Nimra College of Engineering & Technology

Estd. By Nimra Educational Society (A Muslim Minority Society)
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B.TECH – (ELECTRICAL AND ELECTRONICS ENGINEERING)		
COURSE OUTCOMES FOR FIRST YEAR FIRST SEMESTER		
COURSE TITLE	**CO's**	**STATEMENT**
COMMUNICATIVE ENGLISH R201101	CO-1	To understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
	CO-2	To ask and answer general questions on familiar topics and introduce oneself/others
	CO-3	To employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
	CO-4	To recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
	CO-5	To form sentences using proper grammatical structures and correct word forms
MATHEMATICS-I R201102	CO-1	To utilize mean value theorems to real life pr
	CO-2	To solve the differential equations related to various engineering fields
	CO-3	To amiliarize with functions of several variables which is useful in optimization
	CO-4	To apply double integration techniques in evaluating areas bounded by region
	CO-5	To important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems
MATHEMATICS-II (Linear Algebra and Numerical Methods) R201103	CO-1	To develop the use of matrix algebra techniques that is needed by engineers for practical applications
	CO-2	To solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
	CO-3	To evaluate the approximate roots of polynomial and transcendental equations by different algorithms
	CO-4	To apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
	CO-5	To apply numerical integral techniques to different Engineering problems
PROGRAMMING FOR PROBLEM SOLVING USING C R201104	CO-1	To write algorithms and to draw flowcharts for solving problems
	CO-2	To convert flowcharts/algorithms to C Programs, compile and debug programs
	CO-3	To use different operators, data types and write programs that use two-way/ multi-way selection
	CO-4	To design and implement programs to analyze the different pointer applications
	CO-5	To decompose a problem into functions and to develop modular reusable code
ENGINEERING DRAWING & DESIGN R201105	CO-1	The student will learn how to visualize 2D objects
	CO-2	The student will learn how to visualize 3D objects
	CO-3	To constructing the various types of polygons, curves and scales
	CO-4	To draw the projections of the plane inclined to both the planes
	CO-5	To be able to represent and convert the isometric view to orthographic view and vice versa.
ENGLISH COMMUNICATION SKILLS LABORATORY R201106	CO-1	To identify theCommon Errors in Pronunciation
	CO-2	To determine Word stress-di-syllabic words, poly-syllabic words, weak and strong forms, contrastive stress
	CO-3	To find Stress in compound words, rhythm, intonation, accent neutralisation
	CO-4	To Listening to short audio texts and identifying the context and specific pieces of information to answer a series of questions in speaking

	CO-5	To practice Newspapers reading; Understanding and identifying key terms and structures useful for writing reports
ELECTRICAL ENGINEERING WORKSHOP R201107	CO-1	To Explain the limitations, tolerances, safety aspects of electrical systems and wiring
	CO-2	To Select wires/cables and other accessories used in different types of wiring.
	CO-3	To Make simple lighting and power circuits
	CO-4	To Measure current, voltage and power in a circuit
	CO-5	To handle various electric tools
PROGRAMMING FOR PROBLEM SOLVING USING C LAB (ES1202)	CO-1	To Gains Knowledge on various concepts of a C language.
	CO-2	To Draw flowcharts and write algorithms..
	CO-3	To Design and development of C problem solving skills.
	CO-4	To Design and develop modular programming skills.
	CO-5	To Trace and debug a program

