



Jan Seva Sangh Sanchalit

Shri Ram College of Commerce

(Affiliated to University of Mumbai)

NAAC ACCREDITED BY "B"

ISO 9001:2015 Certified



Bachelor of Science
in Information
Technology
(B.SC.IT)

**Programme Outcome,
&
Course Outcome**



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PROGRAMME OUTCOME

PO1- To provide the students with skills to serve as Programmer or Software Engineer with sound knowledge of practical and theoretical concepts for developing software's

PO2- To provide the students with skills to serve as Computer Engineer with enhanced knowledge of computers and its building blocks.

PO3- Work as System Engineer and System integrator

PO4- To provide the students with skills to serve as System Administrator with thorough knowledge of DBMS.

PO5- Give Technical Support for various systems.

PO6- Work as Support Engineer and Technical Writer

PO7- Work as Consultant and Management officers for system management.

PO8- Work as IT Sales and Marketing person.

PO9- To provide the students with skills to serve as IT Officer in Banks and other Financial Institutions.

PO10 - To provide the students with skills to serve as Web Designer with latest web development technology

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COURSE OUTCOME - B. SC IT

1	Imperative Programming	<p>CO1- Provides a basic foundation for studying higher-level programming languages.</p> <p>CO2- It develops the ability to analyze a problem, develop an algorithm & flowchart to solve it which develops logical thinking</p> <p>CO3- Understand the working of looping, structures and pointers</p> <p>CO4- Apply basic programming skills strongly to enhance and hone programming skills</p>
2	Digital Electronics	<p>CO1- Understand the concepts of various components to design stable digital circuits.</p> <p>CO2- Students get knowledge of different types of number systems, their conversion and arithmetic operations.</p> <p>CO3- Examine and solve Karnaugh maps, Boolean expression</p> <p>CO4- Differentiate between the working of various flip-flops, counters, shift-registers and its application</p>
3	Operating Systems	<p>CO1- Become aware of the issues in the management of resources like processor, memory and input-output.</p> <p>CO2- To understand various issues in Inter-Process Communication (IPC) and the role of OS in IPC</p> <p>CO3- Distinguish between various file systems of Windows and Unix</p> <p>CO4- Associate with case studies about different operating systems, virtualization and its related concepts</p>

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4	Discrete Mathematics	CO1- To provide an overview of the theory of discrete objects, starting with relations and partially ordered sets. CO2- Study recurrence relations, generating function and operations on them.
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		<p>CO3- Infer the basics of mathematical induction, graphs and trees that are applied in various domains of IT.</p> <p>CO4- widely applied in Data Structures and areas of Artificial Intelligence.</p>
5	Communication Skills	<p>CO1- To understand and apply knowledge of human communication and language processes e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple angles.</p> <p>CO2: Identify and Assess ethical, legal, cultural aspects affecting business communication</p> <p>CO3: Collaborate skills with respect to technical writing effectively.</p> <p>CO4-Demonstrate verbal and non-verbal ability for effective communication.</p>
		SEM II
1	Object-oriented Programming	<p>CO1- It develops the ability to analyze a problem, develop an algorithm.</p> <p>CO2- Flowchart to solve it which develops their logical thinking</p> <p>CO3: Apply object-oriented programming skills for all advanced programming languages</p> <p>CO4-Differentiate between procedural and object-oriented programming languages</p>
2	Microprocessor Architecture	<p>CO1- To understand the concepts and architecture of embedded systems, the basics of microcontrollers.</p> <p>CO2-Apply various instructions and operations on microprocessor</p> <p>CO3: Compare about the various processor like SPARC, Pentium, Intel i3, i5 and i7</p> <p>CO4-Describe about the working of the basic 8085 microprocessor.</p>

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3	Web Programming	CO1- To provide insight into emerging technologies to design and develop state of - the art web applications using client-side scripting, server-side scripting, and database connectivity. CO2: Implement php and java script programming CO3: Develop web technologies skillset for creating static and dynamic websites.
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		CO4- Study and interpret basic html tags under HTML5.
4	Numerical and Statistical Methods	CO1- To understand the theory of probability, the concept of the random variable, some special distributions, some interpolation methods, and some methods of numerical integration and differentiation. CO2- Understand how mathematical models can be formulated on the basis of scientific principles to simulate the behaviour of a simple physical system CO3- Learn approximate roots through iteration method and implementation in programming language. Learn integration and differentiation through iterative method.

