VIJAYA INSTITUTE OF TECHNOLOGY FOR WOMEN

An ISO 9001:2015 Certified Institute, Approved by AICTE, Affiliated to JNTU Kakinada, AP
Phone: 0866-2844444, Email: vijayatechfw@gmail.com Website: www.vitw.edu.in
College Code: NP, Enikepadu, Vijayawada-521108

Department of Electronics and Communication Engineering
List of Course Outcomes
Batch: 2020(R20)

Year & Sem	Subject Code	Course Code	Course Name	At The End of The Course, The Student Will Be Able To
I-I	R201101	C111	Mathematics -I	CO1:Utilize mean value theorems to real life problems (L3)
				CO2:Solve the differential equations of first order and their applications
				CO3:Solve the differential equations of second and higher order and applications.
				CO4:Solve the differential equations related to various engineering fields(L3)
				CO5:Familiarize with functions of several variables which is useful in optimization(L3)
				CO6:Apply double integration techniques in evaluating areas bounded by region and triple integral techniques over volume.
I-I	R201102	C112	Communicative English	CO1: Ask and answer general questions on familiar topics and introduce oneself/others
				CO2:Recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
				CO3:To help and improve speaking skills through participation in activities such as role plays,discussions and structured talks /oral presentations
				CO4:Discuss specific topics in pairs or in groups for Functional English
				CO5:Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
				CO6:Form sentences using proper grammatical structures and correct word forms
I-I	R201104	C113	Engineering Drawing	CO1:Make use of graphic representation as per standards and to construct polygons, curves
				CO2:Construct scales and prepare the orthographic projections of points and straight lines placed in various quadrants
				CO3:Identify and draw the projection of straight lines inclined to both the planes
				CO4:Identify and draw the projection of planes inclined to both the planes
				CO5:Plan and draw the projection of solids in different positions & inclined to one of the planes
				CO6:Interpret orthographic and isometric views of objects

I-I	R201113	C114	C programming	CO1:Outline the basic terminology of computer programming and illustrate to write, compile & debug a C-program.
				CO2:Make use of basic C- programming language constructs to build C-programs.
				CO3:Develop C-programs by utilizing various control structures.
				CO4:Classify modular programming techniques to implement C- programs.
				CO5:Build C-programs by using data structures like arrays, strings.
				CO6:Make use of pointers and different derived data structures to solve problems in C.
I-I	R201115	C115	Applied chemistry	CO1:Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
				CO2:Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
				CO3:Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
				CO4:Synthesize Nanomaterials for modern advances of engineering technology.
				CO5:Analyze the principles of different analytical instruments and their applications, Design models for energy by different natural sources.
				CO6:Obtain the knowledge of computational chemistry and molecular machines.
I-II	R201201	C121	Mathematics-II	CO1:Develop the use of matrix algebra techniques that is needed by engineers for practical applications and solve system of linear algebraic equations by Gauss elimination method.
				CO2:Find the inverse and powers of matrices by Cayley Hamilton theorem.
				CO3:Evaluate the approximate roots of polynomial and transcendental equations by different algorithms(L5)
				CO4:Solve system of linear algebraic equations using Gauss Jacobi ,Gauss seidel (L3)
				CO5:Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
				CO6:Apply different algorithms for approximating the solution of Ordinary differential Equations with initial conditions to its analytical computations(L3)

