

Program Name	Program Outcome
<b>B. Sc. (Information Technology)</b>	PO1: To develop the necessary analytical abilities for developing computer-based solutions for real life problems. PO2: To inculcate quality practices in Information Technology solutions development. PO3: To imbibe professional skills in students for their future roles. PO4: To prepare necessary knowledge base for potential research and development in Information Technology. PO5: To help students' build-up a successful career in Information Technology and allied fields.



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -I</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Communication Skills	<p>CO1: To introduce aspects of communication essential for business communication.</p> <p>CO2: Train learners in written aspects of organizational communication i.e., business messages and documents requisite for career building.</p> <p>CO3: To enhance learners' oral communication and prepare them for business interviews and professional group communication.</p> <p>CO4: To familiarize them with specific communication needs of an organization.</p> <p>CO5: To enable use of ICT and communication aids.</p>
Digital Electronics	<p>CO1: Have a thorough understanding of the fundamental concepts and techniques used in digitalelectronics.</p> <p>CO2: To understand and examine the structure of various number systems and their application in digitaldesign.</p> <p>CO3: Ability to identify basic requirements for a design application and formulate the most suitable solution.</p> <p>CO4: Ability to understand, analyze and design various combinational and sequential circuits.</p> <p>CO5: The ability to identify and prevent various hazards and timing problems in a design.</p> <p>CO6: To develop skill to build and troubleshoot digital circuits.</p>
Discrete Mathematics	<p>CO1: To use logically valid forms of argument, convert formal to informal statement and vice-versa by avoiding common logical errors.</p> <p>CO2: To use both direct and indirect arguments to derive new results from the given set of logicalidentities and those which are already known to be true.</p> <p>CO3: To develop recursive thinking which is used in the analysis of algorithms for proving anytype of given sequences and series.</p> <p>CO4: To apply principles and concepts of graph theory in practical situations so that any complex algorithm can be solved in a more efficient manner.</p> <p>CO5: To understand the laws concerning the measurement of random or chance events. It will also enable some news methods of counting the number of observations or ways of occurrence of an event easily.</p>
Operating Systems	<p>CO1: To compare processes, solve sums based on scheduling algorithm</p>



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	andcompare their output. CO2: Implementing the memory management, virtual memory and file systems management in virtualsystem. CO3: To solve numerical based on deadlock CO4: To run Linux operating systems using commands also would be able to installand run commands using virtualization. CO5: To compare different types of operating systems.
Imperative Programming	CO1: To understand the programming languages and fundamentals of C. CO2: To recognize different Operators, Expressions, Data Input and output functions. CO3: To interpret the use of conditional, looping statement and functions CO4: To implement different programs in C language.



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -II</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Numerical and Statistical Methods	<p>CO1: Understand various Engineering problems, various types of errors which occur in real life and representation of any function as a series of non-linear coefficients.</p> <p>CO2: Determine the roots of any polynomial and estimate the future as well as intermediate value depending on the pre-requisite values (Past values).</p> <p>CO3: Determine the solution of multiple equations and integrate any linear or non-linear functions within the given intervals.</p> <p>CO4: Prediction of the future values depending on the present as well as past values and to optimize the given situation.</p> <p>CO5: Mapping of a given event into another domain and understanding various types of distribution to be used in probability.</p>
Microprocessor Architecture	<p>CO1: Understand 8085 Microprocessor Architecture. External pin diagram and pin functions of IC8085. Understand difference between microprocessor and CPU. Know testing and troubleshooting in memory interfacing circuits.</p> <p>CO2: Increase your proficiency in assembly language.</p> <p>CO3: Gain practical experience in programming.</p> <p>CO4: Learn concepts associated with interfacing a microprocessor to memory and I/O devices.</p> <p>CO5: To understand how to control components of computer system through use of hardware and software interruptions.</p> <p>CO6: Student will be able to choose best processor for their personal computers and laptops.</p>
Green Computing	<p>CO1: Understand the relation and impact of environmental perspectives and IT. Use and give an account of standards and certifications related to sustainable IT products.</p> <p>CO2: Use methods and tools to measure energy consumption.</p> <p>CO3: Evaluate effectiveness of IT use in relation to environmental perspectives.</p> <p>CO4: Evaluate how the choice of hardware and software can facilitate a more sustainable operation.</p>
Object Oriented Programming	<p>CO1: Differentiate between POP and OOP.</p> <p>CO2: Build C++ application programs using OOP principles and proper program structuring.</p>



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	CO3: Demonstrate the concepts of polymorphism. CO4: Implement Inheritance and learn code reusability. CO5: Design Templates and File Handling.
Web Programming	CO1: To understand various terminologies of Internet, simple application of HTML5. CO2: To design web pages using advanced HTML5. CO3: To design dynamic web pages using JavaScript. CO4: To develop simple, responsive web pages using PHP. CO5: To build web pages using PHP & MySQL.



