machine-I

After completion of this course, students will be able to:

CO1: Understand the concepts of Magnetic fields and magnetic circuits, Ampere Law and Biot Savart Law, Visualization and analysis of magnetic flux lines

CO2: Analyze and derive electromagnetic force, torque, B-H curve relationship, flux-linkage v/s current characteristic of magnetic circuits, linear and nonlinear magnetic circuits, Explain examples galvanometer coil, relay contact, lifting magnet, rotating element with eccentricity.

CO3: Comprehend the Basic construction of a DC machine, magnetic structure - stator yoke , Armature winding and commutation, Derivation of back EMF equation, armature reaction .

CO4: Derive, express Armature circuit equation for motoring and generation, Types of field excitations – separately excited, shunt and series, V-I characteristics and torque speed characteristics of separately excited, shunt and series motors, Losses, load testing of DC machines

CO5: Understand Principle, construction and operation of single-phase transformers, equivalent circuit, phasor diagram, voltage regulation, losses and efficiency Testing, Autotransformers, Phase conversion.

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List of Course Outcomes

II Year – III Semester

3EE4-08: Electromagnetic Fields

After completion of this course, students will be able to:

CO1: Understand the vectors, vector analysis, Conversion of a vector from one coordinate system to another.

CO2: Apply the principles of electrostatics to the solutions of problems relating to electric field and electric potential, Electrostatic Energy and Energy density, Boundary conditions of perfect dielectric materials, Application of Laplace's and Poisson's equations, Steady magnetic fields produced by current carrying conductors.

CO3: Describe principles of magnetostatics of circuits, effect of magnetic force, Nature of magnetic materials, Magnetic boundary conditions, Magnetic circuits, inductances and mutual inductances.

CO4: Comprehend Time Varying Fields and Maxwell's Equations, Motional Electromotive forces

CO5: Derive and express Wave Equation, Uniform Plane Waves, Maxwell's equation in Phasor form, Wave equation in Phasor form, Propagation in good conductors, Skin effect. Pointing theorem.

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List of Course Outcomes

II Year – III Semester

3EE4-21: Analog Electronics Lab

After completion of this course, students will be able to:

CO1: Analyze and Plot the Plot gain-frequency characteristics of BJT amplifier with and without negative feedback in the emitter circuit and determine bandwidths, gain bandwidth products.

CO2: Comprehend the series and shunt voltage regulators and measurement of line and load regulation and ripple factor.

CO3: Observe and analyze the characteristics of small signal amplifier using FET, push pull amplifier. Measure variation of output power & distortion with load.

CO4: Record and analyze effect of variation in R & C on oscillator frequency for Wein bridge oscillator and transistor phase shift oscillator.

CO5: Study and observe the effect of variation of C on oscillator frequency for Hartley and Culprits oscillators and plot the characteristics of UJT and UJT as relaxation

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List of Course Outcomes

II Year – III Semester

3EE4-22: Electrical Machines-I Lab

After completion of this course, students will be able to:

CO1: Determine the parameters 1-phase transformer and its equivalent circuit, Perform Open circuit, short circuit test and sumpner's test, determine voltage regulation and efficiency and determine the efficiency and voltage regulation of a single-phase transformer by direct loading.

CO2: Explain and perform the heat run test on a delta/delta connected 3-phase transformer and determine the parameters for its equivalent circuit, perform the parallel operation of the transformer to obtain data to study the load sharing and Separation of no load losses in single phase transformer.

CO3: Study conversion of three-phase supply to two-phase supply using Scott Connection.

CO4: Speed Control of D.C. shunt motor by field current control method & armature voltage control method, plot the curve for speed verses field current and speed verses armature voltage.

CO5: Determine determine the efficiency at full load of a D.C shunt machine considering it as a motor by performing Swinburne's test and perform Hopkinson's test on two similar DC shunt machines and hence obtain their efficiencies at various loads.

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List of Course Outcomes

II Year – III Semester

3EE4-23: Electrical Circuit Design Lab

After completion of this course, students will be able to:

CO1: Analyze Datasheet Reading and knowledge Soldering - Disordering process and the tools required in it and their application.

CO2: Simulate various circuits like Bridge Rectifier, Regulated Power Supply, Multivibrator circuit using IC 555 and BJT and validate on PCB.

