BUNTS SANGHA'S
S.M.SHETTY COLLEGE OF SCIENCE, COMMERCE & MANAGEMENT STUDIES POWAI

Bachelor of Science- Information Technology

Semester	Subject	Subject Codes		Course Outcomes
Semester 1	Imperative Programming	USIT101	CO1	To understand the foundation for further study of programming languages.
			CO2	To Develop the ability to analyze a problem, develop an algorithm & flowchart to solve it.
			CO3	To Construct simple input and output statements, Conditional operation, Control statements, & Looping.
			CO4	To Assess Pointers and pointer operators.
			CO5	Elaborate the basic aspects of arrays, structure and file handling.
	Digital Electronics	USIT102	CO1	To understand and examine the structure of various number systems and its application in digital design.
			CO2	To apply Boolean algebra to minimize the Boolean expression using Boolean algebra and K-Map
			CO3	To analyze various combinational and sequential circuits.
			CO4	To evaluate the characteristics of various flip-flops.
			CO5	To design various counters and registers.
	Operating Systems	USIT103	CO1	To understand overview of the theory of the operating system, its structure and understanding different system calls and explain working of threads and processes
			CO2	Applying the algorithms used for various operations on operating systems and implement Memory management policies and different file systems.
			CO3	To analyse and examine principles of I/O hardware and software, I/O software layers, disks, clocks, user interfaces: keyboard, mouse, monitor, thin clients, power management and categorize deadlock detection and recovery, deadlock avoidance, deadlock prevention, issues
			CO4	To explain Virtualization and Cloud and analyze different Multiple Processor Systems,multicomputers, distributed systems
			CO5	To create case study on Linux, Android and Windows and discuss Windows power management, Security in windows.
	Discrete Mathematics	USIT104	CO1	To understand the theory of discrete objects, starting with relations and partially ordered sets.
			CO2	To apply skills in expressing mathematical properties formally via the formal language of propositional logic and predicate logic and Be able to construct simple mathematical proofs and possess the ability to verify them.
			CO3	To analyze recurrence relations, generating function and operations on them.
			CO4	To evaluate Relations, graphs and trees, which are widely used in software.
			CO5	To create basic counting techniques to solve combinatorial problems.
	Communication Skills	USIT105	CO1	To understand and apply knowledge of human communication and language processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives.
			CO2	Discuss the importance of effective communication in business
			CO3	Classify the different methods of communication
			CO4	Illustrtare the ethical communication and communicate ethically.
			CO5	Demonstrate critical and innovative thinking.
Semester 2	Object oriented Programming	USIT201	CO1	To define precisely to help students master the Object Oriented Programming skills in C++.
			CO2	To apply the concept of class & object with the implementation of constructor & destructor.
			CO3	To understand & apply the working of overriding & overloading.
			CO4	To apply & evaluate the concept of class reusability.
			CO5	To compare & create multiple file handling processes with template parameters.
	Microprocessor Architecture	USIT202	CO1	To understand the components of Microprocessor 8085, a system based on it.
			CO2	To apply the concept of interfacing and basics of microprocessor 8085 programming.
			CO3	To analyze advanced 8085 instructions.
			CO4	To evaluate BCD to other number system conversion, describe system development tools
			CO5	To design different types of processors available in the market.
	Web Programming	USIT203	CO1	To find out how does the Internet, Web, bowsers, search engines work.
			CO2	To demonstrate the use of different tags in HTML.
			CO3	Make use of HTML, Java Script and PHP to construct a web pages.
			CO4	Analyze the functions of Java Script and PHP as Client Side and Server Side scripting languages.
			CO5	To develop advanced web applications using cookies, sessions and establishing database connections using PHP.

