2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

JNTUA - R19 Regulation - Course Outcomes

Principal
PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - I SEM			BRANCH: ECE	
S.No	**Subject Name**	**Subject Code**	**Course Outcomes (CO):** Student will be able to	
1	Complex variables and Transforms	19A54302	**CO1**	Understand the analyticity of complex functions and conformal mappings.
			CO2	Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours.
			CO3	Understand the usage of Laplace Transforms, Fourier Transforms and Z transforms.
			CO4	Evaluate the Fourier series expansion of periodic functions.
2	Signals & Systems	19A04302T	**CO1**	Understand the mathematical description and representation of continuous-time and discrete-time signals and systems. Also understand the concepts of various transform techniques.
			CO2	Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.
			CO3	Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.
			CO4	Classify the systems based on their properties and determine the response of them.
3	Electronic Devices and Circuits	19A04302T	**CO1**	Understand principle, operation, characteristics and applications of Bipolar Junction Transistor and Field Effect Transistor.
			CO2	Describe basic operation and characteristics of various semiconductor devices.
			CO3	Analyze diode circuits for different applications such as rectifiers, clippers and clampers also analyze low frequency and high frequency models of BJT and FET.
			CO4	Design various biasing circuits for BJT and FET.
			CO5	Compare the performance of various semiconductor devices.

4	Probability Theory and Stochastic Processes	19A04304	CO1	Understanding the concepts of Probability, Random Variables, Random Processes and their characteristics learn how to deal with multiple random variables, conditional probability, joint distribution and statistical independence.
			CO2	Formulate and solve the engineering problems involving random variables and random processes.
			CO3	Analyze various probability density functions of random variables.
			CO4	Derive the response of linear system for Gaussian noise and random signals as inputs.
5	Digital Electronics and Logic Design	19A04304	CO1	Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.
			CO2	Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families.
			CO3	Design combinational and sequential logic circuits.
			CO4	Compare different types of Programmable logic devices and logic families.
6	Electrical Technology	19A02304T	CO1	Able to calculate the e.m.f. generated on DC Generator also able to control speed of different DC motors.
			CO2	Able to conduct open circuit and short circuit tests on single phase transformer for knowing their characteristics.
			CO3	Able to analyse three phase circuits, three induction motor operating principle and know their torque slip characteristics.
			CO4	Able to have knowledge on synchronous machine with which he/she can able to apply the above conceptual things to real-world problems and applications
7	Electronic Devices and Circuits Lab	19A04302P	CO1	Understand the basic characteristics and applications of basic electronic devices.
			CO2	Observe the characteristics of electronic devices by plotting graphs.
			CO3	Analyze the Characteristics of UJT, BJT, FET, and SCR.
			CO4	Design FET based amplifier circuits/BJT based amplifiers for the given specifications.
			CO5	Simulate all circuits in PSPICE /Multisim.

8	Basic Simulation Lab	19A04305	**CO1**	Understand the basic concepts of programming in MATLAB and explain use of built-in functions to perform assigned task.
			CO2	Generate signals and sequences, Input signals to the systems to perform various Operations.
			CO3	Analyze signals using Fourier, Laplace and Z-transforms.
			CO4	Compute Fourier transform of a given signal and plot its magnitude and phase spectrum.
			CO5	Verify Sampling theorem, Determine Convolution and Correlation between signals and sequences.
9	Electrical Technology Lab	19A02304P	**CO1**	To understand various characteristics of DC generators and DC motors
			CO2	To predetermine the efficiency and regulation of a 1-ϕ transformer.
			CO3	To know power measurement in 3-ϕ circuits.
			CO4	To understand various characteristics of Induction motors, Synchronous machines.
10	Biology for Engineers	19A99302	**CO1**	Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.
			CO2	Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry.
			CO3	Briefly about human physiology.
			CO4	Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - II SEM			BRANCH: ECE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Electromagnetic Waves and Transmission lines	19A04401	CO1	Explain basic laws of electromagnetic fields and know the wave concept.
			CO2	Solve problems related to electromagnetic fields.
			CO3	Analyze electric and magnetic fields at the interface of different media.
			CO4	Derive Maxwell's equations for static and time varying fields.
			CO5	Analogy between electric and magnetic fields.
			CO6	Describes the transmission lines with equivalent circuit and explain their characteristic with various lengths.
2	Electronic Circuits – Analysis and Design	19A04402T	CO1	Understand the working principle of multistage amplifiers, Feedback amplifiers, power amplifiers, tuned amplifiers, Multivibrator and Time base generators.
			CO2	Analyse multistage amplifiers, multistage amplifiers, feedback amplifiers, power amplifiers, tuned amplifier and Multivibrators.
			CO3	Design multistage amplifiers, feedback amplifiers, oscillators, Multivibrator, power amplifiers and tuned amplifiers for given specification.
			CO4	Evaluate efficiency of large signal (power) amplifiers and voltage regulators.
3	Control Systems	19A02404	CO1	Understand the concepts of control systems classification, feedback effect, mathematical modelling, time response and frequency response characteristics, state space analysis.
			CO2	Apply the concepts of Block diagram reduction, Signal flow graph method and state space formulation for obtaining mathematical and Root locus, Bode, Nyquist, Polar plots for stability calculations, controllability and observability and demonstrate the use of these techniques.
			CO3	Analyse time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.
			CO4	Design and develop different compensators,

				controllers and their performance evaluation for various conditions. Implement them in solving various engineering applications.
4	Analog Communications	19A04403T	CO1	Understand the concepts of various Amplitude, Angle and Pulse Modulation schemes. Understand the concepts of information theory with random processes.
			CO2	Apply the concepts to solve problems in analog and pulse modulation schemes.
			CO3	Analysis of analog communication system in the presence of noise.
			CO4	Compare and contrast design issues, advantages, disadvantages and limitations of various modulation schemes in analog communication systems.
			CO5	Solve basic communication problems & calculate information rate and channel capacity of a discrete communication channel.
5	Python Programming	19A05304T	CO1	Apply the features of Python language in various real applications.
			CO2	Select appropriate data structure of Python for solving a problem.
			CO3	Design object oriented programs using Python for solving real-world problems.
			CO4	Apply modularity to programs.
6	Computer Architecture and Organization	19A04404	CO1	Conceptualize basics of organizational and architectural issues of a digital computer.
			CO2	Emphasize representation of data types, numbers employed in arithmetic operations and binary coding of symbols used in data processing.
			CO3	Develop low-level programs to perform different basic instructions.
			CO4	Evaluate various modes of data transfer between CPU and I/O devices.
			CO5	Analyze various issues related to memory hierarchy.
			CO6	Design basic computer system using the major components.
7	Universal Human Values	19A52301	CO1	Students are expected to become more aware of themselves, and their surroundings (family, society, nature).
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships

				and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
8	Electronic Circuits – Analysis and Design Lab	19A04402P	CO1	Understand Characteristics and frequency response of various amplifiers.
			CO2	Analyze negative feedback amplifier circuits, oscillators, Power amplifiers, Tuned amplifiers.
			CO3	Determine the efficiencies of power amplifiers.
			CO4	Design RC and LC oscillators, Feedback amplifier for specified gain and multistage amplifiers for Low, Mid and high frequencies.
			CO5	Simulate all the circuits and compare the performance.
9	Analog Communications Lab	19A04403P	CO1	Understand different analog modulation techniques & Radio receiver characteristics.
			CO2	Analyze different analog modulation techniques.
			CO3	Design and implement different modulation and demodulation techniques.
			CO4	Observe the performance of system by plotting graphs & Measure radio receiver characteristics.
			CO5	Simulate all digital modulation and demodulation techniques.
10	Environmental Science	19A99301	CO1	Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources.
			CO2	Understand flow and bio-geo- chemical cycles and ecological pyramids.
			CO3	Understand various causes of pollution and solid waste management and related preventive measures.
			CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.
			CO5	Casus of population explosion, value education and welfare programmes.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - I SEM			BRANCH: ECE	
S.No	**Subject Name**	**Subject Code**	**Course Outcomes (CO):** Student will be able to	
1	Integrated Circuits and Applications	19A04501T	**CO1**	Understand DC and AC characteristics of operational amplifiers & Op amp parameters and functionality of specialized ICs such as 555 TIMER, VCO, PLL & Voltage regulators.
			CO2	Make use of Op-Amps and specialized ICs to design circuits for various applications.
			CO3	Analyze Op-Amp based Comparators, Waveform generators, Active filters, Converters.
			CO4	Design of Op amp based Comparators, Waveform Generators, Active filters, Converters, design various multi-vibrator circuits using IC 555 timer
			CO5	Compare different types of A/D and D/A Converter circuits.
2	Antennas and Wave Propagation	19A04502	**CO1**	Understand various antenna parameters, principle of operation of various antennas viz. wired, aperture, micro strip antennas.
			CO2	Discuss various EM wave propagation methods in ionosphere and troposphere
			CO3	Analyze mathematical aspects of wave propagation, Derive expressions related to radiation mechanisms for antennas
			CO4	Design various antennas namely array, micro strip, horn, lens and aperture antennas, etc., for a given application.
			CO5	Compare performance of various antennas.
3	English Language Skills	19A52601T	**CO1**	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms.
			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
			CO4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.

