

B.SC INFORMATION TECHNOLOGY - COURSE OUTCOME (CO)

Core - I - Programming in C	C01	Demonstrate the flowchart and design an algorithm for a given problem and to develop C programs using operators
	C02	Develop conditional and iterative statements to write C programs
	C03	Exercise user defined functions to solve real time problems
	C04	Inscribe C programs that use Pointers to access arrays, strings and functions.
	C05	Exercise user defined data types including structures and unions to solve problem
Core - Practical - I - Programming in C Lab	C01	Understand basic Structure of C & declaration of variables, data types & Operators.
	C02	Exercise conditional and iterative statements to Write C program.
	C03	To demonstrate the concept of Pointers, Recursion using C.
	C04	To implement the concept of Structure & Union using C.
	C05	Can able to work out the file management and Error Handling.
Value Added Course - I Office Automation	C01	Able to understand basic level knowledge in Ms Word
	C02	To gain basic documentation works in MS Word
	C03	Ability to work in real time documentation process
	C04	Ability to identify and analyze worksheet in Ms Excel
	C05	Able to understand diagnostic procedures and troubleshooting techniques to office automation
Database Management Systems	C01	Apply knowledge of computing and mathematics appropriate to the discipline.
	C02	Analyze a problem, and identify and define the computing requirements appropriate to its solution.
	C03	Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
	C04	An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems
	C05	An ability to use and apply current technical concepts and practices in the core information technologies.
Database Management Systems Lab	C01	Design and implement a database schema for a given problem-domain
	C02	Create and maintain tables using PL/SQL

	C03	Populate and query a database
	C04	Prepare reports
	C05	Application development using PL/SQL & front end tools
Core - NoSql Databases	C01	Define, compare and use the four types of NoSQL Databases (Document-oriented, Key/Value Pairs, Column-oriented and Graph).
	C02	Demonstrate competency in describing how NoSQL databases differ from relational databases from a theoretical perspective
	C03	Demonstrate an understanding of the detailed architecture, define objects, load data, query data and performance tune Column-oriented NoSQL databases.
	C04	Explain the detailed architecture, define objects, load data, query data and performance tune Document-oriented NoSQL databases.
	C05	explore the origins of NoSQL databases and the characteristics that distinguish them from traditional relational database management systems
Core Practical - NoSQL Lab	C01	To understand NoSQL database systems from file systems by enumerating the features provided by database systems and describe each in both function and benefit.
	C02	To analyze an information storage problem and derive an information model expressed in the form of an entity relation diagram and other optional analysis forms, such as a data dictionary
	C03	To understand the features of database systems and NoSQL database
	C04	To understand the functional dependencies and design of the database and to understand the concept of Transaction and Query processing
	C05	To understand terminology, features, classifications, and characteristics embodied in NoSQL database systems.
Machine Learning	C01	Understand the difference between continuous class label and discrete class label classification methods.
	C02	Predict the continuous class variable using linear regression analysis.
	C03	Predict the binary class variable using decision tree and random forest.
	C04	Understand the importance of Logistic regression and its application in business.

	C05	Apply the assessment method to find the better number of PCA and Clusters for the given data.
Machine Learning Lab	C01	To Implement the Data frame R commands for tables.
	C02	To Implement R programs for Regression.
	C03	To Implement a ANOVA and compare with F and partial T test.
	C04	To Understand and implement a plot command.
	C05	To implement a lm() Command.
Big data Analytics	C01	To understand the meaning of big data, need of big data and how worth to study by understands their characteristics of big data.
	C02	To gain knowledge in evolution of Hadoop, understanding the components of Hadoop. To analyze how to develop an application through Hadoop. To getting knowledge of data into Hadoop.
	C03	To understand the value of data analyst and how to implementing a big data in organization.
	C04	To analysis the big data in context, getting the knowledge of predictive analytics and big data.
	C05	To understanding the concepts of humanizing and consumerization of big data analytics.
Android Application Development	C01	To understand about the need for android and the basics in it. To know about the installation of Java JDK and Android SDK.
	C02	To understand about the creation of android projects and user interfaces.
	C03	To code the android applications and to work with android framework classes.
	C04	To work with home screen widgets and app widgets in android.
	C05	To create a distributable file and outsourcing it in the market for the developed application.
DSC - Data Structures & Algorithms	C01	Students will develop knowledge of basic data structures for storage and retrieval of ordered or unordered data.
	C02	Understand the concept of linked sets.
	C03	Appraise the applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
	C04	Student will be able to develop Knowledge of Tree.
	C05	Student will be able to comprehend the concept of Graph.
DSC - Java Programming	C01	Define the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and