CO3: Measure real time quantities and their implementation in different processes like Proximity, Accelerometer, Pressure, Photo-detector etc.

CO4: Implement hardware of temperature control circuit using Thermistor and 6/12 V DC Motor Speed Control.

CO5: Simulate various circuits lke Frequency divider circuit, Buck, Boost, Buck-Boost circuit, Battery Voltage Level Indicator Circuit and validate them on PCB.

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Department of Electrical Engineering

List of Course Outcomes

II Year – III Semester

3EE7-30 Industrial Training

After completion of this course, students will be able to:

CO1: Identify the industry and their locations,products/expertise/domain, and interact with the authorities there at.

CO2: Become updated with all the latest changes in technological world.

CO3: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.

CO4: Communicate effectively through technical presentation, report and interactions.

CO5: Enhance communication skills and life-long learning, and acquire technical skills, employability skills, start-up skills, and risks in industry, management skills and such other skills which are conducive to professional engagement.

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List of Course Outcomes

II Year – III Semester

3EE8-00 Social Outreach, Discipline & Extra Curricular activities

After completion of the course, students would be able to:

CO1: Show a disciplined behavior.

CO2: Appraise need of social work.

CO3: Participate/had participated in national /state level social camp.

CO5: Demonstrate his/her role as social worker.

CO6: Got award/ recognition at National / state Level.

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Department of Electrical Engineering

List of Course Outcomes

II Year – IV Semester

4EE2-01: Biology

After completion of this course, students will be able to:

CO1: Improve the overall scenario by learning the correlation of Biology with engineering majors, as biological systems are considered to be very much efficient.

CO2: Use the disciplinary skills towards designing or improving the biological systems and engineering systems in future by getting a basic understanding of genetics and classifications.

CO3: Assist to the development of new systems like nanotechnology, bioelectronics, smart electronics and artificial intelligence by having an understanding of fundamentals of biology in relation to biomolecules, enzymes, Proteins etc.

CO4: Develop an understanding of analogies between biological and electronic substrates, information processes and transport mechanisms.

CO5: Explore biomolecules and DNA based finite state machines for conducting simple computing logics by understanding the basics of Biological information theory.

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II Year – IV Semester

4EE1-03 Managerial Economics and Financial Accounting

After completion of this course, students will be able to:

CO1: Recall and identify four basic LSRW skills for learning technical communication.

CO2: Read, understand and summarize the technical texts and documents.

CO3: Apply technical style in writing and note making.

CO4: Compose official notes, letters, emails, resume, job applications and Memo with the usage of advanced grammar.

CO5: Design, analyse and evaluate technical reports, articles and proposal in proper format.

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II Year – IV Semester

4EE3-04: Electronic Measurement and Instrumentation

After completion of this course, students will be able to:

CO1: Comprehend the theoretical and mathematical principles of electrical measuring instruments and their applications.

CO2: Understand the principles of instrument transformers and various measuring instruments.

CO3: Differentiate different types of DC and AC potentiometer according to their working principle and constructional features and their applications.

CO4: Analyze the various types of resistances used for measurement purposes and analyze their functional characteristics as well as differences.

CO5: Analyze the working principle, constructional features, design elements and characteristics of various AC bridges used for measurement purposes and their applications.

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II Year – IV Semester

4EE4-05: Electrical Machines – II

After completion of this course, students will be able to:

CO1: Understand the construction and working of AC machines

CO2: Understand the generation of rotating magnetic field in AC machines.

CO3: Solve the performance parameters of AC machines.

CO4: Interpret the behavior of AC machines using phasors, equivalent circuits and its characteristics.

O5: Examine the performance behavior of AC machines under different loading condition.

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II Year – IV Semester

4EE4-06: Power Electronics

After completion of this course, students will be able to:

CO1: Understand the operation of power electronic devices and its applications.

CO2: Distinguish single phase and three phase converter circuits.

CO3: Analyze applications and design of DC-DC converter circuits.

CO4: Analyze applications and design of single phase inverter circuits.

CO5: TIllustrate the functioning of three- phase inverter circuits.

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II Year – IV Semester

4EE4-07: Signals and Systems

After completion of this course, students will be able to:

CO1: Understand Continuous time and discrete time signals and systems.

CO2: Investigate the behavior of LTI system.

