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 Computer Science and Engineering

List of Course Outcomes

Batch: 2019 (R19)

Year & Sem	Subject Code	Course Code	Course Name	At the end of the course, the student will be able to
I-I	C101	HS1101	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	C102	BS1101	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.

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I-I	C103	BS1106	Applied Chemistry	CO1:Outline the properties of polymers and various additives added and different methods of forming plastic materials. Explain the preparation, properties and applications of some plastic materials. Interpret the mechanism of conduction in conducting polymers. Discuss natural and synthetic rubbers and their applications.
				CO2:Explain the theory of construction of battery and fuel cells and can categorize the reasons for corrosion and study some methods of corrosion control.
				CO3: Analyze the liquid crystals, superconductors and the preparation of semiconductors.
				CO4:Analyze the importance of materials like Nanomaterials and fullerenes and their uses.
				CO5:Obtain the knowledge of computational chemistry and Analyze the importance of molecular machines.
				CO6:Explain the different applications of analytical instruments and design sources of energy by different natural sources and Analyze the principles of different analytical instruments.
I-I	C104	ES1112	Fundamentals of Computer Science	CO1: Illustrate the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
				CO2: Recognize the Computer networks, types of networks and topologies.
				CO3: Summarize the concepts of Operating Systems and Databases.
				CO4: Recite the Advanced Computer Technologies like Distributed Computing & Wireless Networks.
I-I	C105	ES1103	Engineering Drawing	CO1: The student will learn how to visualize 2D & 3D objects.
				CO1:Develop the use of matrix algebra

I-II	C110	BS1202	Mathematics – II	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	C111	BS1203	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)
				CO5:Identify solution methods for partial differential equations that model physical processes (L3)
				CO6:Classify and Solve the different

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				types of partial differential equations.
I-II	C112	BS1204	Applied Physics	CO1:Elucidate the need of coherence and the conditions for sustained interference. Analyse the differences between interference and diffraction with applications. Illustrate the resolving power of various optical instruments.
				CO2: Explain the fundamentals of quantum mechanics. Analyse the Physical significance of wave function. Apply Schrodinger wave equation for energy values of a free particle.
				CO3: Explain the various electron theories and calculate the Fermi energy.
				CO4: Interpret the effects of temperature on Fermi-Dirac distribution function. Summarise various types of solids based on Band Theory.
				CO5: Classify the energy bands of semiconductors. Outline the properties of n-type & p-type semiconductors. Identify the types of semiconductors using Hall effect.
				CO6:Explain the concepts of polarisation and summarise various types of polarisation of dielectrics. Interpret Lorentz field and Clausius-Mossotti relation in dielectrics. Classify the magnetic materials based on susceptibility and their temperature dependence. Explain the applications of dielectric and magnetic materials.
I-II	C113	ES1201	Programming for Problem Solving using C	CO1: To write algorithms and to draw flowcharts for solving problems
				CO2: To convert flowcharts/algorithms to C Programs, compile and debug programs · To use different operators, data types and write programs that use two-way/ multi-way selection · To select

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				the best loop construct for a given problem
				CO3: To design and implement programs to analyze the different pointer applications · To decompose a problem into functions and to develop modular reusable code · To apply File I/O operations
I-II	C114	ES1213	Digital Logic Design	CO1: An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
				CO2: An ability to understand the different switching algebra theorems and apply them for logic functions.
				CO3: An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
				CO4: Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.
				CO5: Students will be able to design various sequential circuits starting from flip-flop to registers and counters.
II-I	R1921051	C2101	Mathematical Foundations of Computer Science	CO1:Comprehend mathematical Principles and logic
				CO2:Communicate effectively mathematical ideas/results verbally/in writing
				CO3:Apply the Knowledge of Number Theory in the areas of such cryptography
				CO4:Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
				CO5:Demonstrate skills in solving mathematical problems
				CO6:Manipulate and analyze data numerically and graphically using

