G PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

(Approved by AICTE | NAAC Accreditation with 'A' Grade |
Accredited by NBA (CIV, CSE, ECE & EEE) | Affiliated to JNTUA)
Nandikotkur Road, Venkayapalli (V), Kurnool - 518452, Andhra Pradesh

Course Name: Mathematics-I :A2002

A2002.1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications
A2002.2	Interpret the Eigen values and Eigen vectors of matrix in terms of the transformation it represents in to a matrix Eigen value problem
A2002.3	Utilize mean value theorems to real life problems
A2002.4	Familiarize with functions of several variables which is useful in optimization
A2002.5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems
A2002.6	Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions

Course Name: CHEMISTRY: A2005

A2005.1	To illustrate the molecular orbital energy levels for different molecular species and apply Schrödinger wave equation and particle in a box.
A2005.2	To differentiate between pH metryPotentiometry and conductometric titrations.
A2005.3	Explain the preparation properties and applications of polymers and describe the mechanism of conduction in conducting polymers.
A2005.4	Understand the principles of different analytical instruments and explain their applications.
A2005.5	Explain the concept of nano clusters nano wires and characterize the applications of SEM & TEM.
A2005.6	Explain of different types of colloids ,their preparations , properties and applications

Course Name: COMPUTER PROGRAMMING: A2501

A2501.1	Comprehend the fundamental concepts of computer hardware and problem solving abilities
A2501.2	Knowledge on the basic concepts of algorithms, flow charts and python programming
A2501.3	Ability to analyze the procedure for providing input and acquire output from the program along with implementation of control statements
A2501.4	Interpret the importance of functions in programming
A2501.5	Analyze and Modularize the problem and its solution by using functions.
A2501.6	Ability to relate the concepts of strings, files and preprocessors to the real world applications

Course Name: ENGINEERING GRAPHICS AND COMPUTER AIDED DRAFTING :A2301

A2301.1	Learning conventions of Drawing, which is an Universal Language Of Engineers. Also Interpret and Sketch the various curves which Including ellipse, parabola, hyperbola
A2301.2	Analyze and draft the orthographic projections of points and lines
A2301.3	Analyze and sketch the orthographic projections of planes and solids
A2301.4	Revise and Improve their visualization skills in the development of new products
A2301.5	Construct the isometric projection of an object employing orthographic projections
A2301.6	Drawing 2D and 3D diagrams of various objects

Course Name: CHEMISTRY LAB :A2009

A2009.1	Determine the cell constant and conductance of solutions
A2009.2	Prepare advanced polymer materials
A2009.3	Measure the strength of an acid present in secondary batteries
A2009.4	pH metric titrations
A2009.5	Verify Lambert-Beer's law
A2009.6	Potentiometry - determination of redox potentials and emfs

Course Name: COMPUTER PROGRAMMING LAB: A2502

A2502.1	Design solutions to mathematical problems & Organize the data for solving the problem
A2502.2	Understand and implement modular approach using python
A2502.3	Learn and implement various data structures provided by python library including string, list, dictionary and its operations etc
A2502.4	Understands about files and its applications.
A2502.5	Develop real-world applications, files and exception handling provided by python
A2502.6	Select appropriate programming construct for solving the problem

CO-ENGINEERING LABORATORY : A2302

A2302.1	To acquire the knowledge about the characteristics and working principles of semiconductor diodes, Bipolar Junction Transistor

A2302.2	Analysis of Single Phase AC Circuits, the representation of alternating quantities and determining the power in these circuits
A2302.3	Able to Measure the amplitude and frequency utilizing oscilloscope and analyze the fabrication processes of printed circuit boards
A2302.4	Apply wood working skills in real world applications. Build different parts with metal sheets in real world applications
A2302.5	Apply fitting operations in various applications
A2302.6	Apply different types of basic electric circuit connections

Course Name: Mathematics-II :A2010

A2010.1	Apply the mathematical principles to solve second and higher order differential equations
A2010.2	Analyze the non- homogeneous linear differential equations along with method of variation of parameters
A2010.3	Apply the concept of higher order differential equations to the various streams like Mass spring system and L-C-R Circuit problems
A2010.4	Apply a range of techniques to find solutions of standard PDEs and basic properties of standard PDEs
A2010.5	Analyze the vector calculus involving divergence, curl and their properties along with vector identities
A2010.6	Apply Green's, Stokes and Divergence theorem in evaluation of double and triple integrals.