CO3: Apply the different mathematical transformation tools on LTI systems.

CO4: Examine the impact of sampling & reconstructions of signals, and its effect on communication systems.

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Mr.JitendraYadvendra HOD (EE/ECE)	Mr. AbhishekChattri Dy. Registrar	Dr.Barkha Gupta HOD (ME)

Dr. Vikas Soni
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Department of Electrical Engineering

List of Course Outcomes

II Year – IV Semester

4EE4-08: Digital Electronics

After completion of this course, students will be able to:

CO1: Develop the understanding of number system and its application in digital electronics and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.

CO2: Develop and analyse of K-map to solve the Boolean function to the simplest form for the implementation of compact digital circuits and Design various combinational circuits using gates.

CO3: Design various sequential circuits using various metrics: switching speed, throughput/latency, gate count and area, energy dissipation and power.

CO4: Apply the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances.

CO5: Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.

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Department of Electrical Engineering

List of Course Outcomes

II Year – IV Semester

4EE4-21: Electrical Machines - II Lab

After completion of this course, students will be able to:

CO1: Understand the different Starting and speed control methods of 3-Phase Induction Motor.

CO2: Perform no-load and blocked rotor test to analyse the performance of 3-Phase Induction Motor.

CO3: Determine equivalent circuit parameters of an alternator and also its voltage regulation by different methods.

CO4: Perform the synchronization of an alternator to infinite bus and control load sharing.

CO5: Analyze the behavior of Synchronous motor at different loading conditions using V and inverted V curve.

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List of Course Outcomes

II Year – IV Semester

4EE4-22: Power Electronics Lab

After completion of this course, students will be able to:

CO1: Understand the operation of power electronic devices and its applications.

CO2: Analyze the I-V characteristics of SCR, DIAC and TRIAC.

CO3: Analyze the characteristics of MOSFET, IGBT and UJT.

CO4: Illustrate the functioning of rectifiers and firing circuits.

CO5: Distinguish the speed control of DC motor using converters.

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List of Course Outcomes

II Year – IV Semester

4EE4-23: Digital Electronics Lab

After completion of this course, students will be able to:

CO1: Develop the understanding of number system and its application in digital electronics and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.

CO2: Develop and analyse of K-map to solve the Boolean function to the simplest form for the implementation of compact digital circuits and Design various combinational circuits using gates.

CO3: Design various sequential circuits using various metrics: switching speed, throughput/latency, gate count and area, energy dissipation and power.

CO4: Apply the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances.

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List of Course Outcomes

II Year – IV Semester

4EE4-24: Measurement Lab

After completion of this course, students will be able to:

CO1: Understand the construction and working principle of different test devices like C.R.O., Meggar, Tong-Tester, PF Meter and Phase Shifter.

CO2: Determine power and power factor in 3-phase load.

CO3: Apply the application of calibration of different measuring instruments by different methods.

CO4: Compute low resistance, earth resistances and self-inductance by different measuring methods.

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List of Course Outcomes

II Year – IV Semester

4EE8-00: Social Outreach, Discipline & Extra Curricular Activities

CO1: Show a disciplined behavior.
CO2: Appraise need of social work.
CO3: Participate/had participated in national /state level social camp.
CO4: Demonstrate his/her role as social worker.
CO5: Got award/ recognition at National / state Level.

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List of Course Outcomes

III Year – V Semester

5EE3-01: ELECTRICAL MATERIALS

After completion of this course, students will be able to:

CO1: Learn about the concepts of Bonding and types of solids, crystalline state and their defects, Classical theory of electrical and thermal conduction in solids, temperature dependence of resistivity, skin effect, Hall Effect.

CO2: Acquire knowledge of Dielectric Properties of Insulators in Static and Alternating field, Properties of Ferro-Electric materials, Polarization, Piezoelectricity, Frequency dependence of Electronic and Ionic Polari ability, Complex dielectric constant of non-dipolar solids, dielectric losses.

CO3: Apply concepts of Magnetization of matter, Magnetic Material Classification, Ferromagnetic Origin, Curie-Weiss Law, Soft and Hard Magnetic Materials, Superconductivity and its origin, Zero resistance and Meissen Effect, critical current density.

CO4: Acquire knowledge of Conductivity of metals Ohm's law and relaxation time of electrons, collision time and mean free path, electron scattering and resistivity of metals.