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -III</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Applied Mathematics	<p>CO1: To calculate the various image transformations using matrices.</p> <p>CO2: Equation of First Order and second order differential Equation can describe exponential growth and decay, the population growth of species or the change in investment return over time.</p> <p>CO3: Implementation of Laplace Transformation will help to understand how various analog and digital signal conversions are done.</p> <p>CO4: Multiple Integration will help to calculate the surface area and volume of any real-life objects.</p> <p>CO5: Error functions will help to calculate the accurate error from true and observed value.</p>
Computer Networks	<p>CO1: To recognize the purposes and association between the OSI layers, different types of signals and their mechanism of understanding each of them.</p> <p>CO2: To understand types of multiplexing schemes, transmission media and functions of datalink layer.</p> <p>CO3: Identify the network devices working at various layers, media access layer and protocols.</p> <p>CO4: To implement switching and routing algorithms like RIP, OSPF etc. and addressing schemes.</p> <p>CO5: To decide the right client server protocols to be used in the real-life scenario.</p>
Python Programming	<p>CO1: To develop small applications using basic concepts, values &amp; expressions, various control &amp; conditional statements and Looping.</p> <p>CO2: To use and implement built-in functions and User defined Functions along with different string methods.</p> <p>CO3: To use new datatypes such as Lists, Tuples and dictionaries, Create and handle Exceptions and how to deal with files.</p> <p>CO4: To create classes and objects, implement use of regular expression and multithreaded programming.</p> <p>CO5: To develop GUI applications with database connectivity.</p>
Data Structures	<p>CO1: Understand how arrays can be efficiently used to store linear sets of similar type of data and perform various operations like searching, sorting, merging, reversing etc.</p> <p>CO2: Interpret Linked List data structure to store data in non-linear form for effective utilization of memory, to solve problems like polynomial equations.</p>



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	<p>CO3: Design stack and queue data structures and learn basic operations to be performed. Solve various problems using stacks and queues.</p> <p>CO4: Apply various sorting and searching techniques on arrays and to create various types of trees and their applications like Huffman Algorithm, binary search tree etc.</p> <p>CO5: Understand Hashing techniques including collision techniques and to study graphs and their different operations and its traversals.</p>
Database Management System	<p>CO1: To design the model of database using required data Models.</p> <p>CO2: To demonstrate the concepts of Normalization and Relational Algebra operations on the database.</p> <p>CO3: To apply constraints on the values of DB also can apply different sub queries and triggers to get the desired result from the database.</p> <p>CO4: To understand the concept of Transaction management and Concurrency Control.</p> <p>CO5: To implement PL/SQL blocks with Exception Handling, cursors, procedures, functions and packages to create the database for their project.</p>



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -IV</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Introduction to Embedded Systems	<p>CO1: Understand the basic concepts of embedded systems.</p> <p>CO2: Familiarize with characteristics and attributes of embedded systems.</p> <p>CO3: Demonstrate knowledge and understanding of hardware software co design techniques for microcontroller based embedded systems.</p> <p>CO4: Program microcontrollers in C using IDE and debugging techniques.</p> <p>CO5: Design, Development and planning of embedded systems-based projects.</p>
Computer Graphics and Animation	<p>CO1: To provide an overview of the Computer Graphics field. To describe the important input &amp; output graphics devices. To understand applications of Computer Graphics, different Scanning techniques.</p> <p>CO2: Develops theory of 2D, 3D transformation and describes various types of 2D, 3D transformations.</p> <p>CO3: Learning the basics of 3D Viewing &amp; projections, basics of lights and color.</p> <p>CO4: To compare different algorithms for removal of hidden lines and surfaces. It tells how to design and smooth surfaces.</p> <p>CO5: To Interpret the overviews of animation along with its types and techniques.</p>
Computer Oriented Statistical Techniques	<p>CO1: Able to summarize the information present in the given data set and gives an idea around which value the data observation is clustered.</p> <p>CO2: Understand the complementary relationship of skewness with measures of central tendency and dispersion in describing a set of data.</p> <p>CO3: To be able to infer information about a population from samples drawn from it. And, to make decisions about populations based on sample information.</p> <p>CO4: To determine whether the difference between the observed and expected values is statistically significant.</p> <p>CO5: Able to identify the strength and direction of a linear relationship between two variables using correlation and to predict how much a dependent variable changes based on adjustments to an independent variable using regression.</p>
Core Java	<p>CO1: To learn program structure and basic concepts of java.</p> <p>CO2: To understand and apply OOP techniques to solve real world problems.</p> <p>CO3: To use and create packages and interfaces in a Java program.</p> <p>CO4: To implement Multithreading &amp; exception handling techniques in java.</p>





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	CO5: To design GUI application using Abstract Windows Toolkit.
Software Engineering	CO1: To learn basic concepts related to requirement engineering, different software development models, SRS document. CO2: To understand types of critical systems and learn about system models. CO3: To design and manage the software, different software architectural styles. CO4: To Verify and validate software and to estimate the cost of software. CO5: To learn about process improvement and different types of software engineering.