		method overloading. K1
	C02	Identify the situations of Program Control Statements, Introducing Classes, Objects and Methods of their usages. K2
	C03	Identify String Handling , Arrays, classes, objects, members of a class and the relationships among them needed for a specific problem.K2
	C04	OOP concepts like inheritance, Interface & package in real time situations.K3
	C05	Develop Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using access applet, multithreading)K3
DSC - Java Programming lab	C01	Execute JAVA programs based on simple constructs like arrays, loops , decision statements, functions etc
	C02	Incorporate object oriented concepts like classes, objects, inheritance, polymorphism resembling real time situation.
	C03	Demonstrate the use of packages and interfaces
	C04	Develop OOP programs containing User created Exception handling & Threading.
	C05	Familiarize with Java development Environment such as Eclipse, NetBeans etc. Suggestive list of programs.
DSC - Web Technology	C01	Understand the basics of Internet and Its Protocol.
	C02	To Learn about HTML Language and its features.
	C03	To learn about basic knowledge about CSS.
	C04	Understand basic in Servlete and HTTP
	C05	Understand basic of JSP and Cookies
DSC - Python Programming	C01	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions
	C02	Demonstrate proficiency in handling Strings and File Systems
	C03	Understand Lists, Dictionaries and Regular expressions in Python
	C04	Interpret the concepts of Object-Oriented Programming as used in Python
	C05	Implement exemplary applications related to Network Programming, Web Services and Databases in Python
DSC - Python Programming Lab	C01	Write, test, and debug simple Python programs.
	C02	Implement Python programs with conditionals and loops for stack, sorting algorithms.

	C03	Read and write data from/to files in Python.
	C04	Use Python lists, dictionaries for representing compound data.
	C05	Write Script to SQL and Demonstrate Exception in Python.
DSC – RDBMS	C01	Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS
	C02	Attain a good practical understanding of the SQL. Develop clear concepts about Relational Model.
	C03	Prepare various database tables and joins them using SQL commands
	C04	Able to design and documents data structures incorporating integrity constraints to satisfy business rules by applying the relational model
	C05	Able to develop structured query language (SQL) queries to create, read, update, and delete relational database data
DSC - Computer Graphics	C01	To gain knowledge about the computer graphics and their hardware and software systems used to make these images.
	C02	To Recognize and evaluate critical and aesthetic issues within computer graphics and the mixed media.
	C03	To be able to describe the general software architecture of programs that use 3D computer graphics.
	C04	The task of producing photo-realistic images is an extremely complex one, but this is a field that is in great demand because of the nearly limitless variety of applications.
	C05	To Apply aesthetic judgments and critical thinking skills to art and graphics related issues.
DSC - Linux and Shell Programming	C01	Understanding the basic set of commands and utilities in Linux/UNIX systems.
	C02	To learn to develop software for Linux/UNIX systems.
	C03	To learn the important Linux/UNIX library functions and system calls.
	C04	To obtain a foundation for an advanced file system manipulation.
	C05	To understand the Pattern, URL and E-mail for web content.
DSC - Linux and Shell Programming Lab	C01	Comfortably use basic UNIX/Linux commands from the command line
	C02	Organize and manage their files within the UNIX/Linux file system. And organize and manage their processes within UNIX/Linux