CO5: Acquire knowledge of Classification of semiconductors, semiconductor conductivity, temperature dependence, Carrier density and energy gap, Trends in materials used in Electrical Equipment.

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List of Course Outcomes

III Year – V Semester

5EE4-02: POWER SYSTEM - I

After completion of this course, students will be able to:

CO1: Analyse simple three-phase circuits by calculating power transfer in AC circuits and reactive power. Describe the Structure of a power system. Draw the single line diagrams, and topologies (meshed and radial systems) of power system networks.

CO2: Analyse the equivalent circuits, characteristics and performance equations for the following: Overhead Transmission Lines and Cables Transformers Synchronous Machines

CO3: Analyse the Voltages produced by traveling surges on power system and insulation coordination.

CO4: Analyse the power system for various Balanced and Unbalanced Faults, and explain the Protection schemes (Over-current, directional, distance protection, differential protection.

CO5: Draw and analyse the I-V and P-V characteristics of PV panels (Renewable energy systems) and explain the Power Flow control in a dc link (DC transmission systems).

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List of Course Outcomes

III Year – V Semester

5EE4-03: CONTROL SYSTEM

After completion of this course, students will be able to:

CO1: Determine the mathematical model of control system, transfer function using different techniques in a simplified manner.

CO2: Determine the time response analysis of and concept of stability on linear time invariant system.

CO3: Formulate different types of analysis in frequency domain to explain the nature of stability of the system.

CO4: Identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system.

CO5: Apply the concept of state space approach in classical control, in discrete time sequence and to become familiar with the elementary concept- nonlinear dynamics of the control system.

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List of Course Outcomes

III Year – V Semester

5EE4-04: MICROPROCESSOR

After completion of this course, students will be able to:

CO1: Acquire the knowledge of fundamentals of microprocessors and microcontrollers architecture and comparison between them.

CO2: Apply knowledge and demonstrate programming proficiency using the various addressing modes and instructions set of the target microcontroller.

CO3: Understand the memory expansion and interfacing of peripheral device such as ADC, DAC, timers, counters, etc.

CO4: Acquire the knowledge of synchronous and asynchronous communication and interfacing to protocols like blue-tooth, etc.

CO5: Design electrical circuitry to the microcontroller I/O ports in order to interface the processor to external devices.

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List of Course Outcomes

III Year – V Semester

5EE4-05: ELECTRICAL MACHINE DESIGN

After completion of this course, students will be able to:

CO1: Classify & select proper engineering materials, major considerations in electrical machine designClassify & select proper engineering materials, major considerations in electrical machine design.

CO2: Design overall transformer, Estimate the performance characteristics of Transformer with the constraints specified.

CO3: Design Stator core & stator winding of an Induction motor, design rotor core & rotor winding of an induction motor & calculate load current & other performance.

CO4: Design overall dimensions of synchronous machine, analyze role of various factors like: saliency, shape of pole shoe, SCR, air gap length etc. in its design.

CO5: Identify the limitations (assumptions) of traditional designs and need for CAD analysis, synthesis and hybrid models.

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List of Course Outcomes

III Year – V Semester

5EE5-11: RESTRUCTURED POWER SYSTEM

After completion of this course, students will be able to:

CO1: Grasp the knowledge of need of restructuring of power system, different entities in deregulated environment, different market place mechanism and reasons and objectives of deregulation of various power system across all.

CO2: Acquire knowledge of basic concepts of economics and applied them to solve practical applications through numerical analysis.

CO3: Grasp the knowledge of various market models, levels of competition exist among these models and features of electricity as a commodity.

CO4: Acquire the knowledge related to transmission Congestion Management methods, pricing mechanism methods and indices to calculate market power under deregulated environment.

CO5: Gain the information about various ancillary services and markets for these services in National and International scenario.

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List of Course Outcomes

III Year – V Semester

5EE4-21: POWER SYSTEM - I LAB

After completion of this course, students will be able to:

CO1: Explain various aspects of design considerations of different type of power plant and electrical equipment.

CO2: Describe various aspects design of various components of distribution system. Calculate voltage drop, size of conductor, And also Acquire knowledge of load forecasting.

CO3: Analyze various types of transmission line parameter to design transmission line and understand the sending end and receiving end circle diagram.