COURSE OUTCOMES FOR FIRST YEAR SECOND SEMESTER

COURSE TITLE	CO's	STATEMENT
MATHEMATICS-III (Vector Calculus, Transforms and PDE) R2012011	CO-1	To interpret the physical meaning of different operators such as gradient, curl and divergence
	CO-2	To estimate the work done against a field, circulation and flux using vector calculus
	CO-3	To apply the Laplace transform for solving differential equations
	CO-4	To find or compute the Fourier series of periodic signals
	CO-5	To know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
APPLIED PHYSICS R2012012	CO-1	To Explain the need of coherent sources and the conditions for sustained interference
	CO-2	To Understand the basic concepts of LASER light Sources
	CO-3	To Explain the importance of K-P model
	CO-4	To Explain the applications of dielectric and magnetic materials
	CO-5	To Identify applications of semiconductors in electronic devices
DATA STRUCTURES THROUGH C R2012013	CO-1	To data structures concepts with arrays, stacks, queues.
	CO-2	To linked lists for stacks, queues and for other applications
	CO-3	To traversal methods in the Trees.
	CO-4	To various algorithms available for the graphs
	CO-5	To sorting and searching in the data ret retrieval applications.
ELECTRICAL CIRCUIT ANALYSIS -I R2012014	CO-1	To find Various electrical networks in presence of active and passive elements
	CO-2	To analyse Electrical networks with network topology concepts.
	CO-3	To determine Any magnetic circuit with various dot conventions.
	CO-4	To find Any R, L, C network with sinusoidal excitation.
	CO-5	To determine Any R, L, network with variation of any one of the parameters i.e., R, L, C and f.
BASIC CIVIL AND MECHANICAL ENGINEERING R2012015	CO-1	To Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams.
	CO-2	To Apply concepts of Rosette analysis for strain measurements.
	CO-3	To Analyse the characteristics of common building materials.
	CO-4	To Compare the working characteristics of Internal Combustion engines.
	CO-5	To Compare the differences between boiler mountings and accessories.
APPLIED PHYSICS LAB R2012016	CO-1	To Determie the thickness of thin object by wedge method
	CO-2	To determine the energy gap of a semiconductor using p-n junction diode.
	CO-3	To Determine the wavelength of Laser light using diffraction grating.
	CO-4	To Determine the numerical aperture and acceptance angle of an optical fiber.
	CO-5	To Measurement othe resistance of a semiconductor with varying temperature.
BASIC CIVIL AND MECHANICAL ENGINEERING LAB R2012017	CO-1	to Solve to arrive at finding constant speed and variable speed on IC engines and interpret their performance.
	CO-2	To Estimate energy distribution by conducting heat balance test on IC engines
	CO-3	To Explain procedure for standardization of experiments
	CO-4	To Determine flow discharge measuring device used in pipes channels and tanks.

	CO-5	To Determine fluid and flow properties
DATA STRUCTURES THROUGH C LAB R2012018	CO-1	To Be able to design and analyze the time and space efficiency of the data structure.
	CO-2	To Be capable to identity the appropriate data structure for given problem.
	CO-3	To Have practical knowledge on the applications of data structures.
	CO-4	To Implement basic operations on Circular Queue.
	CO-5	To Implement of Breadth First Search Techniques.
CONSTITUTION OF INDIA R2012019	CO-1	To Understand historical background of the constitution making and its importance for building a democratic India.
	CO-2	To Understand the functioning of three wings of the government i.e., executive, legislative and judiciary.
	CO-3	To Understand the value of the fundamental rights and duties for becoming good citizen of India.
	CO-4	To Analyze the decentralization of power between central, state and local self- government.
	CO-5	To Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy

COURSE OUTCOMES FOR SECOND YEAR FIRST SEMESTER

COURSE TITLE	CO's	STATEMENT
MATHEMATICS-IV R2021021	CO-1	To interpret the physical meaning of different operators such as gradient, curl and divergence
	CO-2	To estimate the work done against a field, circulation and flux using vector calculus
	CO-3	To apply the Laplace transform for solving differential equations
	CO-4	To find or compute the Fourier series of periodic signals
	CO-5	To know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
Electronic Devices and Circuits R2021022	CO-1	To Understand the basic concepts of semiconductor physics.
	CO-2	To Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
	CO-3	To Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
	CO-4	To Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
	CO-5	To Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations
ELECTRICAL CIRCUIT ANALYSIS - II R2021023	CO-1	To Understand the concepts of balanced and unbalanced three-phase circuits.
	CO-2	To Know the transient behavior of electrical networks with DC excitations.
	CO-3	To Learn the transient behavior of electrical networks with AC excitations.
	CO-4	To Estimate various parameters of a two port network.
	CO-5	To Understand the significance of filters in electrical networks.
DC MACHINES AND TRANSFORMERS R2021024	CO-1	To Assimilate the concepts of electromechanical energy conversion.
	CO-2	To Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
	CO-3	To Understand the torque production mechanism and control the speed of dc motors..
	CO-4	To Analyze the performance of single phase transformers.
	CO-5	To Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
ELECTRO MAGNETIC FIELDS R2021025	CO-1	To Compute electric fields and potentials using Gauss law or solve Laplace's or Poisson's equations for various electric charge distributions
	CO-2	To Calculate the capacitance and energy stored in dielectrics.
	CO-3	To Calculate the magnetic field intensity due to current carrying conductor and understanding the application of Ampere's law, Maxwell's second and third law.
	CO-4	To Estimate self and mutual inductances and the energy stored in the magnetic field.

