NALLA NARASIMHA REDDY
Education Society's Group of Institutions–Integrated Campus
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Nalla Narasimha
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NNRG
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CSE
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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

ACADEMIC YEAR 2019-20

YEAR: II   **SEMESTER: I**   **REGULATION: R18**

EE302PC   **Electrical Circuit Analysis**

COURSE OUTCOMES	
CO1	Able to have a strong foundation to analyze of electrical circuits Solve the electrical networks through network theorems.
CO2	Obtain the transient and steady state response of electrical circuits.
CO3	Inspect the conceptual knowledge on sinusoidal steady state Analysis.
CO4	Explain the electrical circuits using Laplace transform approach
CO5	Solve the electrical Two Port networks.

EE303PC   **Analog Electronics**

COURSE OUTCOMES	
CO1	Understand the internal device operations and characteristics of PN diode and transistor
CO2	Design and analyze the MOSFET low frequency and high frequency equivalent circuits.
CO3	Understand the operation of multistage and power amplifiers.
CO4	Design sinusoidal and non sinusoidal oscillators.
CO5	Understand the functionalities of OP-AMP based circuits.

EE304PC   **Electrical Machines – I**

COURSE OUTCOMES	
CO1	Explain fundamental principles and classification of electromagnetic machines
CO2	Describe constructional details and principle of operation of dc machines
CO3	Explain working of dc machines as generators and motors
CO4	Analyze methods of testing and applications of dc machines
CO5	Analyze single phase and three phase transformers circuits

EE305PC   Electromagnetic Fields

	COURSE OUTCOMES
CO1	Explain several laws and principles of electric, magnetic and electromagnetic fields.
CO2	Illustrate the differences between conductors and dielectric materials.
CO3	Solve magneto static field problems using Bio- Savart's law and Ampere's law.
CO4	Simplify time varying electromagnetic field as governed by Maxwell's equation.
CO5	Applications of Electromagnetic Waves in various domains and to estimate the power density

EE306PC   Electrical Machines Lab - I

	COURSE OUTCOMES
CO1	Explain the characteristics of various types of DC generator.
CO2	Analyze performance characteristics of DC shunt and compound motors by conducting break test.
CO3	Determine the efficiency of shunt and series motors by conducting suitable test.
CO4	Demonstrate magnetization characteristics of DC shunt generator.
CO5	Construct speed control curves for DC shunt motor.

EE307PC   Analog Electronics Lab

	COURSE OUTCOMES
CO1	Understand the concept of Diodes, Rectifiers and BJT's
CO2	Evaluate high frequency analysis of transistor
CO3	Analyze the small signal amplifier circuits
CO4	Design sinusoidal and non sinusoidal oscillators
CO5	Understand the function of op amp based circuits

EE307PC   Electrical Circuits Lab

	COURSE OUTCOMES
CO1	Able to demonstrate with the basic circuit components and know how to connect them to make a real electrical circuit
CO2	Evaluate response in a given network by using theorems
CO3	Analyze concepts of electric circuits Across Engineering
CO4	Able to measure three phase active and reactive power of connected balanced loads
CO5	Analyze the response of the two port network parameters

MA401BS Laplace Transforms, Numerical Methods & Complex variables

COURSE OUTCOMES	
CO1	Apply the Laplace transforms techniques for solving ODE's
CO2	Evaluate the real roots of algebraic and transcendental equations by different numerical methods and Estimate the value for the given data using interpolation methods
CO3	Find the numerical solutions for a given ODE's and use suitable method to find the numerical integration
CO4	Analyze complex functions with reference to their analyticity using Cauchy's Riemann equations
CO5	Find the Taylors and Laurent's series expansion of complex functions, integrating using Cauchy's integral and residue theorems

EE402PC Electrical Machines – II

COURSE OUTCOMES	
CO1	Explain constructional features and characteristics of synchronous machines.
CO2	Determine the regulation of alternator with different methods.
CO3	Illustrate concepts of parallel operation and short circuit analysis of alternator.
CO4	Construct power circle diagram of synchronous motor by utilizing the phasors.
CO5	Analyze the single phase and special machines.

EE403PC Digital Electronics

COURSE OUTCOMES	
CO1	Design the logic gates using different logic families
CO2	Utilize the postulates of the Boolean Algebra to minimize the combinational circuits
CO3	Design and Analyze combinational and sequential circuits
CO4	Determine the process of Analog to Digital conversion and Digital to Analog conversion
CO5	Select PLDs to implement the given logical expression

EE404PC   Control Systems

COURSE OUTCOMES	
CO1	Illustrate types, modeling and feedback characteristics of control system.
CO2	Explain time response analysis of different ordered systems and also discussed about concept of stability and its assessment.
CO3	Analyze frequency response analysis using different techniques.
CO4	Design simple feedback controllers
CO5	Modeling of linear-time-invariant systems using state space representations.