CO4: Acquire knowledge of substation, various electrical equipment, high voltage testing of electrical equipment, and flashover voltage testing of insulators.

CO5: Acquire knowledge of filtration and Treatment of transformer oil and Apply techniques to evaluate dielectric strength of transformer oil, capacitance and dielectric loss of an insulating material.

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List of Course Outcomes

III Year – V Semester

5EE4-22: CONTROL SYSTEM LAB

After completion of this course, students will be able to:

CO1: Plot step response and ramp response of a given TF and system in state-space. Design and plot curves for first order R-C circuits with step, impulse, ramp inputs.

CO2: Design second order electrical network and study its transient response for step input for following cases. (a) Under damped system (b) Over damped System. (c) Critically damped system.

CO3: Plot the graph for frequency response of Lag Network, Lead Network and Lag-lead Network.

CO4: Draw the bode plot in real time for a Non-Inverting amplifier, Inverting amplifier, first order transfer function, second order transfer function.

CO5: Design PID controller and calculate Kp, Ki, Kd.

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III Year – V Semester

5EE4-23: MICROPROCESSOR LAB

After completion of this course, students will be able to:

CO1: Describe hardware, functions, memory structure and operation of 8085 Microprocessor kit.

CO2: Perform integer division: (1) 8-bit by 8-bit (2) 16-bit by 8-bit, multiply two 8–bit numbers, reverse bits of an 8-bit number, and perform conversion BCD to ASCII as well as BCD to hexadecimal.

CO3: Transfer a block of data in memory to another place in memory, Transfer block to another location in reverse order, and Sort array in: (1) Ascending order (2) Descending order.

CO4: Search a number in an array and insert a number at correct place in a sorted array. Write a Program to generate and sum 15 Fibonacci numbers, Program for rolling display of message "India", "HELLO".

CO5: Transfer data on output port 8155 & 8255 & implement disco light, running light, and sequential lights, transfer Parallel data between two DYNA-85 kit using 8253 ports.

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III Year – V Semester

5EE4-24: SYSTEM PROGRAMMING LAB

After completion of this course, students will be able to:

CO1: Apply the basics of MATLAB to write code for designing Rheostat, and to generate Machine Op- code table using two pass Assembler.

CO2: Design Single Phase Full Wave Diode Bridge Rectifier With LC Filter in MATLAB Simulink.

CO3: Simulate three phase Half wave diode rectifier with RL load in MATLAB Simulink.

CO4: Simulate OC/SC test of 1-phase transformer in MATLAB Simulink.

CO5: Simulate Torque- speed characteristics of induction motor in MATLAB Simulink.

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III Year – V Semester

5EE7-30 Industrial Training

After completion of this course, students will be able to:

CO1: Demonstrate competency in the field of electrical engineering through problem identification, formulation and solution.

CO2: Develop the ability to work as an individual and in group with the capacity to be a leader or manager as well as an effective team member.

CO3: Implement skills effectively in oral and written communication, including report writing and power point presentations using multimedia tools.

CO4: Analyze industrial problems as a part of industrial training curriculum.

CO5: Acquire practical understanding of theoretical aspects by participating in industrial projects.

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Mr.JitendraYadvendra HOD (EE/ECE)	Mr. AbhishekChattri Dy. Registrar	Dr.Barkha Gupta HOD (ME)

Dr. Vikas Soni
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Department of Electrical Engineering

List of Course Outcomes

III Year – V Semester

5EE8-00 Social Outreach, Discipline & Extra Curricular Activities

After completion of the course, students would be able to:

CO1: Show a disciplined behavior.

CO2: Appraise need of social work.

CO3: Participate/had participated in national /state level social camp.

CO4: Demonstrate his/her role as social worker.

CO5: Got award/ recognition at National / state Level.

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List of Course Outcomes

III Year – VI Semester

6EE3-01: COMPUTER ARCHITECTURE

After completion of this course, students will be able to:

CO1: Understand the basics of computer architecture and its organization.

CO2: Recognize processor models based on their organization, addressing modes and instruction set. CO3: Understand basics of ALU, control unit and computer organization such as memory & I/O.

CO4: Understand various architectures based on performance, cost and applicability.

CO5: Understand impact of modern techniques like pipelining, express buses processor performance.