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5	Green Computing	<p>CO1- To understand what Green IT is and how it can help improve environmental Sustainability.</p> <p>CO2- To Understand the use of computing devices in a way as to attain economic viability</p> <p>CO3- Understand how Green computing practices include the development of environmentally sustainable production practices, energy efficient computers and improved disposal and recycling procedures.</p> <p>CO4- Understand the importance of Green Computing in the design and manufacturing stages of EEE.</p>
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SEMESTER III		
1	Python Programming	<p>CO1-Understand the basics of writing and running Python scripts.</p> <p>CO2-Learn advanced features such as File operations, regular expressions, working with binary data and using the extensive functionality of Python programming with GUI interface.</p> <p>CO3: Assess methods to go paperless and know various initiatives and standards for green computing</p> <p>CO4-Mini project should be submitted by the learner incorporating the theoretical concepts related to green computing</p>
2	Data Structures	<p>CO1- To impart the basic concepts of data structures and algorithms, understand concepts about searching and sorting techniques, understand basic concepts about stacks, queues, lists, trees and graphs,</p> <p>CO2-Understand writing algorithms and step by step approach to solving problems with the help of fundamental data structures.</p> <p>CO3: Implement trees, various hashing techniques and graph for various applications</p> <p>CO4-Compare various sorting and searching techniques used in data structure</p>

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3	Computer Networks	<p>CO1- To provide comprehensive insight into developing wired networks running on live internet.</p> <p>CO2- Briefly study different network devices their configuration and how to address IP to host on the network.</p> <p>CO3- Protocols and their usage with different applications browsing on the internet</p> <p>CO4- Demonstrate the TCP/IP protocol suite</p>
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4	Database Management Systems	<p>CO1- To describe a sound introduction to the discipline of database management systems, give a good formal foundation on the relational model of data</p> <p>CO2- Usage of Relational Algebra, introduce the concepts of basic SQL as a universal Database language and enhance knowledge to advanced SQL topics like embedded SQL.</p> <p>CO3: Use relational algebra to construct queries and will be able to apply complex queries.</p> <p>CO4-Build indexing mechanism for efficient retrieval of data from database systems</p>
5	Applied Mathematics	<p>CO1- The course is aimed to develop the basic Mathematical skills of students that are imperative for effective understanding of engineering subjects</p> <p>CO2- Topics introduced will serve as basic tools for specialized studies in many fields of engineering and technology.</p> <p>CO3-Apply integral, double integral to various applications</p> <p>CO4- Use matrices and complex numbers</p>
SEMESTER IV		
1	Core Java	<p>CO1- The objective of this course is to teach the learner how to use the Object-Oriented paradigm to develop code</p> <p>CO2-understand the concepts of Core Java and cover-up with the pre-requisites of Core java.</p> <p>CO3- understand the Use object-oriented concepts for problem solving real-life applications</p> <p>CO4- Understand the Use IDE to test java programs</p>

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2	Introduction to Embedded Systems	CO1: Understand the differentiate between general purpose and embedded systems CO2: Understand the discuss the characteristics and quality attributes of embedded systems CO3: Apply 8051 programming concepts to implement in hardware CO4- Design and develop embedded systems.
3	Computer Oriented Statistical Techniques	CO1- The purpose of this course is to familiarize students with the basics of Statistics and R coding on the basic topic of Statistics. CO2- This will be essential for prospective

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		researchers and professionals to know these basics. CO3- Apply R programming language for various statistical findings CO4- Experiment with statistical theory, least square methods and correlation theory
4	Software Engineering	CO1- Understand Definition of software engineering CO2- To understand the nature of software development and software life cycle process models, agile software development, SCRUM, and other agile practices. CO3- Discuss various approaches to verification and validation of software including testing, measurements and estimation of software products. CO4- Apply software engineering principles and be aware of software models
5	Computer Graphics and Animation	CO1- To introduce the use of the components of a graphics system and become familiar with the building approach of graphics system components and algorithms related to them. CO2: To understand the various basic concepts in graphics like viewing, projection, transformation, scan conversion CO3- To understand Build simple animation projects by implementing various color models, concepts of planar surfaces and animation CO4- To understand Apply image processing basics and its methods like filtering and smoothing as its applications