4	Digital Communications	19A04503T	CO1	Understand the elements of digital communication system, baseband pulse transmission, pass band digital modulation, geometric representation of signals, basics of information theory and error correcting codes.
			CO2	Apply the knowledge of signals and system & statistical theory to evaluate the performance of digital communication systems.
			CO3	Analyze the different coding, modulation techniques, Probability of error performance of digital system.
			CO4	Compare the performance of different modulation schemes & error correcting codes.
5	Data Communications & Networks	19A04504a	CO1	Understand the requirement of theoretical & practical aspects of computer networks, functions of various layers involved in data communications, building the skills of sub netting and routing mechanisms.
			CO2	Explain the role of protocols in networking.
			CO3	Analyze the services and features of the various layers in the protocol stack.
6	Technical Communication & Presenetation Skills	19A52606a	CO1	Understand the importance of effective technical communication.
			CO2	Apply the knowledge of basic skills to become good orators.
			CO3	Analyze non-verbal language suitable to different situations in professional life.
			CO4	Evaluate different kinds of methods used for effective presentations.
			CO5	Create trust among people and develop employability skills.
7	Integrated Circuits and Applications Lab	19A04501P	CO1	Understand the working of Op amp ICs & Application specific analog ICs.
			CO2	Analyze operational amplifier based circuits for linear and non-linear applications.
			CO3	Design Operational amplifiers for linear and nonlinear application, Multivibrator circuits using 555 & application specific ICs.
			CO4	Simulate all linear and nonlinear application based Op amp Circuits and circuits based on application specific ICs.
			CO5	Compare theoretical, practical & simulated results in integrated circuits.

8	English Language Skills Lab	19A52601P	CO1	Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills.
			CO2	Apply communication skills through various language learning activities.
			CO3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	Evaluate and exhibit acceptable etiquette essential in social and professional settings.
			CO5	Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.
9	Digital Communications Lab	19A04503P	CO1	Understand real time behavior of different digital modulation schemes and technically visualize spectra of different digital modulation schemes.
			CO2	Design and implement different modulation and demodulation techniques.
			CO3	Analyze digital modulation & demodulation techniques.
			CO4	Simulate all digital modulation and demodulation techniques in MATLAB.
10	Research Methodolgy	19A99601	CO1	Understand basic concepts and its methodologies.
			CO2	Demonstrate the knowledge of research processes.
			CO3	Read. comprehend and explain research articles in their academic discipline.
			CO4	Analyze various types of testing tools used in research.
			CO5	Design a research paper without any ethical issues.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - II SEM			BRANCH: ECE	
S.No	**Subject Name**	**Subject Code**	**Course Outcomes (CO):** Student will be able to	
1	Microprocessors and Micro controllers	19A04601T	**CO1**	Understand instruction set of 8086 microprocessor and ARM architecture.
			CO2	Explain addressing modes of 8086, develop assembly language programs for various problems, describe interfacing of 8086 with peripheral devices, architecture and addressing modes of ARM Cortex M0+, assembly instruction set of ARM Cortex M0+.
			CO3	Distinguish between microprocessor and micro controller, 8085& 8086 microprocessors, design applications using micro controllers.
2	Digital Signal Processing	19A04602T	**CO1**	Understand the basic concepts of IIR and FIR filters, DSP building blocks to achieve high speed in DSP processor, DSP TMS320C54XX architecture and instructions.
			CO2	Compute the fast Fourier transforms and find the relationship with other transforms. Realization of digital filter structures.
			CO3	Design of FIR and IIR digital filters.
			CO4	Compare FIR and IIR filters.
3	Digital System Design through VHDL	19A04603	**CO1**	Understand the architecture of FPGAs, tools used in modelling of digital design and modelling styles in VHDL.
			CO2	Learn the IEEE Standard 1076 Hardware Description Language (VHDL).
			CO3	Analyze and design basic digital circuits with combinational and sequential logic circuits using VHDL.
			CO4	Model complex digital systems at several levels of abstractions, behavioural, structural.
			CO5	Design complex digital CPU, vending machine and washing machines etc and analyze the case studies.
4	Principles & Techniques of Radar System	19A04605e	**CO1**	Understand the basic principles of RADAR and its varients, RADAR based Microwave imaging.
			CO2	Apply the fundamental knowledge of various RADARs, Matched Filter and to find the range between the target and RADAR, frequency and phase of the received signal.
			CO3	Analyze the received data from the target using CW RADAR & MTI RADAR and to find the

				distance, tracking range for clutter analysis.
5	Soft Skills	19A52604a	CO1	Recognize the importance of verbal and non verbal skills.
			CO2	Develop the interpersonal and intra personal skills.
			CO3	Apply the knowledge in setting the SMART goals and achieve the set goals.
			CO4	Analyze difficult situations and solve the problems in stress-free environment.
			CO5	Create trust among people and develop employability skills.
6	Managerial Economics & Financial Analysis	19A52602b	CO1	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets.
			CO2	Apply concepts of production , cost and revenues for effective business decisions.
			CO3	Students can analyze how to invest their capital and maximize returns.
			CO4	Evaluate the capital budgeting techniques.
			CO5	Prepare the accounting statements and evaluate the financial performance of business entity.
7	Digital Signal Processing Lab	19A04602P	CO1	Ability to design-test, to verify, to evaluate, and to benchmark a real-time DSP system.
			CO2	Ability to calculate discrete time domain and frequency domain of signals using discrete Fourier series and Fourier transform.
			CO3	Ability to design, using MATLAB-based filter design techniques, FIR and IIR digital filtersand Determine the frequency response of filters.
			CO4	Implementation of basic signal processing algorithms such as convolution, difference equation implementation and application of them in the construction of FIR and IIR filters.
			CO5	Design DSP based real time processing systems to meet desired needs of the society
8	Microprocessors and Microcontrollers Lab	19A04601P	CO1	Execution of different programs for 8086, 8051 in Assembly Level Language using MASM Assembler
			CO2	Design and implement some specific real time applications.
9	Constitution of India	19A99501	CO1	Understand historical background of the constitution making and its importance for building a democratic India.
			CO2	Understand the functioning of three wings of the government ie., executive, legislative and

				judiciary.
			CO3	Understand the value of the fundamental rights and duties for becoming good citizen of India.
			CO4	Analyze the decentralization of power between central, state and local self government
			CO5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - I SEM			BRANCH: ECE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Microwave Engineering and Optical Communications	19A04701T	CO1	Understand the wave propagation in waveguides, principle of operation of optical sources, detectors, microwave active and passive devices. Also remember various types of fibers, modes, configurations and signal degradations.
			CO2	Apply the boundary conditions of the waveguides to solve for field expressions in waveguides.
			CO3	Derive the field expressions for different modes of the waveguides, and Scattering matrix for passive microwave devices.Analyze signal degradation in optical fibers and compare the performance of various optical sources and detectors.
			CO4	Differentiate Linear bean tubes and crossed field tubes in terms of operation and performance.
2	VLSI Design	19A04702T	CO1	Identify the design for testability methods for combinational & sequential CMOS circuits. Understand CMOS fabrication flow, technology scaling, sheet resistance, square capacitance and propagation delays in CMOS circuits.
			CO2	Apply the design Rules and draw layout of a given logic circuit and basic circuit concepts to MOS circuits.
			CO3	Analyze the behavior of amplifier circuits with various loads, static and dynamic logic circuits, various test generation methods for static and dynamic CMOS circuits.
			CO4	Design MOSFET based logic circuit, Amplifier circuits using MOS transistors and MOSFET based logic circuits using various logic styles like static and dynamic CMOS
3	Embedded Systems	19A04703c	CO1	Identify hardware and software components of an embedded system.
			CO2	Choose appropriate embedded system architecture for the given application.
			CO3	Discuss quality attributes and characteristics of an embedded system.

			CO4	Illustrate different Inter Process Communication (IPC) mechanisms used by tasks/process/tasks to communicate in multitasking environment.
			CO5	Design an RTOS based embedded system.
4	Renewable Energy Systems	19A02704a	**CO1**	To distinguish between various alternate sources of energy for different suitable application requirements.
			CO2	To differentiate between solar thermal and PV system energy generation strategies.
			CO3	To understand about wind energy system
			CO4	To get exposed to the basics of Geo Thermal Energy Systems.
			CO5	To know about various diversified energy scenarios of ocean, biomass and fuel cells
5	Management Science	19A52701b	**CO1**	Understand the concepts & principles of management and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in Industry.
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.
			CO5	Create Modern technology in management science.
6	Microwave and Optical Communications Lab	19A04701P	**CO1**	Understand the mode characteristics of Reflex Klystron oscillator and negative resistance characteristics of Gunn Oscillator.
			CO2	Determine the Scattering matrix of given passive device experimentally and verify the same theoretically. Also determine numerical aperture and bending losses of a given optical fiber.
			CO3	Analyze the radiation characteristics to find the directivity and HPBW of a given antenna.
			CO4	Establish optical link between transmitter and receiver experimentally to find attenuation and signal strength of the received signal.
7	VLSI Design Lab	19A04702P	**CO1**	Understand how to use FPGA/CPLD hardware tools in the lab.
			CO2	Develop HDL source code for the given problem/experiment, and simulate the given circuit with suitable simulator and verify the results.