	C03	Usefully combine UNIX/Linux tools using features such as filters, pipes, redirection, and regular expressions.
	C04	Customize their UNIX/Linux working environment
	C05	Know how to use UNIX/Linux resources to find additional information about UNIX/Linux commands
DSC - Ethical Hacking	C01	Explain the importance of numerous methods of real-world information intelligence.
	C02	Differentiate the processes of vulnerability assessment and ethical hacking from penetration testing.
	C03	Comprehend the importance of appropriate countermeasures for managing vulnerabilities.
	C04	To familiarize with the methodologies that can be used to hack into a target.
	C05	To appreciate the wide variety of attacks that can be performed against a wireless network.
DSC - Ethical Hacking Lab	C01	Implement the importance of ethical hacking in achieving the goals of information security.
	C02	Differentiate the processes of vulnerability assessment and ethical hacking from penetration testing.
	C03	Comprehend the importance of appropriate countermeasures for managing vulnerabilities.
	C04	Justify the need for meticulous documentation in writing reports for consumption of both technical and management audiences.
	C05	Articulate the rationale for having an adequate legal framework for dealing with hacking and ethical hacking.
DSC - Data Mining	C01	To explain the core concepts of the Data Warehousing. This Explain about the Concept of Different Types of Data warehouse and its features.
	C02	To discuss Data Mining Techniques and issues.
	C03	To analyze various Association Rules in Data Warehousing.
	C04	To understand various Clustering techniques.
	C05	To deploy applications of Web Mining.
DSC - Network Security	C01	Explain the concepts of Network security
	C02	Explain the theory behind the security of different cryptographic algorithms.
	C03	Explain concepts related to applied cryptography, including plaintext, ciphertext, symmetric cryptography, asymmetric

		cryptography, and digital signatures.
	C04	Explain the requirements of real-time communication security and issues related to the security of web services.
	C05	Explain the requirements of non-realtime security (email security) and ways to provide privacy, source authentication, message integrity, non-repudiation, proof of submission, proof of delivery, message flow confidentiality, and anonymity.
Mathematics for Information Technology	C01	To demonstrate a working knowledge of set notation and elementary set theory with its corresponding set operations and also Venn diagram.
	C02	To apply the fundamental concepts of Mathematical Logic and Tautologies.
	C03	To apply and understand the fundamental concepts of Relations and Functions.
	C04	To demonstrate different traversal methods for graphs.
	C05	To demonstrate different methods for trees and its properties.
Computer Networks	C01	To understand the basics of computer networks , models and services.
	C02	To explain the transmission media and to apply the error detection and correction of data transmission.
	C03	To analyze the importance and design issues of layers.
	C04	To differentiate the services and protocols of various layers.
	C05	To illustrate the types of security and digital signature.
Allied - Organizational Behavior	C01	Demonstrate the applicability of the concept of organizational behaviour and its nature
	C02	To analyzing the complexities associated with management of individual behavior in the organization.
	C03	To demonstrate the leadership skills and become a good leader
	C04	To equip the students knowledge with Morale and Productivity and their importance.
	C05	Demonstrate how the organizational behavior can integrate in understanding the stress and role of counsellor.
Allied- Principles of Management	C01	Discuss and communicate the management evolution and how it will affect future managers
	C02	Observe and evaluate the influence of Historical forces on the current practice of management
	C03	Identify and evaluate social responsibility and ethical issues

		involved in business situations and logically articulate own position on such issues.
	C04	Practice the process of management's four functions: planning, organizing, leading, and controlling.
	C05	Identify and properly use vocabularies within the field of management to articulate one's own position on a specific management issue and communicate effectively with varied audiences.
Allied – Principles of Accounting	C01	To develop the able to discuss and describe the purpose of a company’s basic accounts statements along with being able to prepare the basic financial statements when presented with account balances.
	C02	To develop the ledger's role in the accounting cycle, the nature of posting, and practices in record and organize transactions of various kinds through the Journal, Sub-Ledger, and General Ledger. And subsidiary books.
	C03	To develop Income statement is mostly a summary of account activity for the period in the firm's final Accounts. The Balance sheet is mostly a summary of the current balances in the firm's Assets, Liabilities, and they stand at the period end.
	C04	To develop describe the meaning and use of Bills of Exchange Outline the uses and advantages of Bills of Exchange Differentiate between Bill of Exchange and Promissory Note Illustrate practical accounting aspects of Bill in various situations.
	C05	To develop Any financial management and revenue generations principles and concepts in the non profit organizations and auditors educations.
Operating System	C01	After learning the fundamental concepts in Operating system including how OS has evolved over the years and different components of OS
	C02	This will provide the necessary information for students to extract maximum benefits out of the OS while developing programs, working with applications and etc.
	C03	These chapters cover methods for process scheduling, interprocess communication, process synchronization, and deadlock handling.
	C04	These chapter covers the how storage is maintain in the computer
	C05	Have the knowledge of provided by a mechanism that controls the access of programs, processes, or users to the resources defined by a