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List of Course Outcomes

III Year – VI Semester

6EE4-02: Power System - II

After completion of this course, students will be able to:

CO1: Analyze power flows with the help of numerical analysis techniques such as Gauss Seidel and Newton-Raphson Methods.

CO2: Evaluate the impact of disturbances on stability of power system.

CO3: Analyze the effects of variations in frequency and voltage on power system and various mechanisms to effectively control the same.

CO4: Acquire the knowledge of preventive and emergency control actions and power system security.

CO5: Acquire knowledge about the Regulatory framework, ancillary services, power system economics and power management.

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List of Course Outcomes

III Year – VI Semester

6EE4-03: Power System Protection

After completion of this course, students will be able to:

CO1: Understand the fundamentals of fault analysis, power system protection and the components involved in power system protection.

CO2: Describe the concepts of under-frequency, under-voltage and df/dt relays, wide area measurement system and over current protection.

CO3: Summarize the protection schemes for power system components.

CO4: Understand the implementation of the digital protection scheme with the help of signal processing techniques.

CO5: Explain the simulation of protection schemes by using Electro-Magnetic Transients (EMT) programs.

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List of Course Outcomes

III Year – VI Semester

6EE4-04: Electrical Energy Conversion and Auditing

After completion of this course, students will be able to:

CO1: To understand the basic building blocks of various forms of energy and access energy scenario at national or international level.

CO2: To understand efficient heat & electricity utilization, saving and recovery in different thermal and electrical system.

CO3: To analyze economics of energy conservation opportunities in electrical and industrial utilities and reporting of energy audit.

CO4: To analyze, calculate and improve the energy efficiency and performance of electrical and industrial utilities.

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List of Course Outcomes

III Year – VI Semester

6EE4-05: Electric Drives

After completion of this course, students will be able to:

CO1: Investigate dynamics of electrical drives, their nature and classification, applying concepts of steady-state stability and deriving condition for steady state operating point.

CO2: Analyze chopper fed DC drive.

CO3: Evaluate closed-loop control of dc motor drive.

CO4: Analyze induction motor equivalent circuit and torque-speed characteristics.

CO5: Illustrate control of slip ring induction motor (SLIM).

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List of Course Outcomes

III Year – VI Semester

6EE5-11: Power System Planning

After completion of this course, students will be able to:

CO1: Gain information about basic building blocks of Power System planning.

CO2: Understand the basic concept of Power system reliability at generation, transmission and distribution level.

CO3: Analyze the effect of various parameters involved in Generation, Transmission and Distribution systems.

CO4: Understand the impact of demand side planning in deregulated market environment.

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List of Course Outcomes

III Year – VI Semester

6EE4-21: Power System – II Lab

After completion of this course, students will be able to:

CO1: Evaluate the various parameters of a power system network (min 3 bus) using different load flow techniques.

CO2: Investigate the transient stability of power system network (min 3 bus).

CO3: Find optimal power flow with the help of analytical and iterative methods.

CO4: Design a power system network (min 3 bus) and analyze the severity of various types of fault.

CO5: Comprehend the necessity of limits of voltage and overload in power system and perform the voltage and overload security analysis of power system network.

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List of Course Outcomes

III Year – VI Semester

6EE4-22: Electric Drives Lab

After completion of this course, students will be able to:

CO1: Differentiate the testing of firing circuits in three phase controlled bridge converters.

CO2: Examine the operation of three phase fully and half controlled converters for different types of loads experimentally.

CO3: Demonstrate the speed control methods of AC & DC motors.

CO4: Illustrate operation and analysis of different converters with reference to control strategy.
CO5: Analyze power quality aspects of three-phase controlled converters by calculating different parameters for different loads.

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List of Course Outcomes

III Year – VI Semester

6EE4-23: Power System Protection Lab

After completion of this course, students will be able to:

CO1: Determine fault type, fault impedance and fault location during single line to ground fault, line-to line fault and double line to ground fault.

CO2: Explain the operation of micro-controller based over current relay in DMT type and IDMT type.

CO3: Explain the operation of micro-controller based under voltage relay, and micro-controller based over voltage relay.

CO4: Explain the operation of micro-controller based un-biased single-phase differential relay.

CO5: Explain the operation of micro-controller un-based biased three phase differential relay.