COURSE TITLE	CO's	STATEMENT
	CO-5	To Understand the concepts of displacement current and Poynting theorem and Poynting vector
ELECTRICAL CIRCUITS LABS R2021026	CO-1	To Apply various theorems
	CO-2	To Determination of self and mutual inductances
	CO-3	To Two port parameters of a given electric circuits
	CO-4	To Draw locus diagrams
	CO-5	To Draw Waveforms and phasor diagrams for lagging and leading networks
DC MACHINES AND TRANSFORMERS LAB R2021027	CO-1	To Determine and predetermine the performance of DC machines and Transformers.
	CO-2	To Control the speed of DC motor
	CO-3	To Obtain three phase to two phase transformation
	CO-4	To find Parallel operation of two Single phase Transformers under no-load and load conditions
	CO-5	To Predetermination of efficiency of two DC shunt machines by conducting Hopkinson's test
ELECTRONIC DEVICES AND CIRCUITS LAB R2021028	CO-1	To Analyze the characteristics of diodes, transistors and other devices
	CO-2	To Design and implement the rectifier circuits, SCR and UJT in the hardware circuits.
	CO-3	To Design the biasing and amplifiers of BJT and FET amplifiers
	CO-4	To Measure electrical quantities using CRO in the experimentation
	CO-5	To find rating Ammeters (Analog or Digital)
SKILL ORIENTED COURSE DESIGN OF ELECTRICAL CIRCUITS USING ENGINEERING SOFTWARE TOOLS R2021029	CO-1	To write the MATLAB programs to simulate the electrical circuit problems
	CO-2	To simulate various circuits for electrical parameters
	CO-3	To simulate various wave form for determination of wave form parameters
	CO-4	To simulate RLC series and parallel resonance circuits for resonant parameters
	CO-5	To simulate magnetic circuits for determination of self and mutual inductances
PROFESSIONAL ETHICS & HUMAN VALUESSOFTWARE TOOLS R2021020	CO-1	To Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
	CO-2	To Identify the multiple ethical interests at stake in a real-world situation or practice
	CO-3	To Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
	CO-4	To Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
	CO-5	To Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.

COURSE OUTCOMES FOR SECOND YEAR SECOND SEMESTER

COURSE TITLE	CO's	STATEMENT
PYTHON PROGRAMMING R2022001	CO-1	To Develop essential programming skills in computer programming concepts like data types, containers
	CO-2	To Apply the basics of programming in the Python language Solve coding tasks related
	CO-3	To conditional execution, loops
	CO-4	To Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming
	CO-5	To Python, Program Development Cycle, Input, Processing
DIGITAL ELECTRONICS R2022002	CO-1	To Classify different number systems and apply to generate various codes
	CO-2	To Use the concept of Boolean algebra in minimization of switching functions
	CO-3	To Design different types of combinational logic circuits.•
	CO-4	To Apply knowledge of flip-flops in designing of Registers and counters
	CO-5	To The operation and design methodology for synchronous sequential circuits and algorithmic state machines.