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				appropriate software
II-I	R1921052	CS2102	Software Engineering	CO1:Ability to transform an Object-Oriented Design into high quality, executable code
				CO2:Software Engineering, The Software Process, Generic Process Model
				CO3:Extreme Programming, Core Principles, Principles That Guide Each Framework
				CO4:Skills to design, implement, and execute test cases at the Unit and Integration level
				CO5:Context of Software Engineering, Architectural Styles
				CO6:Compare conventional and agile software methods
II-I	R1921053	ES2101	Python Programming	CO1:Develop essential programming skills in computer programming concepts like data types, containers
				CO2:Apply the basics of programming in the Python language
				CO3:Solve coding tasks related conditional execution, loops
				CO4:Design with Function, Abstraction Mechanisms, Problem Solving with Top Down Design
				CO5:File Operations, Real time use of class in live projects
				CO6:Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming
II-I	R1921054	CS2103	Data Structures	CO1:Summarize the properties, interfaces, and behaviours of basic abstract data types
				CO2:Discuss the computational efficiency of the principal algorithms for sorting & searching
				CO3:Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
				CO4:Queues, Representation, Implementation of Queues-using Arrays
				CO5:Trees,Representation of Binary Trees using Arrays and Linked lists

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				CO6:Demonstrate different methods for traversing trees
II-I	R1921055	CS2104	Object Oriented Programming through C++	CO1:Classify object oriented programming and procedural programming
				CO2:Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling
				CO3:Build C++ classes using appropriate encapsulation and design principles
				CO4:Operator Overloading and Type Conversion, Overloading Unary Operator
				CO5:Pointers & Binding Polymorphisms and Virtual Functions, Rules for Virtual Function
				CO6:Apply object oriented or non-object oriented techniques to solve bigger computing problems
II-I	R1921056	CS2105	Computer Organization	CO1:Develop a detailed understanding of computer systems
				CO2:Cite different number systems, binary addition and subtraction, standard, floating-point, and micro operations
				CO3:Develop a detailed understanding of architecture and functionality of central processing unit
				CO4:General Register Organization, STACK Organization. Instruction Formats
				CO5:Exemplify in a better way the I/O and memory organization
				CO6:Illustrate concepts of parallel processing, pipelining and inter processor communication
II-II	R1922051	BS2201	Probability and Statistics	CO1:Classify the concepts of data science and its importance (L4)
				CO2:Interpret the association of characteristics and through correlation and regression tools (L4)
				CO3:Make use of the concepts of probability and their applications (L3)
				CO4:Apply discrete and continuous

				probability distributions (L3)
				CO5:Infer the statistical inferential methods based on small and large sampling tests (L4)
				CO6:Design the components of a classical hypothesis test (L6)
II-II	R192205	CS2201	Java Programming	CO1:Able to realize the concept of Object Oriented Programming & Java Programming Constructs
				CO2:Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords
				CO3:Apply the concept of exception handling and Input/ Output operations
				CO4:Initialization of Arrays, Storage of Array in Computer Memory, Two-dimensional Arrays, Arrays of Varying Lengths
				CO5:Able to design the applications of Java & Java applet
				CO6:Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit
II-II	R1922053	CS2202	Operating Systems	CO1:Describe various generations of Operating System and functions of Operating System
				CO2:Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
				CO3:Solve Inter Process Communication problems using Mathematical Equations by various methods
				CO4:Contiguous memory allocation, Paging, Segmentation. Virtual Memory Management
				CO5:Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
				CO6:Outline File Systems in Operating System like UNIX/Linux and Windows