Course Name: APPLIED PHYSICS : A2004

A2004.1	Interpret the properties of light waves and its interaction of energy with the matter
A2004.2	Explain the principles of physics in dielectrics and magnetic materials
A2004.3	Apply electromagnetic wave propagation in different guided media
A2004.4	Calculate conductivity of semiconductors
A2004.5	Interpret the difference between normal conductor and super conductor
A2004.6	Demonstratethe application of nanomaterials

Course Name: DATA STRUCTURES :A2503

A2503.1	Learn to choose appropriate data structure as applied to specified problem definition.
A2503.2	Design and analyze linear and non-linear data structures.
A2503.3	Design algorithms for manipulating linked lists, stacks, queues, trees and graphs in python
A2503.4	Demonstrate advantages and disadvantages of specific algorithms and data

	structures
A2503.5	Develop a base for advanced computer science study.
A2503.6	Evaluate algorithms and data structures in terms of time and memory complexity of basic operations.

Course Name: ELECTRICAL CIRCUITS-I :A2202

A2202.1	Solve Electrical circuits with minimum complexity and the concepts of magnetic circuits will be used to understand the static induced E.M.F principle of Transformers.
A2202.2	Differentiate the Active power and the role of reactive power in a electrical system for single phase and three phase systems which is the basis to analyze a complex Power system.
A2202.3	Analyze series and parallel resonance circuits and current locus diagrams.
A2202.4	Solve an Electrical circuit with minimum complexity by using various theorems and their applications.
A2202.5	Determine various network parameters for different two port networks.

Course Name: COMMUNICATIVE ENGLISH :A2001

A2001.1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English
A2001.2	Apply grammatical structures to formulate sentences and correct word forms
A2001.3	Analyze discourse markers to speak clearly on a specific topic in informal discussions
A2001.4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
A2001.5	Create a coherent paragraph interpreting a figure/graph/chart/table
A2001.6	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English

Course Name: COMMUNICATIVE ENGLISH LAB :A2006

A2006.1	Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills
A2006.2	Apply communication skills through various language learning activities
A2006.3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
A2006.4	Evaluate and exhibit acceptable etiquette essential in social and professional settings
A2006.5	Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.
A2006.6	Improve upon speaking skills over telephone, role plays and public speaking

Course Name: APPLIED PHYSICS LAB :A2008

A2008.1	Operate optical instruments like microscope and spectrometer and understand the concepts of interference by finding thickness of paper, radius of curvature of Newton's rings
A2008.2	interpret the concept of diffraction by the determination of wavelength of different colours of white light and dispersive power of grating
A2008.3	demonstrate the importance of dielectric material in storage of electric field energy in the capacitors
A2008.4	plot the intensity of the magnetic field of circular coil carrying current with varying distance and B-H curve
A2008.5	evaluate the acceptance angle of an optical fiber and numerical aperture
A2008.6	determine the resistivity of the given semiconductor using four probe method, the band gap of a semiconductor and identify the type of semiconductor using Hall effect

Course Name: DATA STRUCTURES LABORATORY :A2504

A2504.1	Practice the various DOS and LINUX Commands along with study of editors and also execute sample C programs
A2504.2	Write a program to calculate roots of quadratic equation, factorial, Fibonacci series and also reverse the digits of a number
A2504.3	Generate a program to check palindrome, Pascals Triangle, read and evaluate matrices and also perform addition, subtraction, division of complex numbers
A2504.4	Design a program to implement numerical methods, sorting of strings in alphabetical order and perform various operations on strings
A2504.5	Write a program to compute the salary statement, perform various arithmetic calculations along with maintaining students data
A2504.6	Generate a program to evaluate the telephone bill along with calculating the execution time of a program

Course Name: ELECTRICAL CIRCUITS-I LAB: A2205

A2205.1	Verification of theorems like Norton's Theorem, Thevenin's theorem, super position theorem, maximum power transfer theorem experimentally and theoretically.
A2205.2	Evaluate the frequency responses at which series and parallel resonance occurs in a given circuit
A2205.3	Calculate the impedance and admittance parameters along with transmission parameter for a given circuit.
A2205.4	Measure the active and reactive power for star and delta connected balanced loads
A2205.5	Assess the value of 3 phase power for unbalanced loads employing two wattmeter method

Course Name: TRANSFORM TECHNIQUES AND COMPLEX VARIABLES : A2015

A2015.1	Apply Laplace transforms to solve ordinary differential equations
A2015.2	Build Fourier series and Fourier transforms of a given function.
A2015.3	Test for analyticity of complex functions in the given domain
A2015.4	Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours
A2015.5	Evaluate improper integrals of complex functions using Residue theorem.

Course Name: A2207– ELECTRICAL MACHINES – I

A2207.1	Apply the principles of AC and DC machines to identify a suitable electrical machine for a given application.
A2207.2	Deduce the emf / Voltage equations of DC Machines and single phase transformers.
A2207.3	Analyze the various characteristics of DC Machines, single phase and three phase transformers.
A2207.4	Test the performance of DC Machines and Single phase transformers.
A2207.5	Apply suitable test to control the speed of DC motor.