EE405PC   Power System – I

COURSE OUTCOMES	
CO1	Understand the operation of conventional generating stations and renewable sources of electrical power
CO2	Evaluate the power tariff methods.
CO3	Understand the overhead line insulators and underground cables.
CO4	Determine the electrical circuit parameters of transmission lines and corona.
CO5	Enable the students to do analysis of different types of distribution systems.

EE406PC   Digital Electronics Lab

COURSE OUTCOMES	
CO1	Select logic gates to realize Boolean functions
CO2	Design and implement combinational circuits using ICs
CO3	Design and implement sequential circuits using ICs
CO4	Build the logic gates using different logic families
CO5	Analyze and examine the function of state machines

EE407PC   Electrical Machines Lab – II

COURSE OUTCOMES	
CO1	Estimate Efficiency, Regulation of Single Phase Transformer
CO2	Evaluate Core losses And Examine Three Phase to Two Phase Conversion of Transformer.
CO3	Develop Equivalent Circuit, Characteristics And Circle Diagram Of 1 Phase & 3 Phase Induction Motor.
CO4	Determine Efficiency And Regulation Of Alternator
CO5	Relationships of V and Inverted V Curves of Synchronous Motor.

EE408PC   Control Systems Lab

COURSE OUTCOMES	
CO1	Determine time response of second order system
CO2	Determine time response of second order system
CO3	Verify truth tables and Boolean expressions by using PLC
CO4	Study the effect of feedback on DC and AC servomotor
CO5	Evaluate the effect of P, PD, PI and PID and Stability Analysis of Linear Time Invariant system.

*MC409   Constitution of India

COURSE OUTCOMES	
CO1	Understand the concept of Indian Constitution
CO2	Outline the Fundamental Rights and Fundamental Duties
CO3	Analyze the Directive Principles of State policy
CO4	Analyze the distribution of powers between of Union and states
CO5	Able to know the Emergency Provision of Indian Constitution

EE501PC **Electrical Measurements & Instrumentation**

COURSE OUTCOMES	
CO1	Illustrate different types of measuring instruments, their construction, operation and characteristics.
CO2	Outline of potentiometers and instrument transformers.
CO3	Analyze the measurement of power and energy
CO4	Explain the construction and working of different AC and DC bridges and its applications
CO5	Apply the knowledge about transducers and instrument transformers to use them effectively

EE502PC **Power Systems – II**

COURSE OUTCOMES	
CO1	Estimate the calculation of R, L, and C of transmission line.
CO2	Demonstrate a detailed exposure in the performance of short, medium and long transmission line.
CO3	Analyze the transient effects on the transmission line.
CO4	Estimate the Sag, tension and string efficiency of overhead transmission line.
CO5	Explain the construction and Grading of underground cables.

EI503PC **Microprocessors and Microcontrollers**

COURSE OUTCOMES	
CO1	Understand the internal architecture and organization of 8086.
CO2	Develop assembly language programming to design microprocessor/ micro controller based systems.
CO3	Convey the knowledge of 8051 Micro Controller applications and its real time control.
CO4	Understand the interfacing of external peripherals and I/O devices in Multi-processor applications
CO5	Understand the ARM and advanced ARM Processor architectures and its functionalities.

SM504MS **Fundamentals of Management**

COURSE OUTCOMES	
CO1	Understand the concepts and evolution of management
CO2	Ability to solve the problem and decision making
CO3	Implement the contemporary human resource management practices
CO4	Implement the various levels of Motivational theories and leadership styles
CO5	Analyze the budgeting aspects

CE511OE   Disaster Management

	COURSE OUTCOMES
CO1	Understand the meaning of Environmental hazard, Disaster, environmental stress and Human ecology
CO2	Extend the knowledge of different types Hazards and Disasters
CO3	Summarize Endogenous hazards and estimate suitable mitigation measures
CO4	Understanding Exogenous hazards and man-made Hazards and Vulnerabilities
CO5	Develop the awareness steps required during the risk management

EE505PC   Electrical Measurements & Instrumentation Lab

	COURSE OUTCOMES
CO1	Analyze measuring of Resistance, Inductance and Capacitance of different ranges
CO2	Perform experiments to measure three phase power.
CO3	Design experiments able to calibrate and test single phase energy meter, calibrate PMMC voltmeter and calibrate LPF wattmeter
CO4	Identify the industrial practices of test current transformers and dielectric strength of oil.
CO5	How to calibrate LVDT and resistance strain gauge

EE506PC   Basic Electrical simulation Lab

	COURSE OUTCOMES
CO1	Apply signal generation in different systems.
CO2	Analyze networks by various techniques
CO3	Analyze circuit responses
CO4	Analyze bridge rectifiers

EI507PC   Microprocessors and Microcontrollers Lab

	COURSE OUTCOMES
CO1	Classify and analyze the instruction set of 8086.
CO2	Develop the assembly programs in 8086. It helps to design a complete microprocessor based systems.
CO3	Develop the interfacing of microprocessor with I/O devices.
CO4	Classify and analyze the instruction set of 8051.
CO5	Develop the assembly programs in 8051. It helps to design a complete microcontroller based systems

MC500HS   Professional Ethics

	COURSE OUTCOMES
CO1	Understand the importance of Values and Ethics in their personal lives.
CO2	Understand the importance of Values and Ethics in their professional careers.
CO3	Learn the rights and responsibilities as an employee, team member and a global citizen.