I-II	R201230	C122	Environmental Science	CO1:Relate the concept of Engineering drawing being the principal method of communication for engineers,
				CO2:Apply make the students draw the projections of the lines inclined to both the planes..
				CO3:Develop regular planes perpendicular/parallel to one reference plane and inclined to the other reference plane; inclined to both the reference planes.
				CO4:Perform Experiments with Projections of Solids – Prisms, Pyramids, Cones and Cylinders with the axis inclined to both the planes.
				CO5:Estimate the student will be able to represent and convert the isometric view to orthographic view and vice versa.
				CO6:Make use of Conversion of isometric views to orthographic views
I-II	R201207	C123	Applied Physics	CO1:Realize the need of coherent sources, engineering applications of interference, differences between interference and diffraction, the concept of polarization in the design of various optical instruments.
				CO2:Enable to understand the concepts of LASER light sources, types of lasers, Engineering applications of lasers, Working principle of optical fibers, classification of optical fibers.
				CO3:Interpret the dual nature of matter, significance of wave function.
				CO4:Elucidate the classical and quantum free electron theories, K-P model, classification of materials, effective mass of electron.
				CO5:Explain the dielectric constant and polarization, various types of polarization, Lorentz field and Clausius –Mosotti relation in dielectrics, classification of magnetic materials.
				CO6:Provide vivid comprehension on the classification of energy bands of semiconductors, Hall effect, Meissner effect, BCS theory & Josephson effect in superconductors.
I-II	R201213	C124	Network Analysis	CO1:Outline the working principles of Resistance parameter – series and parallel combination, Inductance parameter – series and parallel combination
				CO2:Make use of the principles of R-L circuit, R-C circuit with DC excitation, Evaluating initial conditions procedure, second order differential
				CO3:Classify and Illustrate the construction and working of various measuring instruments.

				CO4:Classify series R-L, R-C, R-L- C circuits problem solving. Complex impedance and phasor notation for R-L, R-C, R-L-CL-C
				CO5:Understand the fundamentals of Z-parameters, Y-parameters, Transmission line parameters, h-parameters, Inverse h-parameters
				CO6:Analyze the different networks, problem solving including dependent sources also.
I-II	R201214	C125	Basic Electronics and Electrical Engineering	CO1:What is the Principle of operation of DC generator – emf equation
				CO2:Explain the operation of DC generator and analyze the characteristics of DC generator
				CO3:Build the Construction of three phase synchronous motor - operating principle – equivalent circuit of synchronous motor.
				CO4:Explain the principle of operation of DC motor and analyze their characteristics. Acquire the skills to analyze the starting and speed control methods of DCmotors.
				CO5:Identify single phase induction motor
				CO6:Examine and understand the concept of – capacitor motors and AC servomotor.
II-I	R2021041	C211	Electronic Devices And Circuits	CO1:Outline the basic concepts of semiconductor physics.
				CO2:Understand the concept of formation of a p-n junction and the construction of different diodes.
				CO3:Analyze the working of rectifiers and filters with relevant expressions.
				CO4:Understand the operation and analyze the characteristics of BJT and FET in different configurations.
				CO5:Apply proper biasing and stabilization methods to BJT and FET circuits.
				CO6:Analyze BJT and FET amplifier circuits using small signal low frequency model.
II-I	R2021042	C212	Switching Theory and Logic Design	CO1:Represent signed binary numbers using different number systems and binary codes.
				CO2:Apply Boolean algebra, K-maps and Tabular method to minimize logic functions.
				CO3:Make use of combinational circuits to implement combinational logic functions.
				CO4:Develop combinational circuits using PLD's.
				CO5:Construct sequential circuits like counters and registers using flip-flops.
				CO6:Model the minimized Finite State Machines by using state diagrams.

II-I	R2021043	C213	Signals & Systems	CO1:Characterize the signals and systems and build the analogy between vectors & signals to develop the Fourier series concepts.
				CO2:Make use of the Fourier concept to analyze the spectral characteristics for different classes of signals.
				CO3:Explain the process of sampling and reconstruction of signal.
				CO4:Outline the concepts of convolution & Correlation to examine the response of LTI systems.
				CO5:Apply the Laplace transform to analyze continuous LTI systems.
				CO6:Apply the Z- transform to analyze DT LTI systems.
II-I	R2021044	C214	Random Variables and Stochastic Process	CO1:Mathematically model the random phenomena and solve simple probabilistic problems.
				CO2:Identify different types of random variables and compute statistical averages of these random variables.
				CO3:Make use of the concepts of single random variable to study the behaviour of random phenomenon for a multi random variable case.
				CO4:Outline the Temporal characteristics of the Random processes.
				CO5:Explain the characteristics of the Random processes in spectral domain.
				CO6:Apply the concepts of random variables and processes to analyze the behaviour of LTI systems in the presence of different types of noise.
II-I	R2021011	C216	Mathematics -III	CO1:Interpret the physical meaning of different operators such as gradient, curl and divergence and Estimate the work done against a field, circulation and flux using vector calculus (L5)
				CO2:Apply the Laplace transform for solving differential equations (L3)
				CO3:Find or compute the Fourier series of periodic signals (L3)
				CO4:Apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
				C05:Identify solution methods for partial differential equations that model physical processes (L3)
				CO6:Classify and Solve the different types of partial differential equations.
II-II	R2022041	C221	Electronic Circuit Analysis	CO1:Compare small signal low & high frequency amplifiers using BJT and FET.
				CO2:Compare multistage amplifiers based on the combination of different amplifier configurations.