POWER SYSTEMS - I **R2022003**	**CO-1**	To CIIdentify the different components of thermal power plants.
	CO-2	To Identify the different components of nuclear Power plants
	CO-3	To Identify the different components of air and gas insulated substations.
	CO-4	To Identify single core and three core cables with different insulating materials
	CO-5	To Analyse the different economic factors of power generation and tariffs.
INDUCTION AND **SYNCHRONOUS** **MACHINES R2022004**	**CO-1**	To Explain the operation and performance of three phase induction motor.
	CO-2	To Analyze the torque-speed relation, performance of induction motor and induction generator.
	CO-3	To Implement the starting of single phase induction motors
	CO-4	To Develop winding design and predetermine the regulation of synchronous generators.
	CO-5	To Explain hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor.
MANAGERIAL **ECONOMICS &** **FINANCIAL** **ANALYSIS R2022005**	**CO-1**	To The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
	CO-2	To The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
	CO-3	To The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
	CO-4	To The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
	CO-5	To The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making
PYTHON **PROGRAMMING LAB** **R2022006**	**CO-1**	To Write, Test and Debug Python Programs
	CO-2	To Use Conditionals and Loops for Python Programs
	CO-3	To Use functions and represent Compound data using Lists, Tuples and
	CO-4	To Dictionaries Use various applications using python
	CO-5	To Write a program that asks the user for an integer and creates a list that consists of the factors of that integer.
INDUCTION AND **SYNCHRONOUS** **MACHINES LAB** **R2022007**	**CO-1**	To Assess the performance of single phase and three phase induction motors.
	CO-2	To Control the speed of three phase induction motor
	CO-3	To Predetermine the regulation of three–phase alternator by various methods.
	CO-4	To Find the Xd/Xq ratio of alternator and asses the performance of three–phase synchronous motor.
	CO-5	To Determine the performance of single phase AC series motor
DIGITAL **ELECTRONICS LAB** **R2022008**	**CO-1**	To Learn the basics of gates, filp-flops and counters.
	CO-2	To Construct basic combinational circuits and verify their functionalities
	CO-3	To Apply the design procedures to design basic sequential circuits
	CO-4	To To understand the basic digital circuits and to verify their operation
	CO-5	To Apply Boolean laws to simplify the digital circuits
SKILL ORIENTED **COURSE** **IOT APPLICATIONS** **OF ELECTRICAL** **ENGINEERING** **R2022009**	**CO-1**	To apply various technologies of Internet of Things to real time applications.
	CO-2	To apply various communication technologies used in the Internet of Things.
	CO-3	To connect the devices using web and internet in the IoT environment.
	CO-4	To To implement IoT to study Smart Home, Smart city, etc.
	CO-5	To Write a program on Arduino/Raspberry Pi to upload and retrieve temperature and humidity data to thingspeak cloud.

COURSE OUTCOMES FOR THIRD YEAR FIRST SEMESTER

COURSE TITLE	CO's	STATEMENT
POWER SYSTEMS–II **R2031021**	**CO-1**	To Calculate parameters of transmission lines for different circuit configurations.
	CO-2	To Determine the performance of short, medium and long transmission lines.
	CO-3	To Analyse the effect of travelling waves on transmission lines.
	CO-4	To Analyse the various voltage control methods and effect of corona.

	CO-5	To Calculate sag/tension of transmission lines and performance of line insulators.
POWER ELECTRONICS R2031022	**CO-1**	To Illustrate the static and dynamic characteristics of SCR, Power-MOSFET and Power-IGBT.
	CO-2	To Analyse the operation of phase-controlled rectifiers.
	CO-3	To Analyse the operation of three-phase full–wave converters, AC Voltage Controllers and Cycloconverters.
	CO-4	To Examine the operation and design of different types of DC-DC converters.
	CO-5	To Analyse the operation of PWM inverters for voltage control and harmonic mitigation.
CONTROL SYSTEMS R2031023	**CO-1**	To Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
	CO-2	To Determine time response specifications of second order systems and absolute and relative stability of LTI systems using Routh's stability criterion and root locus method.
	CO-3	To AnaAnalyze the stability of LTI systems using frequency response methods.
	CO-4	To Design Lag, Lead, Lag-Lead compensators to improve system performance using Bode diagrams..
	CO-5	To Represent physical systems as state models and determine the response. Understand the concepts of controllability and observability.
UTILIZATION OF ELECTRICAL ENERGY R2031024	**CO-1**	To Identify various illumination methods produced by different illuminating sources.
	CO-2	To Identify a suitable motor for electric drives and industrial applications
	CO-3	To Identify most appropriate heating and welding techniques for suitable applications
	CO-4	To Distinguish various traction system and determine the tractive effort and specific energy consumption.
	CO-5	To Validate the necessity and usage of different energy storage schemes for different applications and comparisons.
OBJECT ORIENTED PROGRAMMING THROUGH JAVA R2031025	**CO-1**	To Discuss and understand java programming constructs, Control structures
	CO-2	To Illustrate and experiment Object Oriented Concepts like classes, objects
	CO-3	To Apply Object Oriented Constructs such as Inheritance, interfaces, and exception handling
	CO-4	To Construct applications using multithreading and I/O
	CO-5	To Develop Dynamic User Interfaces using applets and Event Handling in java
CONTROL SYSTEMS LABORATORY R2031026	**CO-1**	To Analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchros.
	CO-2	To Design P,PI,PD and PID controllers
	CO-3	To Design lag, lead and lag–lead compensators
	CO-4	To CoEvaluate temperature control of an oven using PID controller
	CO-5	To Judge the stability in time and frequency domain
POWER ELECTRONICS LABORATORY R2031027	**CO-1**	To Analyse characteristics of various power electronic devices and design firing circuits for SCR.
	CO-2	To Analyse the performance of single–phase dual, three–phase full–wave bridge converters and dual converter with both resistive and inductive loads.
	CO-3	To Examine the operation of Single-phase AC voltage regulator and Cycloconverter with resistive and inductive loads.
	CO-4	To Differentiate the working and control of Buck converter and Boost converter
	CO-5	To Differentiate the working & control of Square wave inverter and PWM inverter.
SOFT SKILL COURSE	**CO-1**	To Follow strategies in minimizing time consumption in problem solving Apply shortcut methods to solve problems
	CO-2	To AnConfidently solve any mathematical problems and utilize these mathematical skills both in their professional as well as personal life