EE601PC   **Power Systems Analysis**

COURSE OUTCOMES	
CO1	Evaluation of network matrices and develop the Y bus and Z bus matrices.
CO2	To explain different load flow study methods
CO3	To analyze various types of short circuit faults.
CO4	Illustrate the concept of stability analysis in power systems.

EE602PC   **Power Electronics**

COURSE OUTCOMES	
CO1	Explain the concepts of Various Power Electronics devices and their applications.
CO2	Analyze the Circuits to convert Ac voltages in to DC voltages.
CO3	Define how the DC voltages are converted in to AC voltages by using Inverters.
CO4	Illustrate the Circuits to convert fixed DC voltages to DC variable voltages by using choppers.
CO5	Explain the Circuits to convert the frequency of the system by using Cyclo converters.

EE603PC   **Switch Gear and Protection**

COURSE OUTCOMES	
CO1	Explain the working principle of various circuit breakers with their specifications and applications.
CO2	Importance of electromagnetic, static relays and their classifications.
CO3	Examine protection of generators and transformers with Differential protection
CO4	Survey feeder and bus bar protection and test for neutral grounding
CO5	Summarize the protection against over voltages.

CS621OE   **Java programming**

COURSE OUTCOMES	
CO1	Define OOPs concepts & basics of java programming
CO2	Identify the use of classes, interface, packages in solving specific problems
CO3	Analyze the use of Single threading and multithreading programs using synchronization and handle the exceptions to increase the performance of program.
CO4	Know the importance of collection framework in developing effective programs
CO5	Analyze and Design GUI based applications using swings and applets

EM611PE   Computer Organization

	COURSE OUTCOMES
CO1	Understand the basic organization of computer and different instruction formats and addressing modes.
CO2	Analyze the concept of pipelining, segment registers and pin diagram of 8086.
CO3	Develop 8086 Microprocessor based system for real time applications using low Level language like ALP.
CO4	Analyze various issues related to memory hierarchy.
CO5	Evaluate various modes of data transfer between CPU and I/O devices.
CO56	Examine various inter connection structures of multi processors.

EE604PC   Power Systems Lab

	COURSE OUTCOMES
CO1	Analyze sequence impedance of synchronous machine and transformers
CO2	Test of CT, PT and efficiency of strings
CO3	Analyze the faults and protection scheme in power systems
CO4	understand modeling of transmission line
CO5	Perform various load flow techniques

EE605PC   Power Electronics Lab

	COURSE OUTCOMES
CO1	Examine gate firing circuits
CO2	Analyze the characteristics of the SCR ,MOSFET,IGBT
CO3	Design rectifiers, choppers, AC voltage controllers and Inverter circuits
CO4	Build and simulate dual converters and cyclo converters and commutation circuits
CO5	Simulate and Design PSPICE programs for single phase rectifiers and inverter circuits

EN606HS   Advanced English Communication Skills Lab

	COURSE OUTCOMES
CO1	Develops confidence to use relevant vocabulary, using apt kinesics or body language in communication
CO2	Infer the meaning of the text easily through comprehension techniques like, skimming, scanning and effective reading through proper vocabulary
CO3	Analyze the writing skills through letters, reports and resume writing from the text and use for all professional settings
CO4	Gather ideas, information and organize them relevantly in making presentations
CO5	Self assured to organize and deliver discussions, presentations and strategies to face the interviews effectively

EE701PC   Power Semiconductor Drives

COURSE OUTCOMES	
CO1	Explain speed control procedure of single phase converter fed dc separately excited series motor and drives.
CO2	Determine speed-torque characteristics of dc separately excited and series motor fed with 3-phase converter.
CO3	Demonstrate the four Quadrant operation of DC drive with DC chopper and dual converter.
CO4	Summaries the speed control procedure of 3-phase Induction motor of stator side.
CO5	Design the block diagram of closed loop operation of synchronous motor drive.

EE702PC   Power System Operation and control

COURSE OUTCOMES	
CO1	Select the economic operation and optimum generation of thermal power plant.
CO2	Explain optimum scheduling of the hydrothermal system.
CO3	Model of turbine, governor and excitation systems.
CO4	Explain the concept of load frequencies control.
CO5	Discuss the reactive power control and estimate compensating devices.