	Numerical and Statistical Methods	**USIT204**	CO1	To enable learners to understand basic concepts of optimization, modelling and linear modeling and to solve problems using LP techniques. and To recognize elements and variables in statistics and summarize qualitative and quantitative data.
			CO2	To enable learners to identify problems and apply suitable probability distribution formula
			CO3	To analyze varioud methods for a system of linear equations simultaneously of more than 2 variables, numerically differentiation, integration and Differential equation.
			CO4	To compute solutions of algebraic and transcendental equations by numerical methods like the Bisection method, method of false position, Secant method and Newton Rapshon method and To Apply method of interpolation and extrapolation for prediction
			CO5	Enable learners to develop mathematical modelling and to apply on Engineering problems and recognize the error generated by the solution
	Green Computing	**USIT205**	CO1	CO1 : To understand of e-waste and recycling
			CO2	CO2 : To illustrate use of data center , virtualization and energy related issues
			CO3	CO3 : To apply the idea of paperless office, telecommuting
			CO4	CO4 : To analyse the hardware considerations and the process of recycling
			CO5	CO5 : To discuss the requirements for greening the information system and the role of Chief Green Officer
Semester 3	**Python Programming**	**USIT301**	CO1	CO1: To Understand Basic of Python programming with different decision making statements in python.
			CO2	CO2: To Understand & evaluate function with various implementation on string datatype.
			CO3	CO3: To apply & evlaluate various datatype used in Python to handle files & exception.
			CO4	CO4: To design Object Oriented Programming in Python.
			CO5	CO5:To create & evaluate different file handling operations.
	Data Structures	**USIT302**	CO1	CO1 : Select appropriate data structures as applied to specified problem definition. Also to understand about arrays and its concept.
			CO2	CO2 : Illustrate operations like searching, insertion, and deletion, traversing mechanisms on various data structures using various linked lists.
			CO3	CO3 : To develop linear data structures using stack and queue.
			CO4	CO4 : To select appropriate sorting/searching techniques for given problems using different sorting techniques. Also to discover operations and traversals using Tree and Advanced Tree Structure
			CO5	CO5 : To build advanced data structures using nonlinear data structures like Hashing and Graph.
	Computer Networks	**USIT303**	CO1	CO1 -To recognize a theoretical concepts of data communication and computer networks
			CO2	CO2- To understand the interconnection of network components and signalling
			CO3	CO3 - To describe the wired, wireless network architecture and virtual network concept
			CO4	CO4 -To explain the basic protocols of computer networks and how they can be used to assist in network design and implementation.
			CO5	CO5- To understand the communication services directly to the application processes running on different hosts
	Database Management Systems	**USIT304**	CO1	CO1-To define the characteristics, architecture of database approach, list and describe the components, major functions of a database system and to compare different data models.
			CO2	C02- To understand designing of relational model and explain normalization steps and to demonstrate use of the relational algebra and calculus operations from mathematical set theory (union, intersection, difference, and Cartesian product) and the relational algebra operations developed specifically for relational databases (select (restrict), project, join, and division).
			CO3	C03: To apply database constraints ,types of views and SQL functions.
			CO4	C04: To analyse and examine transaction management, concurrency control techniques and data recovery methods.
			CO5	C05: To create program on extensions that PL/SQL offers to SQL and to demonstrate basic PL/SQL code using programming constructs and control statements and to apply advanced concepts like triggers , cursors , stored procedures .
	Applied Mathematics	**USIT305**	CO1	To understand the matrix techniques to reduce the quadratic forms to canonical forms, finding solutions of systems of linear equations in the different areas of Linear Algebra. To perform basic operations , to understand geometric interpretation, to find the nth root and logarithm of complex numbers
			CO2	To apply various methods of the differential equation to solve first-order linear and higher order ODE and its applications to various fields
			CO3	To analyze various Laplace transform problems to determine general or complete solutions to linear ODE applications
			CO4	To evaluate multiple integrals to find area, volume, mass and moment of inertia of plane and solid region.
			CO5	To determine beta and gamma and Error function to solve definite integral
			CO1	To remember the importance of Classes & objects along with constructors, Arrays and Vectors.