			CO3	Analyze the obtained results of the given experiment/problem.
			CO4	Design and implement the experiments using FPGA/CPLD hardware tools.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - II SEM			BRANCH: ECE	
S.No	**Subject Name**	**Subject Code**	**Course Outcomes (CO):** Student will be able to	
1	Advanced 3G and 4G Wireless Mobile Communications	19A04801a	**CO1**	Understand the concepts of wireless communications and standards.
			CO2	Apply a wireless technique to solve engineering problem.
			CO3	Analyze working of wireless technologies.
			CO4	Evaluate a wireless technique in a given situation.
			CO5	Plan a wireless system for deployment.
2	Disaster Management	19A01802a	**CO1**	Affirm the usefulness of integrating management principles in disaster mitigation work.
			CO2	Distinguish between the different approaches needed to manage pre- during and post disaster periods.
			CO3	Explain the process of risk management.
			CO4	Relate to risk transfer.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Complex Variables And Transforms	19A54302	CO1	Understand the analyticity of complex functions and conformal mappings.
			CO2	Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours.
			CO3	Understand the usage of Laplace Transforms, Fourier Transforms and Z transforms.
			CO4	Evaluate the Fourier series expansion of periodic functions.
2	Basic Electrical Circuits	19A02301T	CO1	Given a network, find the equivalent impedance by using network reduction techniques and determine the current through any element and voltage across and power through any element.
			CO2	Given a circuit and the excitation, determine the real power, reactive power, power factor etc.
			CO3	Apply the network theorems suitably.
			CO4	Determine the Dual of the Network, develop the Cut Set and Tie-set Matrices for a given Circuit. Also understand various basic definitions and concepts.
3	Power System Architecture	19A02302	CO1	Remember and understand the concepts of conventional and non conventional power generating systems.
			CO2	Apply the economic aspects to the power generating systems.
			CO3	Analyse the transmission lines and obtain the transmission line parameters and constants.
			CO4	Design and Develop the schemes to improve the generation and capability of transmission line to meet the day to day power requirements.
4	Dc Machines & Transformers	19A02303T	CO1	Understand the concepts of magnetic circuits.
			CO2	Understand the operation of DC machines.
			CO3	Analyse the differences in operation of different DC machine configurations.
			CO4	Analyse single phase and three phase transformers circuits.
5	Semi Conductor Devices & Circuits	19A04306T	CO1	List various types of semiconductor devices.
			CO2	Study the characteristics of various types of semiconductor devices.
			CO3	Apply the characteristics of semiconductor devices to develop engineering solutions.

			CO4	Analyse functioning of various types of electronic devices and circuits.
6	Digital Electronics & Logic Design	19A04304	CO1	Understand various number systems, error detecting, correcting binary codes, logic families, combinational and sequential circuits.
			CO2	Apply Boolean laws, k-map and Q-M methods to minimize switching functions. Also describe the various performance metrics for logic families.
			CO3	Design combinational and sequential logic circuits.
			CO4	Compare different types of Programmable logic devices and logic families.
7	Dc Machines & Transformers Lab	19A02303P	CO1	Able to conduct and analyze load test on DC shunt generators.
			CO2	Able to understand and analyze magnetization characteristics of DC shunt generator.
			CO3	Able to understand and analyze speed control techniques and efficiency of DC machines.
			CO4	Able to understand to predetermine efficiency and regulation of single phase Transformers.
8	Semi Conductor Devices And Circuits Lab	19A04306P	CO1	Understand the basic characteristics and applications of basic electronic devices.
			CO2	Observe the characteristics of electronic devices by plotting graphs.
			CO3	Analyze the Characteristics of UJT, BJT, FET, and SCR.
			CO4	Design FET based amplifier circuits/BJT based amplifiers for the given specifications.
			CO5	Simulate all circuits in PSPICE /Multisim.
9	Basic Electrical Circuits Lab	19A02301P	CO1	Remember, understand and apply various theorems and verify practically.
			CO2	Understand and analyze active, reactive power measurements in three phase balanced & un balanced circuits.
10	Biology for Engineers	19A99302	CO1	Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.
			CO2	Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry.
			CO3	Briefly about human physiology.
			CO4	Explain about genetic material, DNA, genes and

				RNA how they replicate, pass and preserve vital information in living Organisms.
			CO5	Know about application of biological Principles in different technologies for the production of medicines and Pharmaceutical molecules through transgenic microbes, plants and animals.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - II SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Numerical Methods & Probability Theory	19A54304	CO1	Apply numerical methods to solve algebraic and transcendental equations.
			CO2	Derive interpolating polynomials using interpolation formulae.
			CO3	Solve differential and integral equations numerically.
			CO4	Apply Probability theory to find the chances of happening of events.
			CO5	Understand various probability distributions and calculate their statistical constants.
2	Electrical Circuit Analysis	19A02401T	CO1	Understand the analysis of three phase balanced and unbalanced circuits and to measure active and reactive powers in three phase circuits.
			CO2	To get knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.
			CO3	Applications of Fourier transforms to electrical circuits excited by non-sinusoidal sources are known.
			CO4	Design of filters, equalizers and PSPICE programs for Circuit Analysis.
3	Engineering Electro Magnetics	19A02402	CO1	Understand the concept of electrostatics.
			CO2	Understand the concepts of Conductors and Dielectrics.
			CO3	Understand the fundamental laws related to Magneto Statics.
			CO4	Understand the concepts of Magnetic Potential and Time varying Fields.
4	Power Electronics	19A02403	CO1	Understand the operation, characteristics and usage of basic Power Semiconductor Devices.
			CO2	Understand different types of Rectifier circuits with different operating conditions.
			CO3	Understand DC-DC converters operation and analysis of their characteristics.
			CO4	Understand the construction and operation of voltage source inverters, Voltage Controllers and Cyclo Converters.
			CO5	Apply all the above concepts to solve various numerical problem solving

5	Analog Electronic Circuits	19A04405	**CO1**	List various types of feedback amplifiers, oscillators and large signal amplifiers.
			CO2	Explain the operation of various electronic circuits and linear ICs.
			CO3	Apply various types of electronic circuits to solve engineering problems.
			CO4	Analyse various electronic circuits and regulated power supplies for proper understanding.
			CO5	Justify choice of transistor configuration in a cascade amplifier.
			CO6	Design electronic circuits for a given specification.
6	Python Programming	19A05304T	**CO1**	Apply the features of Python language in various real applications.
			CO2	Select appropriate data structure of Python for solving a problem.
			CO3	Design object oriented programs using Python for solving real-world problems.
			CO4	Apply modularity to programs.
7	Universal Human Values	19A52301	**CO1**	Students are expected to become more aware of themselves, and their surroundings (family, society, nature).
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
8	Electrical Circuit Analysis Lab	19A02401P	**CO1**	Understand and experimentally verify various resonance phenomenon.
			CO2	Understand and analyze various current locus diagrams.
			CO3	Apply and experimentally analyze two port network parameters.
9	Electronic Circuits Lab	19A04406	**CO1**	Analyze various amplifier circuits.
			CO2	Design multistage amplifiers.