SOFT SKILL COURSE R2031028	CO-3	To Analyze, summarize and present information in quantitative forms including table, graphs and formulas
	CO-4	To Understand the core competencies to succeed in professional and personal life
	CO-5	To Larn and demonstrate a set of practical skills such as time management, self-management, handling conflicts, team leadership, etc.
ENVIRONMENTAL SCIENCE R2031029	CO-1	To Overall understanding of the natural resources.
	CO-2	To study Basic understanding of the ecosystem and its diversity
	CO-3	To Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
	CO-4	To understanding of the environmental impact of developmental activities.
	CO-5	To have Awareness on the social issues, environmental legislation and global treaties.

COURSE OUTCOMES FOR THIRD YEAR SECOND SEMESTER

COURSE TITLE	CO's	STATEMENT
MICROPROCESSORS AND MICROCONTROLLERS R2032001	CO-1	To Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.
	CO-3	To Analyse the Microcontroller and interfacing capability
	CO-4	To Describe the architecture and interfacing of 8051 controller
	CO-5	To Know the concepts of PIC micro controller and its programming
ELECTRICAL MEASUREMENTS AND INSTRUMENTATION R2032002	CO-1	To Know the construction and working of various types of analog instruments.
	CO-2	To Describe the construction and working of wattmeter and power factor meters
	CO-3	To Know the construction and working various bridges for the measurement resistance - inductance and capacitance
	CO-4	To Know the operational concepts of various transducers
	CO-5	To Know the construction and operation digital meters
POWER SYSTEM ANALYSIS R2032003	CO-1	To Draw impedance diagram for a power system network and calculate per unit quantities.
	CO-2	To Apply the load flow solution to a power system using different methods.
	CO-3	To Form Zbus for a power system networks and analyse the effect of symmetrical faults
	CO-4	To Find the sequence components for power system Components and analyse its effects of unsymmetrical faults
	CO-5	To Analyse the stability concepts of a power system
BIG DATA ANALYTICS R2032004	CO-1	To Understand how to leverage the insights from big data analytics
	CO-2	To Analyze data by utilizing various statistical and data mining approaches
	CO-3	To Perform analytics on real-time streaming data
	CO-4	To Understand the various NoSql alternative database models
	CO-5	To Understand Concepts, Stream Data Model and Architecture
BATTERY MANAGEMENT SYSTEMS AND CHARGING STATIONS R2032005	CO-1	To Describe the construction and operation of different batteries for EV applications
	CO-2	To Describe charging algorithms of different batteries and balancing methods of battery packs
	CO-3	To Describe the different kinds of infrastructure needed in the charging stations
	CO-4	To Describe the requirements of battery management and their maintenance.
	CO-5	To Obtain the modelling of batteries and develop their simulation models.
ELECTRICAL MEASUREMENTS AND INSRUMENTATION LABORATORY R2032006	CO-1	To Know about the phantom loading.
	CO-2	To Measure the electrical parameters voltage - current - power - energy and electrical characteristics of resistance - inductance and capacitance.
	CO-3	To Gain the skill knowledge of various brides and their applications
	CO-4	To Know the characteristics of transducers.
	CO-5	To OMeasure the strains - frequency and phase difference.
MICRO PROCESSORS	CO-1	To Write assembly language program using 8086 microprocessor based on arithmetic - logical - number systems and shift operations.