		computer system.
Practical - Operating System Lab	C01	Understand basic Structure of the Operating System
	C02	Understand programs using implementation of system calls
	C03	To exercise and see the file operation
	C04	Understand the programs using problem concept
	C05	Understand by using the methods In Operating System
Skill - Information and Cyber Security	C01	The objective of this course is to provide students with a basic understanding of Information and Cyber Security issues and make them aware of the Challenges.
	C02	To provide components of the Information and Cyber Security Organization.
	C03	To achieve a basic understanding of information and Cyber Security.
	C04	To master information security governance, and related legal and regulatory Issues
	C05	To be familiarity with information security awareness and a clear understanding of its importance
Software Engineering	C01	This gives the Knowledge about various models in software engineering.
	C02	It gives the brief description about requirements.
	C03	To understand knowledge about Planning.
	C04	To analyze various testing in software testing
	C05	It deals the concept of Maintenance.
Software Engineering Lab	C01	To Understanding the Requirement tasks.
	C02	To Understanding the Requirement analysis and SRS.
	C03	To Implement a DFD and Structured chart.
	C04	To Understand and Implement the concept of Use case Diagram.
	C05	To Understand and Implement the concept of Class Diagram & Object Diagram.
Big data Analytics	C01	To understand the meaning of big data, need of big data and how worth to study by understands their characteristics of big data.
	C02	To gain knowledge in evolution of Hadoop, understanding the components of Hadoop. To analyze how to develop an application through Hadoop. To getting knowledge of data into Hadoop.
	C03	To understand the value of data analyst and how to implementing a big data in organization.

	C04	To analysis the big data in context, getting the knowledge of predictive analytics and big data.
	C05	To understanding the concepts of humanizing and consumerization of big data analytics.
Animation and Multimedia	C01	To develop an understanding and awareness how issues such as content, information architecture, motion, sound, design, and technology merge to form effective and compelling interactive experiences for a wide range of audiences and end users.
	C02	To become familiar with various tools used in the creation and implementation of multi- media
	C03	To understand about the color and 3D Cloud
	C04	To become familiar with Blender with images
	C05	To create an animation and An introduction to the development of Graphics.
Internet of Things	C01	Students can understand and develop their knowledge of Internet of Things
	C02	Analyze basic protocols in wireless sensor network
	C03	Students can develop their knowledge of applications related with IOT.
	C04	Design IoT applications in different domain and be able to analyze their performance
	C05	Implement basic IoT applications on embedded platform.
Enterprise Resource Planning	C01	To understand about ERP systems
	C02	To expose the students to ERP software and modules, Implementation of ERP
	C03	To familiarize Emerging trends on ERP
	C04	Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP Systems.
	C05	To familiarize ERP SOLUTIONS AND FUNCTIONAL MODULES.
Distributed Programming	C01	To understand the foundations of distributed systems.
	C02	To learn process and naming concepts in distributed systems.
	C03	To learn issues related to clock Synchronization and the need for global state in distributed systems.
	C04	To understand the fault tolerance and recovery protocols in Distributed Systems.
	C05	To learn the characteristics of distributed object based System and

		file systems.
DHTML and XML	C01	To understand the concept and importance of Dynamic web page designing
	C02	To recognize the types and attributes of different concepts
	C03	To identify the key relationship between different concepts
	C04	To be aware of the real functions of website development
	C05	To compare static concept with dynamic and to deal with every tiny elements of website
Scripting Languages	C01	Understand the concepts of scripting languages for developing web based projects.
	C02	Illustrates object oriented concepts like VBscript, JavaScript.
	C03	Create database connections using PHP and build the website for the world.
	C04	Demonstrate IP address for connecting the web servers.
	C05	Analyze the internet ware application, security issues and frame works for application.
PC and Mobile Hardware	C01	Understand the basics of Computer Maintenance and understands the Mobile servicing.
	C02	Exercise Mobile Phone Repair and Maintenance , Diagnosing and repairing mobile phone faults
	C03	To learn about basic knowledge about Laptop device and components.
	C04	Understand basic troubleshooting in mobile and Ethics and Legal Aspects of Working
	C05	Understand basic repair and maintenance
Software Project Management	C01	To understand and explore the basics of Software Projects and Risks.
	C02	Understand the Methods and techniques of Software Projects.
	C03	To learn the functions of Classes and Objects.
	C04	To familiarize the Project schedules and activities
	C05	Implementing Framework and Management control
R Programming	C01	To understand and explore the basics of R Programming language.
	C02	Understand the basics of classes, lists and data frames
	C03	To learn the integrated collection of tools for data analysis.