			CO3	Design OPAMP based analog circuits.
			CO4	Understand working of logic gates.
			CO5	Design and implement Combinational and Sequential logic circuits.
10	Environmental Science	19A99301	CO1	Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources.
			CO2	Understand flow and bio-geo-chemical cycles and ecological pyramids.
			CO3	Understand various causes of pollution and solid waste management and related preventive measures.
			CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.
			CO5	Casus of population explosion, value education and welfare programmes.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	AC Machines	19A02501T	CO1	Understand the basics of ac machine windings, construction, principle of working, equivalent circuit of induction and synchronous machines.
			CO2	Analyze the phasor diagrams of induction and synchronous machine, parallel operation of alternators, synchronization and load division of synchronous generators.
			CO3	Apply the concepts to determine V and inverted V curves and power circles of synchronous motor.
			CO4	Analyze the various methods of starting in both induction and synchronous machines.
2	Control Systems	19A02502	CO1	Understand the concepts of control systems classification, feedback effect, mathematical modelling, time response and frequency response characteristics, state space analysis.
			CO2	Apply the concepts of Block diagram reduction, Signal flow graph method and state space formulation for obtaining mathematical and Root locus, Bode, Nyquist, Polar plots for stability calculations, controllability and observability and demonstrate the use of these techniques.
			CO3	Analyse time response analysis, error constants, and stability characteristics of a given mathematical model using different methods.
			CO4	Design and develop different compensators, controllers and their performance evaluation for various conditions. Implement them in solving various engineering applications.
3	English Language Skills	19A52601T	CO1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms.
			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
			CO4	Evaluate reading/listening texts and to write summaries based on global comprehension of

				these texts.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.
4	Electrical Machine Design	19A02504	CO1	Understand various design factors, types of windings, choice of machine, selection and ratings.
			CO2	Able to design DC machine based on specified rating.
			CO3	Able to design 1-ϕ transformer based on specified rating.
			CO4	Able to design 3-ϕ Induction machine based on specified rating.
			CO5	Able to design 3-ϕ Synchronous machine based on specified rating.
5	HVDC & FACTS	19A02503a	CO1	The necessity of HVDC systems as emerging transmission networks.
			CO2	Power Electronic devices to understand the necessity of reactive power compensation devices.
			CO3	To obtain equivalent circuits of various HVDC system configurations
6	Technical Communication & Presentation Skills	19A52506a	CO1	Understand the importance of effective technical communication.
			CO2	Apply the knowledge of basic skills to become good orators.
			CO3	Analyze non-verbal language suitable to different situations in professional life.
			CO4	Evaluate different kinds of methods used for effective presentations.
			CO5	Create trust among people and develop employability skills.
7	AC Machines Lab	19A02501P	CO1	Analyze and apply load test, no-load and blocked-rotor tests for construction of circle diagram and equivalent circuit determination in a single phase induction motor.
			CO2	Predetermine regulation of a three-phase alternator by synchronous impedance & m.m.f methods.
			CO3	Predetermine the regulation of Alternator by Zero Power Factor method Xd and Xq determination of salient pole synchronous machine.
			CO4	Evaluate and analyze V and inverted V curves of 3 phase synchronous motor.
8	English Language	19A52601P	CO1	Remember and understand the different aspects

	Skills Lab			of the English language proficiency with emphasis on LSRW skills
			CO2	Apply communication skills through various language learning activities.
			CO3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	Evaluate and exhibit acceptable etiquette essential in social and professional settings
			CO5	Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.
9	Power Electronics & Simulation Lab	19A02506	CO1	Understand and analyze various characteristics of power electronic devices with gate firing circuits and forced commutation techniques.
			CO2	Analyze the operation of single-phase half &fully-controlled converters and inverters with different types of loads.
			CO3	Analyze the operation of DC-DC converters, single-phase AC Voltage controllers, cyclo converters with different loads.
			CO4	Create and analyze various power electronic converters using PSPICE software.
10	Research Methodology	19A99601	CO1	Understand basic concepts and its methodologies.
			CO2	Demonstrate the knowledge of research processes.
			CO3	Read. comprehend and explain research articles in their academic discipline.
			CO4	Analyze various types of testing tools used in research.
			CO5	Design a research paper without any ethical issues.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - II SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Signals & Systems	19A04301	CO1	Understand the mathematical description and representation of continuous-time and discrete-time signals and systems. Also understand the concepts of various transform techniques.
			CO2	Apply sampling theorem to convert continuous-time signals to discrete-time signals and reconstruct back, different transform techniques to solve signals and system related problems.
			CO3	Analyze the frequency spectra of various continuous-time and discrete-time signals using different transform methods.
			CO4	Classify the systems based on their properties and determine the response of them.
2	Digital Computer Platforms	19A02601T	CO1	Understand the basic architecture & pin diagram of 8086 microprocessor.
			CO2	Assembly language programming to perform a given task, Interrupt service routines for all interrupt types.
			CO3	Microprocessor and Microcontroller designing for various applications.
			CO4	Write Assembly Language Programs for the Digital Signal Processors and use Interrupts for real-time control applications
			CO5	Write Xilinx programming and understanding of Spartan FPGA board.
3	Power System Analysis	19A02602	CO1	Remember and understand the concepts of per unit values, Y Bus and Z bus formation, load flow studies, symmetrical and unsymmetrical fault calculations.
			CO2	Apply the concepts of good algorithm for the given power system network and obtain the converged load flow solution and experiment some of these methods using modern tools and examine the results.
			CO3	Analyse the symmetrical faults and unsymmetrical faults and done the fault calculations, analyse the stability of the system and improve the stability. Demonstrate the use of these techniques through good

				communication skills.
			CO4	Develop accurate algorithms for different networks and determine load flow studies and zero, positive and negative sequence impedances to find fault calculations.
			CO5	Design and select efficient Circuit Breakers to improve system stability. Implement them in resolving various day-to-day issues ina Power System.
4	Power Quality	19A02603a	CO1	Understand the basic concepts of different power quality issues and to mitigate them, principles of regulation of long duration voltage variations.
			CO2	Analyze voltage disturbances and power transients that are occurring in power systems.
			CO3	Understand the concept of harmonics in the system and their effect on different power system equipment.
			CO4	Apply the knowledge about different power quality measuring and monitoring concepts.
5	Soft Skills	19A52604a	CO1	Recognize the importance of verbal and non verbal skills.
			CO2	Develop the interpersonal and intrapersonal skills.
			CO3	Apply the knowledge in setting the SMART goals and achieve the set goals.
			CO4	Analyze difficult situations and solve the problems in stress-free environment
			CO5	Create trust among people and develop employability skills.
6	Managerial Economics And Financial Analysis	19A52602b	CO1	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets
			CO2	Apply concepts of production, cost and revenues for effective business decisions.
			CO3	Students can analyze how to invest their capital and maximize returns.
			CO4	Evaluate the capital budgeting techniques.
			CO5	Prepare the accounting statements and evaluate the financial performance of business entity.
7	Constitution of India	19A99501	CO1	Understand historical background of the constitution making and its importance for building a democratic India.
			CO2	Understand the functioning of three wings of the government ie., executive, legislative and judiciary.
			CO3	Understand the value of the fundamental rights

				and duties for becoming good citizen of India.
			CO4	Analyze the decentralization of power between central, state and local self government.
			CO5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
6	Control Systems & Simulation Lab	19A02605	**CO1**	Get the knowledge of feedback control and transfer function of DC servo motor.
			CO2	Model the systems and able to design the controllers and compensators.
			CO3	Get the knowledge about the effect of poles and zeros location on transient and steady state behaviour of second order systems and can implement them to practical systems and MATLAB.
			CO4	Determine the performance and time domain specifications of first and second order Systems.
9	Digital Computer Platforms Lab	19A02601P	**CO1**	Assembly language programming on 8086 Microprocessors.
			CO2	Interfacing of various devices with 8086.
			CO3	MASAM Programming.
			CO4	Interfacing 8051 Microcontroller with its peripheral devices.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Measurements & Sensors	19A02701	CO1	Able to Understand the working of various instruments and equipments used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and distribution sectors.
			CO2	Able to analyze and solve the varieties of problems and issues coming up in the vast field of electrical measurements.
			CO3	Analyse the different operation of extension range ammeters and voltmeters, DC and AC bridge for measurement of parameters and different characteristics of periodic and aperiodic signals using CRO.
			CO4	Design and development of various voltage and current measuring meters and the varieties of issues coming up in the field of electrical measurements.
2	Power System Protection	19A02702	CO1	Distinguish between the principles of operation of electromagnetic relays, static relays and microprocessor based relays.
			CO2	Determine the unprotected percentage of generator winding under fault occurrence.
			CO3	Design the protection system for transformers.
			CO4	Identify various types of the relays in protecting feeders, lines and bus bars.
			CO5	Solve numerical problems for arc interruption and recovery in circuit breakers.
			CO6	Demonstrate the protection of a power system from over voltages.
3	Power System Operation & Control	19A02703a	CO1	To be able to understand to deal with problems in Power System as Power System Engineer.
			CO2	To be able to Understand to deal with AGC problems in Power System.
			CO3	To be able to understand to deal the problems in hydro electric and hydro thermal problems.
			CO4	To understand the complexity of reactive power control problems and to deal with them.