Course Name: A2208– ELECTROMAGNETIC FIELDS

A2208.1	Apply orthogonal coordinate systems for Electric and magnetic fields over the distribution of charge.
A2208.2	Analyse the charge configurations of Electric and Magnetic fields using Coulombs law, Gauss's law, Biot-Savart's Law, Ampere's circuital Law and Poynting theorem.
A2208.3	Evaluate the capacitance, Inductance and Magnetic forces for various conductors in Electromagnetic fields.
A2208.4	Investigate the behavior of Electric and Magnetic Fields in Static and Time Varying Fields by Maxwell's equations.
A2208.5	Analyze the plane wave equation in free space, dielectrics and conductors.

Course Name :A2209 –ELECTRICAL CIRCUITS – II

A2209.1	Analyze three phase circuits to determine line voltages, line currents, phase voltages and phase currents.
A2209.2	Apply differential equation and Laplace transform techniques fortransientresponse of series and parallel RLC circuits.
A2209.3	Design a low pass filter, high pass filter, band pass filter and attenuators for given circuit parameters.
A2209.4	Develop a dual circuit, cutest and tie set matrices for a given circuit.

Course Name: A2408 – ELECTRONIC CIRCUITS-I

A2408.1	Analyze the operation and characteristics of diodes and transistors.
A2408.2	Analyze various applications of diodes and transistors.
A2408.3	Make use of Boolean algebra postulates to minimize Boolean functions.
A2408.4	Construct and analyze various combinational and sequential circuits used in digital systems.

Course Name: A2210– ELECTRICAL MACHINES-I LABORATORY

A2210.1	Determine the critical field resistance and critical speed of a DC Shunt generator.
A2210.2	Plot the characteristics of DC shunt, Series and Compound generators using load test.
A2210.3	Test the performance of a given DC motor using suitable technique.
A2210.4	Apply suitable test to calculate the losses for a given DC machine.

Course Name:A2211 –ELECTRICAL CIRCUITS AND SIMULATION LABORATORY

A2211.1	Analyze RL and RC series circuits, 3 phase balanced and unbalanced system and power system network using PSPICE programming.
A2211.2	Test the transient response of DC & AC series RLC circuits using PSPICE programming.
A2211.3	Design the dual network, low pass and high pass filter using PSPICE programming.

A2211.4	Simulate a given DC circuit using PSPICE programming.

Course Name:A2409 – ELECTRONIC CIRCUITS - I LABORATORY

A2409.1	Analyze the description of CRO and Function generator panels.
A2409.2	Determine cut-in, break-down voltages, static and dynamic resistances from V-I characteristics of electronic devices.
A2409.3	Measure the ripple content present in rectifiers using with and without filters.
A2409.4	Make use of small signal analysis to plot the characteristics of BJT and FET.
A2409.5	Make use of Lab VIEW software to construct combinational and sequential circuits.
A2409.6	Test and Debug the combinational and sequential circuits using LabVIEW Software.

Course Name:A2017 –QUANTITATIVE APTITUDE AND REASONING – I

A2017.1	Identify the problems by applying mathematical fundamentals
A2017.2	Apply the suitable logical methods to solve the problems
A2017.3.	Solve the various problems by using quantitative mathematical fundamentals
A2017.4	Analyse the comprehensive data with logical ability

Course Name:A2032 – HUMAN VALUES AND PROFESSIONAL ETHICS

A2032.1	Apply human values and ethics in professional life.
A2032.2	Develop the moral ideals to maintain good relationships with people.
A2032.3	Solve environmental related problems by keeping health of human being into consideration.
A2032.4	Make use of the fundamental rights and human rights in life for individual dignity
A2032.5	Build the sound health system both physically and mentally by practicing yoga, karate, sports etc.

Course Name:A2019 – MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

A2019.1	Analyze the concepts of managerial economics and financial accounting to make better decisions in the organization
A2019.2	Analyze the demand, production, cost and break even to know interrelationship among variables and their impact

A2019.3	Classify the market structure to decide the fixation of suitable price
A2019.4	Apply capital budgeting techniques to select best investment opportunity
A2019.5	Analyze and prepare financial statements to assess financial health of business

Course Name:A2212 – ELECTRICAL MACHINES – II

A2212.1	Apply the principles of AC machines to identify a suitable electrical machine for a given application.
A2212.2	Deduce the power and torque equations of Induction motors and synchronous machines.
A2212.3	Analyze the various characteristics of induction motors and synchronous machines.
A2212.4	Test the performance of induction motors and synchronous machines.
A2212.5	Apply a suitable test to control speed of Induction motors.