II-II	R1922054	CS2203	Database Management Systems	CO1:Describe a relational database and object-oriented database
				CO2:Create, maintain and manipulate a relational database using SQL
				CO3:Describe ER model and normalization for database design
				CO4:Representation of entities, entity set, relationship, relationship set, constraints, sub classes, super class, inheritance, specialization
				CO5:Examine issues in data storage and query processing and can formulate appropriate solutions
				CO6:Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
II-II	R1922055	CS2204	Formal Languages and Automata Theory	CO1:Classify machines by their power to recognize languages.
				CO2:Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
				CO3:Employ finite state machines to solve problems in computing
				CO4:Context Free Grammar, Leftmost and Rightmost Derivations, Normal Forms-Chomsky
				CO5:Illustrate deterministic and non-deterministic machines
				CO6:Quote the hierarchy of problems arising in the computer science
III-I	R1931051	CS3101	Data Warehousing and Data Mining	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:Pattern Evaluation Method, Pattern Mining in Multilevel, Multi-Dimensional Space, Classification using Frequent Patterns
				CO5:Apply appropriate classification techniques for data analysis
				CO6:Apply appropriate clustering

				techniques for data analysis
III-I	R1931052	CS3102	Computer Networks	CO1:Illustrate the OSI and TCP/IP reference model
				CO2:Analyze MAC layer protocols and LAN technologies
				CO3:Design applications using internet protocols
				CO4:LAN Technology, Ethernet, Fast Ethernet, Wi-MAX.
				CO5:Implement routing and congestion control algorithms
				CO6:Develop application layer protocols
III-I	R1931053	CS3103	Compiler Design	CO1:Design, develop, and implement a compiler for any language
				CO2:Use LEX and YACC tools for developing a scanner and a parser
				CO3:Design and implement LL and LR parsers
				CO4:Applications of Syntax-Directed Translation, Syntax-Directed Translation Schemes, Switch-Statements, Intermediate Code for Procedures.
				CO5:Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity
				CO6:Apply algorithms to generate machine code
III-I	R1931054	CS3104	Artificial Intelligence	CO1:Outline problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem
				CO2:Apply the language/framework of different AI methods for a given problem
				CO3:Implement basic AI algorithms-standard search algorithms or dynamic programming
				CO4:Propositional calculus, proportional logic, natural deduction system
				CO5:Approaches to knowledge representation, knowledge representation using semantic network
				CO6:Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports

III-I	R193105C	PE3101	Advanced Data Structures	CO1:Illustrate several sub-quadratic sorting algorithms.
				CO2:Demonstrate recursive methods
				CO3:Leftist Trees, Binomial Heaps, Fibonacci Heaps
				CO4:Red-Black Trees, AVL Trees
				CO5:M-Way Search Trees, B-Tree, Deletion from a B-Tree
				CO6:Apply advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure
III-II	R1932051	CS3201	Web Technologies	CO1:Illustrate the basic concepts of HTML and CSS & apply those concepts to design static web pages
				CO2:Identify and understand various concepts related to dynamic web pages and validate them using JavaScript
				CO3:Outline the concepts of Extensible mark-up language & AJAX
				CO4:Working with XML
				CO5:Develop web Applications using Scripting Languages & Frameworks
				CO6:Create and deploy secure, usable database driven web applications using PHP and RUBY
III-II	R1932052	CS3202	Distributed Systems	CO1:Elucidate the foundations and issues of distributed systems
				CO2:Illustrate the various synchronization issues and global state for distributed systems
				CO3:Illustrate the Mutual Exclusion and Deadlock detection algorithms in distributed systems
				CO4:Distributed mutual exclusion algorithms, Maekawa's algorithm
				CO5:Describe the agreement protocols and fault tolerance mechanisms in distributed systems
				CO6:Describe the features of peer-to-peer and distributed shared memory systems
III-II	R1932053	CS3203	Design and Analysis of Algorithms	CO1:Describe asymptotic notation used for denoting performance of algorithms
				CO2:Analyze the performance of a given

				algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms
				CO3:List and describe various algorithmic approaches
				CO4:Solve problems using divide and conquer, greedy, dynamic programming, backtracking and branch and bound algorithmic approaches
				CO5:Apply graph search algorithms to real world problems
				CO6:Demonstrate an understanding of NP- Completeness theory and lower bound theory
III-II	R1932054	PE3201	Managerial Economics and Financial Accountancy	CO1:The Learner is equipped with the knowledge of estimating the Demand and demand elasticity for a product.
				CO2:The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
				CO3:The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
				CO4:Market Structures, Methods of Pricing. Meaning and Features – Phases of a Business Cycle.
				CO5:The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
				CO6:The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
III-II	R193205B	OE3201	Information Retrieval System	CO1:Apoply IR principles to locate relevant information Large collection of data
				CO2:Design different document clustering algorithms
				CO3:Impliment Retrieval system for Web search tasks
				CO3:Apply Clustering in Clustering Techniques