			CO5	To understand the necessity of deregulation aspects and demand side management problems in the modern power system era.
4	Introduction to Micro Controllers & Application	19A04704a	**CO1**	Understand the importance of Microcontroller and Acquire the knowledge of Architecture of 8051 Microcontroller.
			CO2	Apply and Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to using 8051 I/O ports.
			CO3	Develop the 8051 Assembly level programs using 8051 instruction set.
			CO4	Design the Interrupt system, operation of Timers/Counters and Serial port of 8051.
5	Management Science	19A52701b	**CO1**	Understand the concepts & principles of management and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in Industry.
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project & to analyze the business through SWOT.
			CO5	Create Modern technology in management science.
6	Power System & Simulation Lab	19A02705	**CO1**	Get the practical knowledge on calculation of sequence impedance, fault currents, voltages and sub transient reactance's. Get the practical knowledge on how to draw the equivalent circuit of three winding transformer.
			CO2	Get the knowledge on development of MATLAB program for formation of Y and Z buses.
			CO3	Get the knowledge on development of MATLAB programs for Gauss-Seidel and Fast Decouple Load Flow studies.
			CO4	Get the knowledge on development of SIMULINK model for single area load frequency problem.
7	Measurements Lab	19A02706	**CO1**	Calibrate various electrical measuring instruments.
			CO2	Accurately determine the values of inductance and capacitance using AC bridges.
			CO3	Compute the coefficient of coupling between two coupled coils.

			CO4	Accurately determine the values of very low resistances

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - II SEM			BRANCH: EEE	
S.No.	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Intelligent Control Techniques	19A02801c	CO1	To get familiarity of various Intelligent Control Techniques.
			CO2	To be able to design the controllers and estimators using ANN.
			CO3	To be able to model and develop control schemes with Fuzzy Logic rule bases.
			CO4	To be able to implement an evolutionary algorithm suitable to optimize and design a given system specifications.
			CO5	To be able to use MATLAB tool boxes for implementation of various ICTs for system modelling, control schemes and to design estimators
2	Disaster Management	19A01802a	CO1	Affirm the usefulness of integrating management principles in disaster mitigation work.
			CO2	Distinguish between the different approaches needed to manage pre- during and post disaster periods.
			CO3	Explain the process of risk management.
			CO4	Relate to risk transfer.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - I SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Mathematical Foundations of Computer Science	19A54303	CO1	Evaluate elementary mathematical arguments and identify fallacious reasoning.
			CO2	Understand the properties of Compatibility, Equivalence and Partial Ordering relations, Lattices and Has see Diagrams.
			CO3	Understand the general properties of Algebric Systems, Semi Groups, Monoids and Groups.
			CO4	Design solutions for problems using breadth first and depth first search techniques.
			CO5	Solve the homogeneous and non-homogeneous recurrence relations.
			CO6	Apply the concepts of functions to identify the Isomorphic Graphs.
			CO7	Identify Euler Graphs, Hamilton Graph and Chromatic Number of a graph.
2	Digital Logic Design	19A05301	CO1	Analyze the number systems and codes.
			CO2	Decide the Boolean expressions using Minimization methods.
			CO3	Design the sequential and combinational circuits.
			CO4	Apply state reduction methods to solve sequential circuits.
			CO5	Describe various types of memories.
3	Design Thinking	19A99304	CO1	Generate and develop different design ideas.
			CO2	Appreciate the innovation and benefits of design thinking.
			CO3	Experience the design thinking process in IT and agile software development.
			CO4	Understand design techniques related to variety of software services
4	Database Management Systems	19A05302T	CO1	Design a database for a real world information system.
			CO2	Define transactions which preserve the integrity of the database.
			CO3	Generate tables for a database
			CO4	Organize the data to prevent redundancy

			CO5	Pose queries to retrieve the information from database.
5	Object Oriented Programming Through Java	19A05303T	**CO1**	To solve real world problems using OOP techniques.
			CO2	To apply code reusability through inheritance, packages and interfaces
			CO3	To solve problems using java collection framework and I/O classes.
			CO4	To develop applications by using parallel streams for better performance.
			CO5	To develop applets for web applications.
			CO6	To build GUIs and handle events generated by user interactions.
			CO7	To use the JDBC API to access database
6	Python Programming	19A05304T	**CO1**	Apply the features of Python language in various real applications.
			CO2	Select appropriate data structure of Python for solving a problem.
			CO3	Design object oriented programs using Python for solving real-world problems.
			CO4	Apply modularity to programs.
7	Universal Human Values	19A52301	**CO1**	Students are expected to become more aware of themselves, and their surroundings (family, society, nature).
			CO2	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
			CO3	They would have better critical ability.
			CO4	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
			CO5	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
8	Database Management Systems Lab	19A05302P	**CO1**	Design database for any real world problem.
			CO2	Implement PL/SQL programs.
			CO3	Define SQL queries.
			CO4	Decide the constraints.
			CO5	Investigate for data inconsistency.

9	Object Oriented Programming Through Java Lab	19A05303P	CO1	Recognize the Java programming environment.
			CO2	Develop efficient programs using multi threading.
			CO3	Design reliable programs using Java exception handling features.
			CO4	Extend the programming functionality supported by Java.
			CO5	Select appropriate programming construct to solve a problem.
10	Python Programming Lab	19A05304P	CO1	Design solutions to mathematical problems.
			CO2	Organize the data for solving the problem.
			CO3	Develop Python programs for numerical and text based problems.
			CO4	Select appropriate programming construct for solving the problem.
			CO5	Illustrate object oriented concepts.
11	Environmental Science	19A99301	CO1	Grasp multidisciplinary nature of environmental studies and various renewable and non renewable resources.
			CO2	Understand flow and bio-geo- chemical cycles and ecological pyramids.
			CO3	Understand various causes of pollution and solid waste management and related preventive measures.
			CO4	About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation.
			CO5	Casus of population explosion, value education and welfare programmes.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: II B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Number Theory and Applications	19A54401	CO1	Understand number theory and its properties.
			CO2	Understand principles on congruences
			CO3	Develop the knowledge to apply various applications.
			CO4	Develop various encryption methods and its applications.
2	Computer Organization	19A05401	CO1	Understand computer architecture concepts related to design of modern processors, memories and I/Os.
			CO2	Identify the hardware requirements for cache memory and virtual memory.
			CO3	Design algorithms to exploit pipelining and multiprocessors.
			CO4	• Understand the importance and tradeoffs of different types of memories.
			CO5	Identify pipeline hazards and possible solutions to those hazards.
3	Design and Analysis of Algorithms	19A05402T	CO1	Determine the time complexity of an algorithm by solving the corresponding recurrence Equation.
			CO2	Apply the Divide and Conquer strategy to solve searching, sorting and matrix multiplication problems.
			CO3	Analyze the efficiency of Greedy and Dynamic Programming design techniques to solve the optimization problems.
			CO4	Apply Backtracking technique for solving constraint satisfaction problems.
			CO5	Analyze the LC and FIFO branch and bound solutions for optimization problems, and compare the time complexities with Dynamic Programming techniques.
			CO6	Define and Classify deterministic and Non-deterministic algorithms; P, NP, NP –hard and NP-complete classes of problems.
4	Entrepreneurship	19A52401	CO1	Design business model and business plan.
			CO2	Demonstrate the Venture infront of investors.

			CO3	Build the team for a start-up
			CO4	Illustrate successful cases of start-ups
			CO5	Develop strategies for market survey
5	Operating Systems	19A05403T	CO1	Realize how applications interact with the operating system.
			CO2	Analyze the functioning of a kernel in an Operating system.
			CO3	Summarize resource management in operating systems.
			CO4	Analyze various scheduling algorithms.
			CO5	Examine concurrency mechanism in Operating Systems.
			CO6	Apply memory management techniques in design of operating systems
			CO7	Understand the functionality of file system
			CO8	Compare and contrast memory management techniques.
			CO9	Understand the deadlock prevention and avoidance.
			CO10	Perform administrative tasks on Linux based systems.
6	Software Engineering	19A05404T	CO1	Obtain basic software life cycle activity skills.
			CO2	Design software requirements specification for given problems.
			CO3	Implement structure, object oriented analysis and design for given problems.
			CO4	Design test cases for given problems.
			CO5	Apply quality management concepts at the application level
7	Operating Systems Lab	19A05403P	CO1	Trace different CPU Scheduling algorithm.
			CO2	Implement Bankers Algorithms to Avoid and prevent the Dead Lock.
			CO3	Evaluate Page replacement algorithms.
			CO4	Illustrate the file organization techniques.
			CO5	Illustrate shared memory process.
			CO6	Design new scheduling algorithms.
8	Software Engineering Lab	19A05404P	CO1	Acquaint with historical and modern software methodologies.
			CO2	Understand the phases of software projects and practice the activities of each phase.
			CO3	Practice clean coding.
			CO4	Take part in project management.
			CO5	Adopt skills such as distributed version control,

				unit testing, integration testing, build management, and deployment.
9	Biology For Engineers	19A99302	**CO1**	Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.
			CO2	Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry.
			CO3	Briefly about human physiology.
			CO4	Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - I SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Formal Languages and Automata Theory	19A05501	CO1	Explain formal machines, languages and computations.
			CO2	Design finite state machines for acceptance of strings.
			CO3	Develop context free grammars for formal languages.
			CO4	Build pushdown automata for context free grammars.
			CO5	Apply Turing machine for solving problems.
			CO6	Validate decidability and undecidability.
2	Artificial Intelligence	19A05502T	CO1	Apply searching techniques for solving a problem.
			CO2	Design Intelligent Agents.
			CO3	Develop Natural Language Interface for Machines.
			CO4	Design mini robots.
			CO5	Summarize past, present and future of Artificial Intelligence.
3	Object Oriented Analysis Design & Testing	19A05503T	CO1	Analyze the problem from object oriented perspective.
			CO2	Model complex systems using UML Diagrams.
			CO3	Choose the suitable design patterns in software design.
			CO4	Adapt Object-Oriented Design Principles.
			CO5	Identify the challenges in testing object-oriented software.
4	Computer Networks	19A05504T	CO1	Identify the software and hardware components of a Computer network.
			CO2	Develop new routing, and congestion control algorithms.
			CO3	Assess critically the existing routing protocols.
			CO4	Explain the functionality of each layer of a computer network .
			CO5	Choose the appropriate transport protocol based on the application requirements.
5	Data Ware Housing & Data Mining	19A05505A	CO1	Design a Data warehouse system and perform business analysis with OLAP tools.