	C04	Understand the working of various applications with functions
	C05	To familiarize the graphical facilities for data analysis.
Block chain Fundamentals	C01	understand Blockchain and its Uses
	C02	Understand the Bitcoin details.
	C03	students will be familiar with blockchain and cryptography basics.
	C04	Students will learn how this system works and how can they utilize and what application can be build.
	C05	build their own application using the learned concepts.
Software Quality Assurance	C01	Understand the basic concepts of software quality Assurance. The ability to understand the software requirements.
	C02	Know the theoretical concept of software quality factors. The ability to know the software life cycle
	C03	Understand the planning stages of software quality assurance. To know about the reviews of software quality assurance.
	C04	Know the software development methodologies. The ability to know the verification and validation process.
	C05	The ability to understand the testing concepts. To understand the quality and cost of the projects
Information Storage Management	C01	Select Various Technology for Information Storage Management
	C02	Illustrate the various Storage System Architecture.
	C03	Apply Networked Storage Levels.
	C04	Apply security measures to safeguard storage & farm
	C05	Analyze Quos on Storage
Cloud Infrastructure and Service	C01	To explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing
	C02	To discuss system virtualization and outline its role in enabling the cloud computing system model.
	C03	To analyze various cloud programming models and apply them to solve problems on the cloud.
	C04	To understand various management and other distinguish services of AWS.
	C05	To deploy applications over commercial cloud computing infrastructures such as Amazon

Software Testing	C01	To explain the core concepts of the software testing Basics. How and why this testing shift came about, the characteristics, advantages and challenges brought about by the various Testing and services in Software Testing.
	C02	To discuss various types of Testing and its features.
	C03	To analyze various Testing Technique which is directly implemented into real time application software
	C04	To Analyze Performance and Functional of Real time Application Software.
	C05	To Plan Overall Software Development Process.
Wireless Sensor Network	C01	To understand about Sensor networks overview and Basic Wireless Sensor Technology
	C02	To expose Wireless Transmission Technology and Systems
	C03	To familiarize Fundamentals of MAC Protocols and Routing Protocols for Wireless Sensor Networks
	C04	To understand Transport Control Protocols for Wireless Sensor Networks , Middleware for Wireless Sensor Networks
	C05	To familiarize Performance and Traffic Management and Operating Systems for Wireless Sensor Networks
Digital Image Processing	C01	Understand the fundamentals of digital image processing and sampling and quantization concepts.
	C02	Apply image processing techniques in both the spatial and frequency domains using various transform techniques.
	C03	Understanding the filtering techniques for Image restoration and reconstruction.
	C04	Understanding fundamentals and some basic models of Image Compression
	C05	Applying the image segmentation process.
Cryptography and Network Security	C01	Explain the concepts of Cyber security
	C02	Illustrate key management issues and solutions
	C03	Familiarize with Cryptography and very essential algorithms & Design and develop simple cryptography algorithms
	C04	Understand about IEE security related applications in networking.
	C05	Introduce cyber Law and ethics to be followed. Understand cyber security and need cyber Law
Web Mining	C01	To Understand the fundamentals of web data mining.
	C02	To analyze the social networks and web crawling algorithms.

	C03	To Understand the concept of web mining and information retrieval and web search
	C04	To Apply the data extraction and information integration
	C05	To design the data modeling and understand the web usage mining areas.
Digital Marketing	C01	To Create a structured digital marketing plan and budget
	C02	To Identify the correct measures to set objectives and evaluate digital marketing
	C03	To Review and prioritize the strategic options for boosting customer acquisition, conversion, and retention using digital marketing
	C04	To Understand and follow the practical success factors to improve results from digital marketing
	C05	To Understand the basic concept of search engines, social media platforms, content creation & advertising in order to educate, engage & market your product or service to potential buyers
Social Networks	C01	Understanding the basic Network and its Analyzing.
	C02	To learn knowledge representation using ontology.
	C03	To learn the important Graph techniques Networks.
	C04	To obtain a foundation for an Anatomy and Python.
	C05	To understand the file representaiton, Bigdata work.