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List of Course Outcomes

III Year – VI Semester

6EE4-24: Modeling and simulation lab

After completion of this course, students will be able to:

CO1: Develop Simulink model for basic electrical circuits.

CO2: Examine the stability of Power System.

CO3: Analyze the behavior of various Machines under certain set of inputs.

CO4: Analyze the behavior of Synchronous Machines along with different type of controllers.

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III Year – VI Semester

6EE8-00 Social Outreach, Discipline & Extra Curricular Activities

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CO3: Participate/had participated in national /state level social camp.

CO4: Demonstrate his/her role as social worker.

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List of Course Outcomes

IV Year – VII Semester

7EE5-11: WIND AND SOLAR ENERGY SYSTEM

After completion of this course, students will be able to:

CO1: Understand the physics of wind power and various wind generator topologies.

CO2: Describe solar radiation spectra, solar geometry, earth sun angles, observer sun angles, solar day length.

CO3: Analyze solar photovoltaic technologies, V-I characteristics of a PV cell, PV module, array, maximum power point tracking (MPPT) algorithms.

CO4: Explain various network integration issues.

CO5: Comprehend solar thermal power generation.

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List of Course Outcomes

IV Year – VII Semester

7AG6-60.2 : Environmental Engineering and Disaster Management

After completion of this course, students will be able to:

CO1: Understand the Importance of safe water supply system, different sources of water supply, intakes and transportation of water and water requirements for urban and rural areas.

CO2: Describe different Indian Standards and quality of drinking water , various processes of water treatment and importance of sanitation.

CO3: Understand the disposal of domestic waste water in urban and rural areas and wastewater treatment, sewer and its types.

CO4: Explain Solid waste management, air pollution, types of air pollutants and their effect on living beings, BIS standards for air pollutants and their abetments.

CO5: Discuss various types of disasters and Importance of disaster management.

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List of Course Outcomes

IV Year – VII Semester

7EE4-21 Embedded Systems Lab

After completion of this course, students will be able to:

CO1: Able to explain embedded systems and its applications.

CO2: Able to explain architecture, data transfer and different addressing modes in microcontrollers.

CO3: Able to use different components in embedded systems and their assembly.

CO4: Able to test their designs using circuit emulators.

CO5: Able to appraise circuit emulator results with hardware implementation and real time applications.

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IV Year – VII Semester

7EE4-22: Advance control system lab

After completion of this course, students will be able to:

CO1: Represent a system (in the form of transfer function) in MATLAB considering it's zeros, poles and gain.

CO2: Analyze the plots of time and frequency responses of SISO and MIMO systems.

CO3: Analyze the response of RLC circuit. Assess gain and phase margin to examine the effect of stability margins on closed loop response characteristics of a control system.

CO4: Analyze the Time Domain response analysis of first and second order systems. CO5: Design lead-lag compensator for the given system.

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List of Course Outcomes

IV Year – VII Semester

7EE7-30 Industrial Training

After completion of this course, students will be able to:

CO1: Demonstrate competency in the field of electrical engineering through problem identification, formulation and solution.

CO2: Develop the ability to work as an individual and in group with the capacity to be a leader or manager as well as an effective team member.

CO3: Implement skills effectively in oral and written communication, including report writing and power point presentations using multimedia tools.

CO4: Analyze industrial problems as a part of industrial training curriculum.

CO5: Acquire practical understanding of theoretical aspects by participating in industrial projects.

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List of Course Outcomes

IV Year – VII Semester

7EE7-40: Seminar

After completion of this course, students will be able to:

CO1: Identify important practical concepts from the industry exposure and grasp the depth knowledge of the topic.

CO2: Understand organizational issues including teams, attitudes and define work-life balance and its impact on organizations and employees.

CO3: Get in touch with recent technologies.

CO4: Solve industrial problems as a part of industrial training curriculum.

CO5: Sharpen their personality and intelligence, develop effective group communication, presentation, self-management and report writing skills.

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Website: www.mitkota.com Email: mitkota1@gmail.com

Department of Electrical Engineering

List of Course Outcomes

IV Year – VII Semester

7EE8-00: Social Outreach, Discipline & Extra Curricular Activities

After completion of the course, students would be able to:

CO1: Show a disciplined behavior.
CO2: Appraise need of social work.
CO3: Participate/had participated in national /state level social camp.
CO4: Demonstrate his/her role as social worker.
CO5: Got award/ recognition at National / state Level.