MICRO PROCESSORS AND MICRO CONTROLLERS LAB R2032007	CO-2	to Write assembly language programs for numeric operations and array handling problems
	CO-3	To Write a assembly program on string operations
	CO-4	To Interface 8086 with I/O and other devices.
	CO-5	To Do parallel and serial communication using 8051 & PIC 18 micro controllers.
POWER SYSTEMS AND SIMULATION LAB R2032008	CO-1	To Estimate the sequence impedances of 3-phase Transformer and Alternators
	CO-2	To Evaluate the performance of transmission lines
	CO-3	To Analyse and simulate power flow methods in power systems
	CO-4	To Analyse and simulate the performance of PI controller for load frequency control.
	CO-5	To Analyse and simulate stability studies of power systems
SKILL ADVANCED COURSE R2032009	CO-1	To Illustrate and comprehend the basics of Machine Learning with Python
	CO-2	To Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions
	CO-3	To Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms
	CO-4	To Evaluate the concepts of binning, pipeline Interfaces with examples
	CO-5	To Apply the sentiment analysis for various case studies

COURSE OUTCOMES FOR FOURTH YEAR FIRST SEMESTER

COURSE TITLE	CO's	STATEMENT
DIGITAL SIGNAL PROCESSING R2041001	CO-1	To Know the concepts of Digital signal processing - frequency domain representation &z- transform.
	CO-2	To Compute discrete Fourier transform and fast fourier transforms for different sequences.
	CO-3	To Analyse the Microcontroller and interfacing capabilityDesign IIR filters through analog filter approximation and basic structure of IIR filters.
	CO-4	To Design FIR filters with window techniques and basic structure of FIR filters.
	CO-5	To Learn the concepts of Multirate Signal Processing.
HYBRID ELECTRIC VEHICLES R2041002	CO-1	To Know the concept of electric vehicles and hybrid electric vehicles
	CO-2	To Familiar with different configuration of hybrid electric vehicles.
	CO-3	To Choose an effective motor for EV and HEV application
	CO-4	To Understand the power converters used in hybrid electric vehicles
	CO-5	To KKnow different batteries and other energy storage systems.
POWER SYSTEM OPERATION AND CONTROL R2041003	CO-1	To Compute optimal load scheduling of Generators
	CO-2	To Formulate hydrothermal scheduling and unit commitment problem
	CO-3	To Analyse effect of Load Frequency Control for single area systems
	CO-4	To Analyse effect of Load Frequency Control for two area systems
	CO-5	To Describe the effect of reactive power control for transmission lines.
PCONCEPTS OF MICROPROCESSORS AND MICROCONTROLLERS R2041004	CO-1	To Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.
	CO-2	To Analyse the instruction sets - addressing modes - minimum and maximum modes operations of 8086 Microprocessors
	CO-3	to Analyse the Microcontroller and interfacing capability.
	CO-4	to Describe the architecture and interfacing of 8051 controller
	CO-5	to Know the concepts of PIC micro controller and its programming.
CONCEPTS OF POWER SYSTEM ENGINEERING R2041005	CO-1	To Know the concepts of power generation by various types of power plants.
	CO-2	To Learn about transmission line concepts and distribution systems schemes
	CO-3	To Learn about protection equipments and grounding methods of power system.
	CO-4	To Know the economic aspects of electrical energy and their importance.
	CO-5	To Know the importance of power factor improvement and voltage control in power systems.
CSKILL ADVANCED COURSE	CO-1	To Implement procedures for the machine learning algorithms
	CO-2	To Design and Develop Python programs for various Learning algorithms

MACHINE LEARNING WITH PYTHON LAB R2041006	CO-3	To Apply appropriate data sets to the Machine Learning algorithms
	CO-4	To Develop Machine Learning algorithms to solve real world problems
	CO-5	To Implement Support Vector Machines and Principle Component Analysis