Semester 4	**Core Java**	**USIT401**	CO2	To understand the principles of inheritance, interface and packages and demonstrate through problem analysis assignments how they relate to the design of methods, abstract classes and interfaces and packages.
			CO3	To understand the importance of Multi-threading & different exception handling mechanisms.
			CO4	To apply experience of designing, implementing, testing.
			CO5	To create graphical user interfaces in Java using applet and AWT that respond to different user events.
	Introduction to Embedded Systems	**USIT402**	CO1	To understand the embedded system concepts and architecture of embedded systems
			CO2	To understand the concepts of Microcontroller and microprocessor architecture.
			CO3	To describe the architecture of the 8051 microcontroller and write an embedded program for the 8051 microcontroller.
			CO4	To design the interfacing for 8051 microcontroller.
			CO5	To choose elements for an embedded systems tool
	Computer Oriented Statistical Techniques	**USIT403**	CO1	To remember descriptive statistical concepts
			CO2	to undestand probability concept required for computer learners, Concept about Samples, sampling theory, Calculating statistics and probability from samples.
			CO3	To make conclusions using estimation theory, Concept about hypotheses, setting up the hypothesis and making decisions using decision theory
			CO4	To measure experimental results based on hypothesis using chi square techniques
			CO5	To develop techniques correlating the relationship between multiple variables
	Software Engineering	**USI403**	CO1	To obtain Knowledge of basic SW engineering methods and practices, and A general understanding of software process models
			CO2	To analyse the software requirements and the SRS documents along with the Critical system application and their system model
			CO3	To understand the role of project management including project architecture design and Quality management.
			CO4	To relate verification and validation including static analysis, and reviews.
			CO5	To explain the software process framework and software reusability and distributed software engineering.
	Computer Graphics & Applications	**USIT405**	CO1	To list the basic concepts used in computer graphics.
			CO2	To understand the concept and applications of viewing and projections.
			CO3	To make use of various algorithms to scan convert the basic geometrical primitives, perform 2D/3D transformations, area filling and clipping.
			CO4	To examine the fundamentals of animation, virtual reality and its related technologies.
			CO5	To compare different color models and evaluate the effect of light and color on graphics.
Semester 5	**Software Project Management**	**USIT501**	CO1	To define various software application domains and remember different process models used in software development.
			CO2	To understand needs for software specifications, also they can classify different types of software requirements and their gathering techniques.
			CO3	To build the requirements model into the design model and demonstrate use of software and user interface design principles.
			CO4	To categorise among SCM and SQA and can classify different testing strategies and tactics and compare them.
			CO5	To develop project schedules and construct, design and develop network diagrams for different types of Projects. They can also organize different activities of the project as per Risk impact factor.
	Internet of Things	**USIT502**	CO1	To uderstand the concepts of IOT.
			CO2	To identify the different technologies.
			CO3	To apply IOT to different applications.
			CO4	To analyse and evaluate protocols used in IOT.
			CO5	To analyse and evaluate the data received through sensors in IOT.
	Advanced Web Programming	**USIT503**	CO1	Understand the MS.NET framework, to use the features of .NET Framework along with the features of C# such as C# programming basics, Objects and Types, Inheritance.
			CO2	Demonstrate the use of Web forms and make use of Web controls for building web applications.
			CO3	To Make use of the web pages using Styles, Themes, and Master Pages.
			CO4	Evaluate dynamic web application by using the ADO .Net for Database Connectivity.
			CO5	Improve the web application by using XML, AJAX with collaborating Security aspects.
	Artificial Intelligence	**USIT504**	CO1	To understand the foundations and history of Artificial Intelligence , types of agents and environment with their Performance measure,Environment, Actuators and Sensors
			CO2	To illustrate the search algorithms and to demonstrate search techniques of uninformed informed and local search category
			CO3	To solve problems related to gaming domain using adversarial search algorithms To illustrate the working of knowledge based agents and propositional logic
			CO4	To formulate the First order logic . To demonstrate the working of inference and logic.
			CO5	To evaluate various agent planning approaches and To define the knowledge representation components.
			CO1	To find out how the Persistence, Hibernate, JPA applications work.

	Enterprise Java	**USIT505**	CO2	To understand the concept of servlets, JSP, database connectivity.
			CO3	To apply the concepts of cookies, sessions and file operations in websites.
			CO4	To compare different Java EE Technologies and Examine their usecase senarios.
			CO5	To build applictions using Servlets, JSP, Enterprise Java Beans.
Semester 6	**Software Quality Assurance**	**USIT601**	CO1	To understand the importance of Software Project Management.
			CO2	To apply testing processes and be able to identify when to begin testing during the software development lifecycle.
			CO3	To classify the principles behind testing software and why software should be tested.
			CO4	To evaluate the understanding of the verification and validation processes of testing.
			CO5	To improve implementation of Project Evaluation and Programme Management along with Project Planning & Estimate the cost of Software and its process.
	Security in Computing	**USIT602**	CO1	To understand the significance of Information security, its risk factors and basic principles of security.
			CO2	To illustrate the concpets of database security and encryption, authentication; authorization.
			CO3	To Identify the function of a firewall, and how it keeps a network, devices and wireless network secure and safe.
			CO4	To explain the Intrusion detection and prevention, concepts of VoIP, Operating systems models
			CO5	To describe the basic concepts of Cloud computing, Physical and application security
	Business Intelligence	**USIT603**	CO1	To define concepts and various mathematical models related to business intelligences and decision support systems and understand business intelligence architectures, Ethics and business intelligence and analyze Decision support systems.
			CO2	To understand Mathematical models for decision making to understand data mining and identify different Data preparation methods
			CO3	To apply concept of Classification and its models and also understand different Clustering methods
			CO4	To analyze different Business intelligence applications such as Marketing models,Logistic and production models and understand Data envelopment analysis such as Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices
			CO5	To explain Knowledge Management ,Artificial Intelligence and Expert Systems and its various structure and application
	Principles of Geographic Information Systems	**USIT604**	CO1	To understnad & apply GIS tools to create maps that are fit-for-purpose and effectively convey the information they are intended to.
			CO2	To understand & apply project results in oral, written, and graphic forms.
			CO3	To create & apply undertaking new (unfamiliar) analysis using GIS, troubleshoot problems in GIS, and seek help from software/website help menus and the GIS community to solve problems.
			CO4	To apply & evaluate mathematical concepts, including statistical methods, to data to be used in geospatial analysis.
			CO5	To create & apply original data using a Global Positioning System (GPS) or other Global Navigation Satellite Systems (GNSS).
	IT Service Management	**USIT605**	CO1	Remember the key principles of IT service management.
			CO2	Understand the important processes of IT service management.
			CO3	Make use of the comprehension of a framework of IT service management.
			CO4	Analyze an IT service organization in terms of processes and functions and to discuss the roles involved in IT service management.
			CO5	Evaluate IT asset and service cataloging also to draft a component in an IT service management agreement.