				CO3:Compare different types of feedback amplifiers
				CO4:Make use of baurkhasan criteion to design different types of oscillators.
				CO5:Apply load line concept to examine different types of power amplifiers.
				CO6:Analyze different Tuned amplifiers.
II-II	R2022044	C222	Linear Control Systems	CO1:Develop the transfer function using block diagram algebra and signal flow graph methods
				CO2:Analyze the Transient & Steady State Performance of control systems
				CO3:Analyze the stability of LTI systems using Routh's stability criterion and the Root locus method.
				CO4:Analyze the stability of LTI systems using frequency response methods.
				CO5:Design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
				CO6:Develop the state models to solve time invariant state equations and outline the concepts of controllability and observability of control systems.
II-II	R2022042	C223	Digital IC Design	CO1:Illustrate the electrical behavior of CMOS and Bipolar logic families.
				CO2:Apply Data flow and Structural VHDL modeling styles to realize digital circuits.
				CO3:Model different digital circuits using behavioral modeling in VHDL and Study the logic synthesis process steps.
				CO4:Develop different combinational based digital system design modules with relevant digital ICs.
				CO5:Build different Sequential based digital system design modules with relevant digital ICs.
				CO6:Analyze different Synchronous and Asynchronous Sequential circuits with examples.
II-II	R2022043	C224	Analog Communications	CO1:Explain the basic concepts of analog communication system and compare various generation, detection techniques of amplitude modulation
				CO2:Compare various types of amplitude modulation techniques with spectral characteristics
				CO3:Explain different methods of generation and detection of FM
				CO4:Classify radio transmitters and receivers based on their operation
				CO5:Outline the effect of noise on analog modulation systems
				CO6:Illustrate various analog pulse modulation systems
II-II	R2022025	C226	Managerial and organisational behaviour	CO1:Appraise the practices of management concepts in the business environment and evaluate various types of organization structures.

				CO2:Identify the production management practices and distinguish the different stock levels of an organization.
				CO3:Prepare an appropriate marketing mix and determine the recruitment process in global competitive environment.
				CO4:Evaluate the project process on the basis of costs and time.
				CO5:Recognize and analyze the strategies of the firm and can re discover the SWOT of themselves.
				CO6:Understand and develop the contemporary management practices such as MIS, MRP, TQM,ERP, BPO and assess the changing business environment.
III-I	R2031041	C311	Analog IC Applications	CO1:Outline the basic operation and performance parameters of differential amplifiers.
				CO2:Demonstrate the measuring techniques for performance parameters of OP-AMP.
				CO3:Construct different linear and non-linear circuits using OP- AMPs
				CO4:Analyze and design amplifiers and active filters using OP- AMPs
				CO5:Develop applications by making use of different analog ICs.
				CO6;Construct different types of DAC's and ADC's using OP- AMP
III-I	R2031042	C312	Electro magnetic Waves and Transmission liNES	CO1:Determine E and H using various laws and applications of electric & magnetic fields.
				CO2:Demonstrate the measuring techniques for performance parameters of OP-AMP.
				CO3:Apply the Gain the knowledge in uniform plane wave concept and characteristics of uniform plane wave in various media behavior of EM waves
				CO4:Analyze and design amplifiers and active filters using OP- AMPs
				CO5:Develop applications by making use of different analog ICs.
				CO6:Calculate Brewster angle, critical angle and total internal reflection Calculate Brewster angle, critical angle and total internal reflection
III-I	R2031043	C313	Digital Communications	CO1:Illustrate the various types of baseband digital modulation techniques .
				CO2:Explain band pass digital modulation and demodulation techniques
				CO3:Identify the error probability of various receivers using digital modulation techniques
				CO4:Apply the information theory in determine the channel capacity
				CO5:Compare different source coding schemes for efficient data representation