			CO2	Apply suitable pre-processing and visualization techniques for data analysis.
			CO3	Apply frequent pattern and association rule mining techniques for data analysis.
			CO4	Design appropriate classification and clustering techniques for data analysis.
			CO5	Infer knowledge from raw data.
6	Technical Communication & Presentation Skills	19A52506A	CO1	Understand the importance of effective technical communication.
			CO2	Apply the knowledge of basic skills to become good orators.
			CO3	Analyze non-verbal language suitable to different situations in professional life.
			CO4	Evaluate different kinds of methods used for effective presentations.
			CO5	Create trust among people and develop employability skills.
7	Artificial Intelligence Laboratory	19A05502P	CO1	Implement search algorithms.
			CO2	Solve Artificial intelligence problems.
			CO3	Design chatbot and virtual assistant.
8	Computer Networks Laboratory	19A05504P	CO1	Design scripts for Wired network simulation.
			CO2	Design scripts of static and mobile wireless networks simulation.
			CO3	Analyze the data traffic using tools.
			CO4	Design JAVA programs for client-server communication.
			CO5	Construct a wired and wireless networks using the real hardware.
9	Object Oriented Analysis Design & Testing Lab	19A05503T	CO1	Design use case, sequence and collaboration diagrams.
			CO2	Develop the different models to document an Object-oriented design.
			CO3	Demonstrate class level and system integration testing.
10	Constitution of India	19A99501	CO1	Understand historical background of the constitution making and its importance for building a democratic India.
			CO2	Understand the functioning of three wings of the government ie., executive, legislative and judiciary.
			CO3	Understand the value of the fundamental rights and duties for becoming good citizen of India.
			CO4	Analyze the decentralization of power between central, state and local self government.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

			CO5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: III B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Cryptography & Network Security	19A05601	CO1	Identify various type of vulnerabilities of a computer network.
			CO2	Outline various security algorithms.
			CO3	Design secure systems.
			CO4	Investigate the threats and identify the solutions for threats.
2	Big Data Analytics	19A05602T	CO1	Explain the concepts and challenges of big data.
			CO2	Determine why existing technologies are inadequate to analyze the large data.
			CO3	Outline the operations viz. Collect, manage, store, query, and analyze various forms of big data.
			CO4	Apply large-scale analytic tools to solve some of the open big data problems.
			CO5	Analyze the impact of big data for business decisions and strategies.
			CO6	Design different big data applications.
3	English Language Skills	19A52601T	CO1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms
			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions
			CO4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.
4	System Software & Compiler Design	19A05603a	CO1	Differentiate the various phases of a compiler.
			CO2	Identify the tokens and verify the code.
			CO3	Design code generator.
			CO4	Apply code optimization techniques.
			CO5	Design a compiler for a small programming language.

5	Soft Skills	19A052604a	CO1	Recognize the importance of verbal and non verbal skills.
			CO2	Develop the interpersonal and intra personal skills.
			CO3	Apply the knowledge in setting the SMART goals and achieve the set goals.
			CO4	Analyze difficult situations and solve the problems in stress-free environment.
			CO5	Create trust among people and develop employability skills.
6	Managerial Economics & Financial Analysis	19A52602b	CO1	Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets.
			CO2	Apply concepts of production , cost and revenues for effective business decisions.
			CO3	Students can analyze how to invest their capital and maximize returns.
			CO4	Evaluate the capital budgeting techniques.
			CO5	Prepare the accounting statements and evaluate the financial performance of business entity.
7	Big Data Analytics Laboratory	19A05602P	CO1	Configure Hadoop and perform File Management Tasks.
			CO2	Apply MapReduce programs to real time issues like word count, weather dataset and sales of a company.
			CO3	Critically analyze huge data set using Hadoop distributed file systems and MapReduce.
			CO4	Apply different data processing tools like Pig, Hive and Spark.
8	English Language Skills lab	19A52601P	CO1	Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills.
			CO2	Apply communication skills through various language learning activities.
			CO3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	Evaluate and exhibit acceptable etiquette essential in social and professional settings.
			CO5	Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.
9	Research Methodology	19A99601	CO1	Understand basic concepts and its methodologies.
			CO2	Demonstrate the knowledge of research processes.

			CO3	Read. comprehend and explain research articles in their academic discipline.
			CO4	Analyze various types of testing tools used in research.
			CO5	Design a research paper without any ethical issues.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - I SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Internet of Things	19A05701T	CO1	Choose the sensors and actuators for an IoT application.
			CO2	Select protocols for a specific IoT application.
			CO3	Utilize the cloud platform and APIs for IoT applications.
			CO4	Experiment with embedded boards for creating IoT prototypes.
			CO5	Design a solution for a given IoT application.
2	Software Testing	19A05702T	CO1	Choose Test cases that are geared to discover the program defects.
			CO2	Design test cases before writing code and run these tests automatically.
			CO3	Formulate test cases for testing different programming constructs.
			CO4	Test the applications using different testing methods and automation tools.
3	Cloud Computing	19A05703a	CO1	Outline the procedure for Cloud deployment.
			CO2	Distinguish different cloud service models and deployment models.
			CO3	Compare different cloud services.
			CO4	Design applications for an organization which use cloud environment.
4	Introduction to Micro Controllers & Applications	19A04704a	CO1	Understand the importance of Microcontroller and Acquire the knowledge of Architecture of 8051 Microcontroller.
			CO2	Apply and Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to using 8051 I/O ports.
			CO3	Develop the 8051 Assembly level programs using 8051 instruction set.
			CO4	Design the Interrupt system, operation of Timers/Counters and Serial port of 8051.
5	Management Science	19A52701b	CO1	Understand the concepts & principles of management and designs of organization in a practical world.
			CO2	Apply the knowledge of Work-study principles & Quality Control techniques in Industry.
			CO3	Analyze the concepts of HRM in Recruitment, Selection and Training & Development.
			CO4	Evaluate PERT/CPM Techniques for projects of an enterprise and estimate time & cost of project

				& to analyze the business through SWOT.
			CO5	Create Modern technology in management science.
6	Software Testing Lab	19A05702P	CO1	Demonstrate the basic testing procedures.
			CO2	Formulate test cases and test suites.
			CO3	Make use of the Selenium and Bugzilla tools to perform testing.
			CO4	Construct and test simple programs.
			CO5	Demonstrate bug tracking.
7	Internet of Things Lab	19A05701P	CO1	Choose the sensors and actuators for an IoT application.
			CO2	Select protocols for a specific IoT application.
			CO3	Utilize the cloud platform and APIs for IoT application.
			CO4	Experiment with embedded boards for creating IoT prototypes.
			CO5	Design a solution for a given IoT application.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI.
PRODDATUR. Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: IV B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	DevOps	19A05801a	CO1	Explain how DevOps will balance the needs throughout the SDLC.
			CO2	Demonstrate how DevOps improves the collaboration and productivity by automation.
			CO3	Adapt DevOps in real time projects.
			CO4	Illustrate the continuous integration tools and monitoring tools.
2	Disaster Management	19A01802a	CO1	Affirm the usefulness of integrating management principles in disaster mitigation work.
			CO2	Distinguish between the different approaches needed to manage pre- during and post disaster periods.
			CO3	Explain the process of risk management.
			CO4	Relate to risk transfer.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

DEPARTMENT OF

BASIC SCIENCE & HUMANITIES

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - I SEM			BRANCH: ECE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Algebra and Calculus	19A54101	CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.
			CO2	Utilize mean value theorems to real life problems.
			CO3	Familiarize with functions of several variables which is useful in optimization.
			CO4	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems.
			CO5	Students will become familiar with 3-dimensional coordinate systems and also learn the utilization of special functions.
2	Applied Physics	19A56101T	CO1	Identify the wave properties of light and the interaction of energy with the matter.
			CO2	Apply electromagnetic wave propagation in different guided media.
			CO3	Asses the electromagnetic wave propagation and its power in different media.
			CO4	Calculate conductivity of semiconductors.
			CO5	Interpret the difference between normal conductor and superconductor.
			CO6	Demonstrate the application of nano materials.
3	Problem Solving & Programming	19A05101T	CO1	Construct his own computer using parts.
			CO2	Recognize the importance of programming language independent constructs.
			CO3	Solve computational problems.
			CO4	Select the features of C language appropriate for solving a problem.
			CO5	Design computer programs for real world problems.
			CO6	Organize the data which is more appropriated for solving a problem.
4	Communicative English - I	19A52101T	CO1	Understand the context, topic, and pieces of specific information from social or Transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms.