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -V</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Internet of Things	<p>CO1: Summarize the basic concepts of designing IOT devices and the Internet.</p> <p>CO2: Understand how prototypes can be created and electronic components required for creating the prototype.</p> <p>CO3: Understand prototyping the physical device and program on the device using online-programming components and protocols.</p> <p>CO4: To know the various techniques for writing embedded programs and different business models.</p> <p>CO5: To devise methods for mass production of IOT devices and learn about Ethics for IOT.</p>
Software Project Management	<p>CO1: To realize Project Management life cycle. To understand the various steps in Programme Management and Project Planning.</p> <p>CO2: To calculate the Software Effort Estimation.</p> <p>CO3: To do Project Planning and Risk assessment</p> <p>CO4: To think and analyze how Monitoring and Control can be implemented for various software projects.</p> <p>CO5: To realize the importance of Working in Teams.</p>
Artificial Intelligence	<p>CO1: Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.</p> <p>CO2: Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game-based techniques to solve them.</p> <p>CO3: Design good evaluation functions and strategies for game playing.</p> <p>CO4: Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving. Know how to build simple knowledge-based systems.</p> <p>CO5: Describe and implement several of the major approaches to classical planning, including planning graphs, POP, and propositionalizing.</p>
Linux System Administration	<p>CO1: Understand the duties of System Administrator, working on Command Line, understanding system administrator tasks, managing software.</p> <p>CO2: Configuring and managing storage, connecting to network, working with users, groups and permissions.</p> <p>CO3: Securing server with tables, setting up cryptographic services, configuring server for files sharing.</p> <p>CO4: Configuring DNS, DHCP, Mail Server, Apache.</p>



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	CO5: Bash shell scripting, high-availability clustering, setting up an installation server.
Next Generation Technologies	CO1: To Understand Bif Data Concepts and applications. To understand the role of MongoDB as NoSQL Database. CO2: To understand MongoDB data model and apply different CRUD operations to analyze unstructured data. CO3: To learn how data is stored in MongoDB and data writes happen using journaling. To list MongoDB's limitations and the use cases where it's not a good fit. CO4: To develop skills to write scripts that create interactive effects on websites using jQuery. CO5: To create and parse JSON data.



<b>Program Name and Semester</b>	<b>Bachelor of Science in Information Technology (B. Sc.IT) Semester -VI</b>
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<b>Course Name</b>	<b>Course Outcome</b>
Security in Computing	<p>CO1: Understand the basic design principles of security and know various security models</p> <p>CO2: Realise application of Symmetric Key Cryptography, Storage and Database Security</p> <p>CO3: Learn to design Secure Networks using the connecting devices</p> <p>CO4: Analyse the need of Intrusion Detection and Prevention Systems, Operating System Security Models.</p> <p>CO5: Evaluate feasibility of Virtualization and Cloud Computing for different types of data and Designing Secure Web Applications.</p>
Principles of Geographic's Information Systems	<p>CO1: To relate the real world and its representation of it using GIS.</p> <p>CO2: To understand and manage data and Processing Systems.</p> <p>CO3: To analyze Spatial Referencing and Positioning.</p> <p>CO4: To analyze Spatial data.</p> <p>CO5: To implement maps using QGIS software.</p> <p>CO6: To construct and analyze maps based on a particular area.</p>
IT Service Management	<p>CO1: To learn the basics of ITSM, Life Cycle of ITSM and principles of Service Strategy.</p> <p>CO2: To understand fundamentals of service design, principles, processes and challenges faced during service design.</p> <p>CO3: To understand fundamentals of service transition, principles, processes and challenges faced during service transition.</p> <p>CO4: To learn fundamentals of service operations, principles, processes and challenges faced during service operation.</p> <p>CO5: To understand principles, process of Continual Service Improvement and implementation of Continual Service Improvement.</p>
Cyber Laws	<p>CO1: To learn about Power of Arrest Without Warrant Under the IT Act, 2000, Cyber Crime and Criminal justice: Penalties, Adjudication and appeals Under the IT Act, 2000.</p> <p>CO2: To learn about Contracts in the InfoTech World and Jurisdiction in the Cyber World.</p> <p>CO3: Implementation of Copyright Protection in the Cyber world.</p> <p>CO4: To interpret real problems in the virtual World along with Digital Signatures, Certifying Authorities and E-Governance.</p> <p>CO5: Protection of cyber consumers in India and The Indian Evidence Act of 1872 vs Information Technology act.</p>
Business Intelligence	<p>CO1: To understand active forms of support for decision making based on the systematic adoption of mathematical models.</p> <p>CO2: To understand applications of data mining and business</p>



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	<p>intelligence in the fields like relational marketing, and models like salesforce planning.</p> <p>CO3: To understand knowledge management and its different activities.</p> <p>CO4: To create the phases of a data mining process and their objectives and the activities of data preparation.</p> <p>CO5: To develop models using classification and clustering methods.</p>