				CO6:Compare different error control coding schemes for the reliable transmission of digital information over the channel
III-I	R203104B	C314	Electronic measurement and Instrumentation	CO1:Understand the different characteristics of electronic measuring instruments.
				CO2:Make use of Signal generators to analyze a signal.
				CO3:Understand the design and functioning of Oscilloscopes.
				CO4:Utilize AC bridges for measurement of inductance.
				CO5:Distinguish active transducers from passive transducers.
				CO6:Develop the ability to use instruments for measurement of physical parameters.
III-I	R193104D	C315	Advanced UNIX Programming	CO1:Able to understand Documentation will demonstrate good organization and readability.
				CO2:Able to identify File processing projects will require data organization, problem solving and research.
				CO3:Understand Scripts and programs will demonstrate simple effective user interfaces.
				CO4:Able to understand Scripts and programs will demonstrate effective use of structured programming.
				CO5:Enlist Scripts and programs will be accompanied by printed output demonstrating completion of a test plan.
				CO6:Able to understand Testing will demonstrate both black and glass box testing strategies.
III-II	R2032041	C321	Micro Processor and Micro Controller	CO1:Comprehend the architecture and working of 16 bit microprocessor 8086.
				CO2:Apply assembly language programming skills to perform arithmetic, logical and string operations with 8086.
				CO3:Develop applications involving interfacing of various peripherals with 8086 microprocessor.
				CO4:Outline the architectural features of 80386 and 80486 microprocessors.
				CO5:Develop microcontroller based standalone applications for societal needs.
				CO6:Comprehend the architecture and instruction set of PIC 16F877 microcontroller.
III-II	R2032042	C322	VLSI Design	CO1:Illustrate the various fabrications steps of IC and come across basic electrical properties of MOSFET.
				CO2:Apply design rules to construct the layout of different digital circuits.

				CO3:Build MOS circuits with the help of Basic circuit concepts and analyze its characteristics based on the Scaling factors.
				CO4:Describe Chip input & output circuits and Design For Testability using different testing techniques.
				CO5:Make use of FPGA architectures to realize digital circuits.
				.
III-II	R2032043	C323	Digital Signal Processing	CO1:Apply the concepts of difference equations to analyze the discrete time systems.
				CO2:Make use of the FFT algorithm for solving the DFT of a given signal.
				CO3:Analyze the Digital IIR filter design for different specifications and Realize its structures.
				CO4:Analyze the Digital FIR filter design for different specifications and Realize its structures.
				CO5:Understand the Multirate Processing concepts in various applications.
				CO6:Outline the architecture of programmable Digital Signal processors and apply the signal processing concepts on DSP Processor.
III-II	R193204A	C324	Cellular mobile Communication	CO1:Outline the concepts of cellular systems and the effect of co- channel Interference reduction.
				CO2:Analyze the effects of interferences, develop antenna system.
				CO3:Outline various frequency management, channel assignment algorithms in cellular systems and illustrate various propagation effects in cellular environment.
				CO4:Illustrate different types of antennas used at cell site and mobile stations.
				CO5:Compare various types of handoff techniques and summarise the concepts of dropped calls.
				CO6:Illustrate the architecture of GSM and multiple access techniques.
III-II	R203204C	C325	Embedded Systems	CO1:Classify the elements, characteristics, quality attributes and applications of typical embedded systems.
				CO2:Identify hardware components required for an embedded system and the design approach of an embedded hardware.
				CO3:Compare embedded firmware design approaches on embedded environment.
				CO4:Explain Internals of Real-Time operating system and the fundamentals of RTOS based embedded firmware design and identify the need for hardware software Co-design.
				CO5:Make use of different IDEs for firmware development of different family of