			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
			CO4	Evaluate reading/listening texts and to write summaries based on global.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.
5	Electronics & Communication Engineering Workshop	19A04101	CO1	Identify discrete components and ICs.
			CO2	Assemble simple electronic circuits over a PCB.
			CO3	Testing of various components.
			CO4	Interpret specifications (ratings) of the component.
			CO5	Demonstrate disassembling and assembling a Personal Computer and make the computer ready to use.
			CO6	Make use of Office tools for preparing documents, spread sheets and presentations.
			CO7	Demonstrate working of various communication systems.
6	Applied Physics Lab	19A56101P	CO1	Operate optical instruments like microscope and spectrometer.
			CO2	Determine thickness of a hair/paper with the concept of interference.
			CO3	Estimate the wavelength of different colors using diffraction grating and resolving Power.
			CO4	Plot the intensity of the magnetic field of circular coil carrying current with distance
			CO5	Evaluate the acceptance angle of an optical fiber and numerical aperture.
			CO6	Determine magnetic susceptibility of the material and its losses by B-H curve.
			CO7	Determine the resistivity of the given semiconductor using four probe method.
			CO8	Identify the type of semiconductor i.e., n-type or p-type using hall effect.
			CO9	Calculate the band gap of a given semiconductor.
7	Problem Solving & Programming Lab	19A05101P	CO1	Construct a Computer given its parts.
			CO2	Select the right control structure for solving the problem.
			CO3	Analyze different sorting algorithms.
			CO4	Design solutions for computational problems.
			CO5	Develop C programs which utilize the memory efficiently using programming constructs.

8	Communicative English - I Lab	19A52101P	**CO1**	To remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills
			CO2	To apply communication skills through various language learning activities.
			CO3	To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	To evaluate and exhibit acceptable etiquette essential in social and professional settings
			CO5	To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - II SEM			BRANCH: ECE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Network Theory	19A04201T	CO1	Solve network problems using mesh and nodal analysis techniques.
			CO2	Analyze networks using Thevenin, Norton, Maximum power transfer, Superposition, Miller and Millman theorems.
			CO3	Compute responses of first order and second order networks using time & frequency domain analysis.
			CO4	Design resonant circuits for given bandwidth.
			CO5	Utilize z, y, ABCD and h parameters for analyzing two port circuit behavior.
2	Differential Equations and Vector Calculus	19A54201	CO1	Solve the differential equations related to various engineering fields.
			CO2	Identify solution methods for partial differential equations that model physical Processes.
			CO3	Interpret the physical meaning of different operators such as gradient, curl and Divergence.
			CO4	Estimate the work done against a field, circulation and flux using vector calculus.
3	Chemistry	19A51102T	CO1	Compare the materials of construction for battery and electrochemical sensors.
			CO2	Explain the preparation, properties, and applications of thermoplastics & thermosettings, elastomers & conducting polymers.
			CO3	Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.
			CO4	Apply the principle of supramolecular chemistry in application of molecular machines and switches.
4	Data Structures	19A05201T	CO1	Select Appropriate Data Structure for solving a real world problem.
			CO2	Select appropriate file organization technique depending on the processing to be done.
			CO3	Construct Indexes for Databases.
			CO4	Analyse the Algorithms.
			CO5	Develop Algorithm for Sorting large files of data.
5	Engineering Workshop	19A03101	CO1	Apply wood working skills in real world applications.

			CO2	Build different parts with metal sheets in real world applications.
			CO3	Apply fitting operations in various applications.
			CO4	Apply different types of basic electric circuit connections.
			CO5	Demonstrate soldering and brazing.
6	Engineering Graphics Lab	19A03102	CO1	Draw various curves applied in engineering.
			CO2	Show projections of solids and sections graphically.
			CO3	Draw the development of surfaces of solids.
			CO4	Use computers as a drafting tool.
			CO5	Draw isometric and orthographic drawings using CAD packages.
7	Network Theory Lab	19A04201P	CO1	Verify Kirchoff's laws and network theorems.
			CO2	Measure time constants of RL & RC circuits.
			CO3	Analyze behavior of RLC circuit for different cases.
			CO4	Design resonant circuit for given specifications.
			CO5	Characterize and model the network in terms of all network parameters.
8	Chemistry Lab	19A51102P	CO1	Determine the cell constant and conductance of solutions.
			CO2	Prepare advanced polymer materials.
			CO3	Measure the strength of an acid present in secondary batteries.
			CO4	Analyse the IR and NMR of some organic compounds.
9	Data Structures Lab	19A05201P	CO1	Select the data structure appropriate for solving the problem.
			CO2	Implement searching and sorting algorithms.
			CO3	Design new data types.
			CO4	Illustrate the working of stack and queue.
			CO5	Organize the data in the form of files.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - I SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Algebra and Calculus	19A54101	CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.
			CO2	Utilize mean value theorems to real life problems.
			CO3	Familiarize with functions of several variables which is useful in optimization.
			CO4	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems.
			CO5	Students will become familiar with 3-dimensional coordinate systems and also learn the utilization of special functions.
2	Applied Physics	19A56101T	CO1	Identify the wave properties of light and the interaction of energy with the matter.
			CO2	Apply electromagnetic wave propagation in different guided media.
			CO3	Asses the electromagnetic wave propagation and its power in different media.
			CO4	Calculate conductivity of semiconductors.
			CO5	Interpret the difference between normal conductor and superconductor.
			CO6	Demonstrate the application of nano materials.
3	Problem Solving & Programming	19A05101T	CO1	Construct his own computer using parts.
			CO2	Recognize the importance of programming language independent constructs.
			CO3	Solve computational problems.
			CO4	Select the features of C language appropriate for solving a problem.
			CO5	Design computer programs for real world problems.
			CO6	Organize the data which is more appropriated for solving a problem.
4	Communicative English - I	19A52101T	CO1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms.
			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.

			CO4	Evaluate reading/listening texts and to write summaries based on global.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.
5	Electrical & Electronics Engineering Workshop	19A02101	CO1	Able to demonstrate knowledge on different tools, abbreviations and symbols used in Electrical Engineering.
			CO2	Able to measure different electrical quantities using measuring instruments.
			CO3	Able to demonstrate how to trouble shoot the electrical equipments (like fan, grinder, motor, etc.).
			CO4	Able to do wiring and earthing for residential houses.
6	Applied Physics Lab	19A56101P	CO1	Operate optical instruments like microscope and spectrometer.
			CO2	Determine thickness of a hair/paper with the concept of interference.
			CO3	Estimate the wavelength of different colors using diffraction grating and resolving Power.
			CO4	Plot the intensity of the magnetic field of circular coil carrying current with distance
			CO5	Evaluate the acceptance angle of an optical fiber and numerical aperture.
			CO6	Determine magnetic susceptibility of the material and its losses by B-H curve.
			CO7	Determine the resistivity of the given semiconductor using four probe method.
			CO8	Identify the type of semiconductor i.e., n-type or p-type using hall effect.
			CO9	Calculate the band gap of a given semiconductor.
7	Problem Solving & Programming Lab	19A05101P	CO1	Construct a Computer given its parts.
			CO2	Select the right control structure for solving the problem.
			CO3	Analyze different sorting algorithms.
			CO4	Design solutions for computational problems.
			CO5	Develop C programs which utilize the memory efficiently using programming constructs.
8	Communicative English - I Lab	19A52101P	CO1	To remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills
			CO2	To apply communication skills through various language learning activities.