Mr. Vijay Varshney (O/C Exam)	Mr. Pankaj Jain HOD (First Year)	Mrs. SeemaArya HOD (CSE)
Mr.JitendraYadvendra HOD (EE/ECE)	Mr. AbhishekChattri Dy. Registrar	Dr.Barkha Gupta HOD (ME)

Dr. Vikas Soni
Principal

Cc to:-

Hon'ble Vice-Chairman Sir for kind information.
Hon'ble Group Director Sir for kind information.
Undersigned.
HOD's & I/C's. / First Year Coordinator.
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List of Course Outcomes

IV Year – VIII Semester

8EE4-11: HVDC Transmission System

After completion of this course, students will be able to:

CO1: Demonstrate the implementation benefits of HVDC transmission over EHVAC transmission with respect to economics, performance and technological developments from LCC to VSC based systems. CO2: Illustrate the detailed performance analysis of LCC and VSC converter-valve operation with the study of relevant PWM techniques used in VSCs.

CO3: Derive and analyze the HVDC link control techniques for managing power flow, reactive power control and voltage regulation in LCC and VSC based HVDC systems.

CO4: Analyze the applicability and performance of filters, reactors, insulators & circuit breakers with the converter control strategies during faults in HVDC LCC and VSC systems.

CO5: Demonstrate the performance analysis for stability enhancement and power modulation of synchronous and asynchronous HVDC links along with MTDC system controls.

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List of Course Outcomes

IV Year – VIII Semester

8TT6-60.2 : DISASTER MANAGEMENT

After completion of the course, students would be able to:

CO1: Understand different types Hazards, social and environment related issues , Risk and Vulnerability.

CO2: Describe various types of disasters, their occurrence, impact and preventive measures.

CO3: Explain different types Hydro-meteorological and Geological based natural disasters.

CO4: Comprehend various types of man made disasters like Textile Processing Industrial Hazards, Major Power Break Downs, Traffic Accidents, Fire Hazards.

CO5: Understand the roll of management in mitigating Disaster in Indian Textile Industries and Roll of production people in Disaster Management.

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List of Course Outcomes

IV Year – VIII Semester

8EE4-21: Energy Systems Lab

After completion of this course, students will be able to:

CO1: Explain different components of Solar power plant.

CO2: Explain different components of Micro Grid and micro-hydel pumped storage system.

CO3: Explain different wind turbine generators, Fuel Cell and its applications.

CO4: Analyze the characteristics of Solar Panel.

CO5: Test designs of Hybrid Power Systems using MATLAB.

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List of Course Outcomes

IV Year – VIII Semester

8EE7-50: Project

After completion of this course, students will be able to:

CO1: Demonstrate literature survey and technical pre-requisites of the selected project topic. Select the category of project (1.Design & implementation 2.Analysis 3.Up gradation of old project) Work on the allocated project under the supervision of the assigned guide Survey the available literature (select base paper) on the allocated project topic (from various resources-books, research papers, dissertation reports) Gain expertise over the technical and non-technical aspects of the finalized project.

CO2: Predict the challenges in practical implementation of the project hardware/software and draft their possible alternate solutions. Identify and summarize the challenges in practical implementation of the project Make a rough draft of the possible alternate solutions, for the recognized challenges Choose the feasible, practically realizable and economically viable options Finalize at least one option (from the chosen) and proceed further as per the guidelines.

CO3: Design engineering solutions of complex problems utilizing systems and engineering approach. Decide the method for the further development of the project Apply the systems and engineering approach for developing the project hardware (circuit design) /software (code generation) Design the prototype (Base model/algorithm) of the project.

CO4: Practically fabricate /implement, test /debug and run/simulate the project (hardware/software) gather the components for assembling the project prototype (hardware project); decide the sub-routine programs which could be combined into a complete code (software project) fabricate /implement the project, based on the made prototype (Base model/algorithm) test /debug the project for obtaining the output run/simulate the project for achieving the targeted output.

CO5: Communicate with the engineering community in written and oral forms. develop progress reports and project reports (minor project report and major project report) containing the summary of the overall work done write an article/summary /review paper/ research paper and submit the same in conference/journal etc., if possible defend/justify the project work during examination (viva voce).

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