VIJAYA INSTITUTE OF TECHNOLOGY FOR WOMEN

An ISO 9001:2015 Certified Institute, Approved by AICTE, Affiliated to JNTU Kakinada, AP
Phone: 0866-2844444, Email: vijayatechfw@gmail.com Website: www.vitw.edu.in
College Code: NP, Enikepadu, Vijayawada-521108

				processors/controllers and embedded operating systems.
				CO6:Outline the concepts of embedded system implementation and testing.
III-II	R203205K	C326	Computer Networks	CO1:Understand the concepts of Network Topologies and network (communication) reference models (OSI and TCP/IP reference models).
				CO2:Illustrate Physical layer Guided Transmission media and Multiplexing concepts.
				CO3:InterpretDatalink layer Framing Techniques, Error control Techniques using CRC, flow control techniques using Elementary Data Link layer protocols, sliding window protocols in a network..
				CO4:Illustrate how the MediaAccess control problem solved in a network using multiple access protocols– ALOHA,CSMA,collision free protocols
				CO5:Make use of the Network Layer routing algorithms , congestion control algorithms to perform better network communication.
				CO6:Analyze the internet Transport layer protocols-TCP,UDP protocol working mechanismin Client – Server Data communication.
IV-I	R204104A	C411	Optical Communication	CO1:Explain the working principle of the optical fiber and classify the structures of Optical fiber and types
				CO2:Explain the various loss and dispersion mechanisms in optical fiber. Choose the appropriate materials required to construct the optical fibers.
				CO3:Choose appropriate connectors and/or splices to join the optical fibers.
				CO4:Classify the Optical sources and detectors and to discuss their principle.
				CO5:Analyze the power launching and coupling techinques of optical fiber. Compare the performance of optical analog and digital recievers.
				CO6:Design the optical system for given specifications and also high speed links using WDM. Measure the optical fiber parameters.
IV-I	R204104D	C412	Satellite Communications	CO1:Understand the basics of satellite communication and Ability to calculate the orbital determination and launching methods.
				CO2:Demonstrate the Different Sub systems required in a satellite communication system.
				CO3:Design satellite link system for specified C/N .
				CO4:Compare various types of multiple access techniques like TDMA, FDMA , CDMA and DAMA.
				CO5:Illustrate the architecture of Earth station Technology and Ability to demonstrate the LEO and GEO satellite systems.

				CO6:Outline the concepts of satellite navigation and the global positioning system
IV-I	R204104I	C413	Internet of Things	CO1:Introduction to IoT, Architectural Overview,
				CO2:Construct ARM Cortex-A class processor
				CO3:Build Co AP, UDP, TCP, Bluetooth.
				CO4:Discover Data acquisition and integration, Device data storage-Unstructured data storage on cloud/local server
				CO5:Explain IoT case studies and mini projects based on Industrial automation
				CO6:Build the Agriculture ,Healthcare, Home Automation
IV-I	R204104R	C414	Environmental management	CO1:Outline planning and the design of water supply systems for a community/town/city
				CO2:Plan and design the water and wastewater systems
				CO3:Identify the source of emissions and select proper control systems
				CO4:Design & estimation of water supply system for a city
				CO5:to get knowledge about various environmental aspects
				CO6:Selection of suitable treatment flow for raw water treatments
IV-I	R204101Y	C415	Green Technology	CO1:To understand different concepts of green technologies
				CO2:Enlist different concepts of green technologies in a project
				CO3:Understand the principles of Energy efficient technologies
				CO4:Estimate the carbon credits of various activities
				CO5:Identify the importance of life cycle assessment
				CO6:Recognize the benefits of green fuels with respect to sustainable development.
IV-I	R2041011	C416	Humanity & sciences	CO1:to become more aware of themselves, and their surroundings family, society, nature)
				CO2:Able to become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
				CO3: Able to have better critical ability
				CO4:To become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
				CO5: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

				CO6:To understand the society nature and apply behavioural sense