			CO3	To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	To evaluate and exhibit acceptable etiquette essential in social and professional settings
			CO5	To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - II SEM			BRANCH: EEE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Basic Civil & Mechanical Engineering	19A01201T	CO1	Draw SFD and BMD for cantilever and Simply supported beams.
			CO2	Understand the working principles of electrical resistors and capacitors.
			CO3	Apply concepts of Rosetta analysis for strain measurements.
			CO4	Outline sources of energy, power plant economics, and environmental aspects (L2).
			CO5	Describe working components of a steam power plant.
			CO6	Illustrate the working mechanism of Diesel and Gas turbine power plants.
			CO7	Explain different types of pumps and their application.
			CO8	Explain working of IC engines with combustion process.
			CO9	Possess the knowledge of system components of refrigeration and air conditioning.
2	Differential Equations and Vector Calculus	19A54201	CO1	Solve the differential equations related to various engineering fields.
			CO2	Identify solution methods for partial differential equations that model physical Processes.
			CO3	Interpret the physical meaning of different operators such as gradient, curl and Divergence.
			CO4	Estimate the work done against a field, circulation and flux using vector calculus.
3	Chemistry	19A51102T	CO1	Compare the materials of construction for battery and electrochemical sensors.
			CO2	Explain the preparation, properties, and applications of thermoplastics &thermosettings, elastomers & conducting polymers.
			CO3	Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.
			CO4	Apply the principle of supramolecular chemistry in application of molecular machines and switches.
4	Data Structures	19A05201T	CO1	Select Appropriate Data Structure for solving a real world problem.
			CO2	Select appropriate file organization technique

				depending on the processing to be done.
			CO3	Construct Indexes for Databases.
			CO4	Analyse the Algorithms.
			CO5	Develop Algorithm for Sorting large files of data.
5	Engineering Workshop	19A03101	CO1	Apply wood working skills in real world applications.
			CO2	Build different parts with metal sheets in real world applications.
			CO3	Apply fitting operations in various applications.
			CO4	Apply different types of basic electric circuit connections.
			CO5	Demonstrate soldering and brazing.
6	Engineering Graphics Lab	19A03102	CO1	Draw various curves applied in engineering.
			CO2	Show projections of solids and sections graphically.
			CO3	Draw the development of surfaces of solids.
			CO4	Use computers as a drafting tool.
			CO5	Draw isometric and orthographic drawings using CAD packages.
7	Basic Civil & Mechanical Engineering Lab	19A01201P	CO1	Explain different working cycles of engine.
			CO2	Illustrate the working of refrigeration systems
			CO3	Evaluate heat balance sheet of IC engine.
8	Chemistry Lab	19A51102P	CO1	Determine the cell constant and conductance of solutions.
			CO2	Prepare advanced polymer materials.
			CO3	Measure the strength of an acid present in secondary batteries.
			CO4	Analyse the IR and NMR of some organic compounds.
9	Data Structures Lab	19A05201P	CO1	Select the data structure appropriate for solving the problem.
			CO2	Implement searching and sorting algorithms.
			CO3	Design new data types.
			CO4	Illustrate the working of stack and queue.
			CO5	Organize the data in the form of files.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - I SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Algebra and Calculus	19A54101	CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical Applications.
			CO2	Utilize mean value theorems to real life problems.
			CO3	Familiarize with functions of several variables which is useful in optimization.
			CO4	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems.
			CO5	Students will become familiar with 3-dimensional coordinate systems and also learn the utilization of special functions.
2	Chemistry	19A51102T	CO1	compare the materials of construction for battery and electrochemical sensors.
			CO2	Explain the preparation, properties, and applications of thermoplastics &thermosettings, elastomers & conducting polymers.
			CO3	Explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures.
			CO4	Apply the principle of supramolecular chemistry in application of molecular machines and switches.
3	Problem Solving & Programming	19A05101T	CO1	Construct his own computer using parts.
			CO2	Recognize the importance of programming language independent constructs.
			CO3	Solve computational problems.
			CO4	Select the features of C language appropriate for solving a problem.
			CO5	Design computer programs for real world problems.
			CO6	Organize the data which is more appropriated for solving a problem.
4	Engineering Graphics Lab	19A03102	CO1	Draw various curves applied in engineering.
			CO2	Show projections of solids and sections graphically.
			CO3	Draw the development of surfaces of solids.
			CO4	Use computers as a drafting tool.
			CO5	Draw isometric and orthographic drawings

				using CAD packages.
5	Engineering Workshop	19A03101	CO1	Apply wood working skills in real world applications.
			CO2	Build different parts with metal sheets in real world applications.
			CO3	Apply fitting operations in various applications.
			CO4	Apply different types of basic electric circuit connections.
			CO5	Demonstrate soldering and brazing.
6	Chemistry Lab	19A51102P	CO1	determine the cell constant and conductance of solutions.
			CO2	prepare advanced polymer materials.
			CO3	measure the strength of an acid present in secondary batteries.
			CO4	analyse the IR and NMR of some organic compounds.
7	Problem Solving & Programming Lab	19A05101P	CO1	Construct a Computer given its parts.
			CO2	Select the right control structure for solving the problem.
			CO3	Analyze different sorting algorithms.
			CO4	Design solutions for computational problems.
			CO5	Develop C programs which utilize the memory efficiently using programming constructs.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)

COURSE OUTCOMES			REGULATION: R19	
YEAR/SEM: I B.TECH - II SEM			BRANCH: CSE	
S.No	Subject Name	Subject Code	Course Outcomes (CO): Student will be able to	
1	Basic Electrical and Electronics Engineering	19A02201T	CO1	Apply concepts of KVL/KCL in solving DC circuits.
			CO2	Choose correct rating of a transformer for a specific application.
			CO3	Illustrate working principles of induction motor - DC Motor.
			CO4	Identify type of electrical machine based on their operation.
			CO5	Describe working principles of protection devices used in electrical circuits.
2	Probability and Statistics	19A54202	CO1	Make use of the concepts of probability and their applications.
			CO2	Apply discrete and continuous probability distributions.
			CO3	Classify the concepts of data science and its importance.
			CO4	Interpret the association of characteristics and through correlation and regression tools.
			CO5	Design the components of a classical hypothesis test.
			CO6	Infer the statistical inferential methods based on small and large sampling tests.
3	Applied Physics	19A56101T	CO1	Identify the wave properties of light and the interaction of energy with the matter.
			CO2	Apply electromagnetic wave propagation in different guided media.
			CO3	Asses the electromagnetic wave propagation and its power in different media.
			CO4	Calculate conductivity of semiconductors.
			CO5	Interpret the difference between normal conductor and superconductor.
			CO6	Demonstrate the application of nano materials.
4	Data Structures	19A05201T	CO1	Select Appropriate Data Structure for solving a real world problem.
			CO2	Select appropriate file organization technique depending on the processing to be done.
			CO3	Construct Indexes for Databases.
			CO4	Analyse the Algorithms.
			CO5	Develop Algorithm for Sorting large files of data.

5	Communicative English - I	19A52101T	CO1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English.
			CO2	Apply grammatical structures to formulate sentences and correct word forms.
			CO3	Analyze discourse markers to speak clearly on a specific topic in informal discussions.
			CO4	Evaluate reading/listening texts and to write summaries based on global.
			CO5	Create a coherent paragraph interpreting a figure/graph/chart/table.
6	Computer Science and Engineering Workshop	19A05202	CO1	Construct a computer from its parts and prepare it for use.
			CO2	Develop Documents using Word processors.
			CO3	Develop presentations using the presentation tool.
			CO4	Perform computations using spreadsheet tool
			CO5	Connect computer using wired and wireless connections.
			CO6	Design Graphics, Videos and Web pages.
			CO7	Connect things to computers.
7	Communicative English - I Lab	19A52101P	CO1	To remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills
			CO2	To apply communication skills through various language learning activities.
			CO3	To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
			CO4	To evaluate and exhibit acceptable etiquette essential in social and professional settings
			CO5	To create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English.
8	Basic Electrical & Electronics Engineering Lab	19A02201P	CO1	Verify Kirchoff's Laws & Superposition theorem.
			CO2	Perform testing on AC and DC Machines.
			CO3	Study I – V Characteristics of PV Cell.
			CO4	Describe construction, working and characteristics of diodes, transistors and operational amplifiers.
			CO5	Demonstrate how electronic devices are used for applications such as rectification, switching and amplification.

			CO6	Build different building blocks in digital electronics using logic gates.
			CO7	Explain functionality of flip-flops, shift registers and counters for data processing Applications.
			CO8	Explain functioning of various communication systems.
9	Applied Physics Lab	19A56101P	CO1	Operate optical instruments like microscope and spectrometer.
			CO2	Determine thickness of a hair/paper with the concept of interference.
			CO3	Estimate the wavelength of different colors using diffraction grating and resolving Power.
			CO4	Plot the intensity of the magnetic field of circular coil carrying current with distance
			CO5	Evaluate the acceptance angle of an optical fiber and numerical aperture.
			CO6	Determine magnetic susceptibility of the material and its losses by B-H curve.
			CO7	Determine the resistivity of the given semiconductor using four probe method.
			CO8	Identify the type of semiconductor i.e., n-type or p-type using hall effect.
			CO9	Calculate the band gap of a given semiconductor.
10	Data Structures Lab	19A05201P	CO1	Select the data structure appropriate for solving the problem.
			CO2	Implement searching and sorting algorithms.
			CO3	Design new data types.
			CO4	Illustrate the working of stack and queue.
			CO5	Organize the data in the form of files.

PRINCIPAL
Vaagdevi Institute of Technology & Science
PEDDASETTIPALLI
PRODDATUR, Kadapa (Dist.)