				CO4:Design IRS for web search tasks
				CO5:Multimedia information retrieval
III-II	R193204J	HS3201	Principles of Communication	CO1:Analalyse the Performance of analog modulation schemes in time and frequency domains
				CO2:Analyse the performance of angle modulated signals
				CO3:Charectarise analog systems in time domain as random processes and noise
				CO4:Charecterise the influence of channel of analog modulated signals
				CO5:Determine the performance of analog communication systems in terms of SNR
				CO6:Analyse Pulse Amplitude Modulation, Pulse Position Modulation, Pulse Code Modulation and TDM systems
IV-I	R1941051	CS4101	Cryptography And Network Security	CO1:Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory
				CO2:Compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
				CO3:Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
				CO4:Apply different digital signature algorithms to achieve authentication and create secure applications
				CO5:Apply network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP
				CO6:Apply the knowledge of cryptographic utilities and authentication mechanisms to design secure applications
IV-I	R1941052	CS4102	UML & Design Patterns	CO1:Illustrate software design with UML diagrams
				CO2:Design software applications using

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				OO concepts
				CO3:Identify various scenarios based on software requirements
				CO4:Mention about Design Patterns and various types
				CO5:Apply UML based software design into pattern based design using design patterns
				CO6:Illustrate the various testing methodologies for OO software
IV-I	R194105G	PE4102	Cloud Computing	CO1:Interpret the key dimensions of the challenge of Cloud Computing
				CO2:Examine the economics, financial, and technological implications for selecting cloud computing for own organization
				CO3:Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications
				CO4:Discuss about storage systems
				CO5:Evaluate own organizations' needs for capacity building and training in cloud computing related IT areas
				CO6:Illustrate Virtualization for Data-Centre Automation
IV-I		OE4101	Environmental Studies	CO1:Gain knowledge about environment and eco system
				CO2:Students will learn about natural resources and its importance
				CO3:Environment impacts of human activities on natural resource
				CO4:Gain Knowledge about the conservation of bio diversity and its importance
				CO5:Avail students about problems of environmental pollution and its impact on human and eco system and control measures
				CO5:Students will learn about increasing population growth and its impact on environment
IV-II	R1942051	HS4201	Management And Organizational Behaviour	CO1:After completion of the Course the student will acquire the knowledge on management functions, global leadership

				and organizational structure
				CO2:Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments
				CO3:The learner is able to think in strategically through contemporary management practices
				CO4:Theories of Motivation: Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y
				CO5:The learner can develop positive attitude through personality development and can equip with motivational theories
				CO6:The student can attain the group performance and grievance handling in managing the organizational culture
IV-II		OE4201	Distributed Systems	CO1:Understand the principles and foundations on which the internet and other distributed systems are based
				CO2:Apply different approaches for supporting distributed applications
				CO3:Analyse the role of middle ware technologies in designing distributed systems
				CO4:To know about distributed objects and components
				CO5:Analyse the sharing of data in distributed environment
				CO6:Replication , Using different algorithms
IV-II	R194205C	PE4201	Dev Ops	CO1:Enumerate the principles of continuous development and deployment, automation of configuration management, inter-team collaboration, and IT service agility
				CO2:Describe Dev Ops & Dev Sec Ops methodologies and their key concepts
				CO3:Illustrate the types of version control systems, continuous integration tools
				CO4:Illustrate the types of continuous monitoring tools
				CO5:Illustrate the types of cloud models
				CO6:Set up complete private infrastructure using version control

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				systems and CI/CD tools