EE722PE   HVDC Transmission

COURSE OUTCOMES	
CO1	Develop the knowledge of advantages of HVDC transmission over AC transmission system.
CO2	Solve mathematical problems related to rectifier and inverter control schemes and understand starting and stopping of DC links.
CO3	Describe various power flow control methods in HVDC to perform power flow analysis in AC/DC systems.
CO4	Study and understand converter faults and protection schemes.
CO5	Analyze the different harmonics generated by the converters and design different types of filters.

EE732PE   Power Quality

	COURSE OUTCOMES
CO1	To introduce to students the term and definition of power quality disturbances, and their causes, detrimental effects and solutions.
CO2	Understand the causes of power quality problems and relate them to equipment
CO3	To prepare students to know the power quality monitoring method, equipments and develop the ability to analyze the measured data
CO4	Impact knowledge on power quality consideration in industrial power system
CO5	Explain the mitigation methods and system equipment interface

EE744PE   Special Machines

	COURSE OUTCOMES
CO1	Understand the significance of electrical machines as part of control systems components
CO2	Explain the performance and control of stepper motors, and their applications
CO3	Explain theory of operation and control of switched reluctance motor.
CO4	Describe the operation and characteristics of permanent magnet dc motor and brush less dc motor
CO5	Explain the theory of linear induction motor and applications of it.

EE703PC   Electrical Systems Simulation Lab

	COURSE OUTCOMES
CO1	Design of first and second order circuits in time and frequency domain
CO2	Evaluate of medium and long transmission lines
CO3	Analyze Symmetrical component, Transmission Line Fault, LG, LL and 3-Φ faults of Transformer
CO4	Design of Speed Control of DC Motor, Speed Control of Induction motor, feedback control system.
CO5	Analyze Economic Dispatch of Thermal Units
CO6	Design of Load frequency control of single area and two area power system ,Single Phase and Three Phase Inverters, Single Phase and Three Phase Full Converters

EE704PC   Electrical Workshop

	COURSE OUTCOMES
CO1	Knowledge of wiring of distribution box with various circuit breakers.
CO2	Study and estimate various scheme of illumination.
CO3	Design, fabricate and carry-out performance analysis of single phase transformers and induction motors
CO4	Distinguish types of starters for various motors.
CO5	Design filters circuit for application.
	Design and test the different electronic circuits

EE705PC   Industry Oriented Mini Project

	COURSE OUTCOMES
CO1	**Design** identify basic requirements for a application and propose a cost effective solution
CO2	**Build** knowledge through practical assignments and learn the various design methods for solving a problem analysis
CO3	**Develop** skill to build design techniques for various problem analysis
CO4	**Summarize** the fundamental concepts and techniques used in mini project
CO5	**Make up** project enables the student to understand the business process

EE706PC   Seminar

	COURSE OUTCOMES
CO1	**Spell** for basic concepts of science and technology
CO2	**Contrast** the understanding perceptive of techniques applicable to their domain
CO3	**Construct** the solutions upon their own knowledge
CO4	**Improve** their Presentation and Communication skills
CO5	**Make up** them to pursue their placements and higher studies

EE852PE   Electrical Distribution Systems

COURSE OUTCOMES	
CO1	Explain the factors related to electrical distribution system.
CO2	How to select the rating of substation.
CO3	Calculate the voltage drops and power losses in different distribution system.
CO4	Analyze different types of faults and procedure for fault calculation.
CO5	Illustrate the different voltage control methods.

EE863PE   Utilization of Electric Power

COURSE OUTCOMES	
CO1	Classify various types of Electric drives and relate its applications.
CO2	Apply different Electric Heating and Welding methods in real time.
CO3	Make use of Illumination systems.
CO4	Illustrate multiple Braking methods used in Electric traction.
CO5	Evaluate Tractive effort relations.

ME853PE   Renewable Energy Sources

COURSE OUTCOMES	
CO1	Understand the need of utilization of renewable energy resources.
CO2	Describe the solar energy, solar radiation and its applications.
CO3	Understand the potential of wind energy as a renewable source.
CO4	Illustrate the potential of bio mass as a renewable source.
CO5	Understand the potential of geothermal energy and hydro energy as a renewable source.
CO6	Analyze the potential of ocean energy as a renewable source.

EE801PC   Major Project

COURSE OUTCOMES	
CO1	**Apply** knowledge to generate, develop, and evaluate ideas and information to solve the problem in the area of Electronics &Communication Engineering
CO2	**Identify** the basic requirements for the **design** of application and propose societal, environmental and cost effective solution
CO3	**Apply** appropriate techniques, resources, modern engineering and IT tools for modeling and simulation of the system
CO4	**Develop** the skills to communicate effectively
CO5	**Construct** collaborative skills through working in a team to achieve common goals