Course Name:A2213 – CONTROL SYSTEMS

A2213.1	Determine the transfer function of a given system using different techniques.
A2213.2	Analyze the response of a given system in time and frequency domains.
A2213.3	Test the stability, observability and controllability of a given system.
A2213.4	Apply suitable technique for calculating the gain margin and phase margin of a given system.

Course Name:Analog Electronic Circuits : C211
Year of Study: 2012-13/2013-14/2014-15/2015-16/2016-17

C211.1	Analyze the multi stage amplifiers which include BJT and FET RC Coupled amplifiers in terms of frequency response and bandwidth
C211.2	Describe the effect of negative feedback on amplifier characteristics along with analysis of voltage series, current series, voltage and current shunt feedback amplifiers
C211.3	Interpret the condition for oscillations along with the analysis of Hartley, Colpitts, Clapp and Tuned Collector oscillators
C211.4	Estimate the frequency and amplitude stability of oscillators which include crystal oscillators, RC oscillators and Weinbridge oscillators
C211.5	Identify Large Signal Amplifiers Along With Efficiency And Carry Out Analysis On Power Disssipation, Thermal Runaway, Push-Pull Amplifier.
C211.6	Discuss the response characteristics of high pass and low pass circuits for various excitations and also analyze the working and design of bistable, monostable and Astable multi vibrators

Course Name:A2214 - ELECTRICAL POWER GENERATION

A2214.1	Apply the knowledge of conversion of energy for different energy sources to generate electrical power.
A2214.2	Draw the layouts of different electrical power generating systems.
A2214.3	Select the optimal location for the establishment of different electrical power plants.
A2214.4	Analyze the base load and peak load conditions to select suitable generating stations.
A2214.5	Compare different types of tariffs suitable for different loads.

Course Name:A2419 – ELECTRONIC CIRCUITS-II

A2419.1	Analyze the characteristics and applications of operational amplifier.
A2419.2	Construct different active filters and oscillator circuits using op-amp and make use of IC 555 and PLL effectively in communication systems.
A2419.3	Analyze the concepts of combinational and sequential logic circuits and use them in the design of latches, counters using digital IC's.
A2419.4	Distinguish between different signals and systems.
A2419.5	Analyze different signals by using an appropriate transform

Course Name:A2215 - CONTROL SYSTEMS LABORATORY

A2215.1	Plot the characteristics of AC servo motor, DC servo motor, synchros and magnetic amplifier.
A2215.2	Determine the transfer function of DC machine and time domain specifications of second order system.
A2215.3	Analyze the different logic gates using Programmable Logic Controller
A2215.4	Analyze the stability of given system in time domain and frequency domain using MATLAB software.
A2215.5	Test the effect of P, PD, PI, PID controller on a second order system.

Course Name:A2216–ELECTRICAL MACHINES-II LABORATORY

A2216.1	Test the performance of 1 phase Transformer, 3 phase induction motor and synchronous motor by conducting suitable test.
A2216.2	Determine circuit parameters of a 1 phase Transformer, 3 phase induction motor and synchronous motor by conducting suitable test.
A2216.3	Apply Scott connection for the conversion of a 3 phase to 2 phase systems.

C407.3	Employ 8086 processor for Dos/BIOS programming involving display of characters and strings

A2216.4	Determine the regulation of a 3 phase alternator and 1 phase transformer by conducting suitable test.
A2216.5	Test the parallel operation and polarity test of a single phase transformer.

Course Name:A2420 – ELECTRONIC CIRCUITS-II LABORATORY

A2420.1	Implement different configurations of operational amplifiers.
A2420.2	Construct and analyze various active filters using op-amp.
A2420.3	Design and draw the internal structure of various logic gates.
A2420.4	Analyze the generation ofoperations of various signals and sequences using MATLAB.

Course Name:A2018 –QUANTITATIVE APTITUDE AND REASONING – II

A2018.1	Identify the problems by applying mathematical fundamentals.
A2018.2	Apply the suitable logical method to solve the problems.
A2018.3.	Solve the various problems by using quantitative mathematical fundamentals.
A2018.4	Analyse the comprehensive data with logical ability.

Course Name:A2031-ENVIRONMENTAL SCIENCE

A2031.1	Solve environmental problems through higher level of personal involvement and interest.
A2031.2	Apply ecological morals to keep up amicable connection among nature and human beings.
A2031.3	Recognize the interconnectedness of human dependence on the earth’s ecosystems.
A2031.4	Apply environmental laws for the protection of environment and wildlife.
A2031.5	Influence society in proper utilization of goods and services.

C407.4	Realize the string operation and instruction prefix involving move block, reverse string, sorting, inserting using 8086 processor
C407.5	Carry out the process of interfacing using 8259, 8279 and 8251