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SEMESTER V		
1	Software Project Management	<p>CO1- To understand the need of project management and project management life cycle, project scheduling concept, and risk management associated with various type of projects.</p> <p>CO2- Understand the fundamental principles of Software Project management.</p> <p>CO3- Know the issues and challenges faced while doing Software project Management</p> <p>CO4- Understand reasons for failure of software projects fails and how to reduce failure probability</p>
2	Internet of Things	<p>CO1- To learn different protocols used in IOT and to learn the concepts of smart city development in IOT.</p> <p>CO2- Develop an understanding of the definition and significance of the Internet of Things.</p> <p>CO3- Know the practical use of devices in IoT Technology.</p> <p>CO4- Understand home automation in IoT.</p>
3	Advanced Web Programming	<p>CO1- This course is designed to give students the opportunity to enhance and enrich their skills in Web programming.</p> <p>CO2- Students will learn to develop Web applications that use three-tier architecture, session management, object-oriented techniques, and advanced database interactions.</p> <p>CO3- Students will learn Concepts such as advanced CSS concepts, rich interactive Web environments, authentication, and security will also be explored.</p>

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4	Artificial Intelligence	<p>CO1- This subject enables computers to perform such intellectual tasks as decision making, problem-solving, perception, and understanding of human communication.</p> <p>CO2- To understand basic proficiency in representing difficult real-life problems in a state-space representation so as to solve them using AI techniques like searching and game playing.</p> <p>CO3- Develop a basic understanding of the building blocks of AI as presented in terms of</p>
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		intelligent agents: Search, Knowledge representation, inference, logic, and learning. CO4- mplement a small AI system in a team environment.
5	Enterprise Java	CO1- The objective is to provide knowledge of advanced features of contemporary java which would enable them to handle complex programs relating to managing data and processes over the network. CO2- The major objective of this course is to provide a sound foundation to the students on the concepts, precepts, and practices, in a field that is of immense concern to the industry and business. CO3- Know how to connect any JDBC compliant database CO4- Able to implement the techniques for business application development.
		SEM VI
1	Software Quality Assurance	CO1- To understand basic software debugging methods, White box and Black box testing methods and techniques. CO2: Use benchmarking metrics to measure quality in software products. CO3: Apply verification and validation methods to ensure continuous quality improvement CO4- Know the methods and tools of testing and maintenance of software.

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2	Security in Computing	<p>CO1- To analyse and determine the present IT infrastructure, services and processes, of how to manage different attacks on data.</p> <p>CO2- Understand development, operation, maintenance, and retirement of software.</p> <p>CO3- Understand how to develop software, reduce cost of software and how to maintain quality of software.</p> <p>CO4- Know the methods and tools of testing and maintenance of software</p>
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3	Business Intelligence	<p>CO1- To understand the concept of data mining as an important tool for enterprise data management</p> <p>CO2- To understand the as a cutting-edge technology for building competitive advantage, to enable students to effectively identify sources of data</p> <p>CO3- To understand the process it for data mining and to make students well versed in all data mining algorithms, methods of evaluation and to impart knowledge of tools used for data mining.</p> <p>CO4- To understand the configure secure networks using different network security protocols</p>
4	Principles of Geographic Information Systems	<p>CO1- Maximize the efficiency of decision-making and planning. CO2- Provide efficient means for data distribution and handling. Elimination of redundant database- minimize duplication</p> <p>CO3- Understand concepts like data warehouses, design methods, data extracting, transforming and loading processes and OLAP systems.</p> <p>CO4- Learn to use basic BI tools, mathematical models.</p>

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5	IT Service Management	<p>CO1- To analyse and determine the present IT infrastructure, services and processes, create management practices that are futuristic in nature,</p> <p>CO2- To formulate a roadmap to elevate the state of the business, and create steps for the roadmap.</p> <p>CO3- Understand how to explore mapped data</p> <p>CO4- Know how to relate GIS with remote sensing technologies.</p>
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