

# **S. S. T. COLLEGE OF ARTS AND COMMERCE**

## ***Bachelor of Science (Computer Science)***

### ***Programme outcome***

<b>PO1</b>	An ability to apply knowledge of computing and mathematics appropriate to the discipline
<b>PO2</b>	An ability to identify, formulates, and develops solutions to computational challenges
<b>PO3</b>	An ability to design, implement, and evaluate a computational system to meet desired needs within realistic constraints
<b>PO4</b>	An ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals
<b>PO5</b>	An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession
<b>PO6</b>	An ability to communicate and engage effectively with diverse stakeholders
<b>PO7</b>	An ability to analyze impacts of computing on individuals, organizations, and society
<b>PO8</b>	Recognition of the need for and ability to engage in continuing professional development
<b>PO9</b>	An ability to use appropriate techniques, skills, and tools necessary for computing practice
<b>PO10</b>	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computational systems in a way that demonstrates comprehension of the trade-offs involved in design choices
<b>PO11</b>	An ability to apply design and development principles in the construction of software systems of varying complexity

# *Course Outcome*

*Sem -I*

## *Course: Soft Skill Development*

<b>C01</b>	To know about various aspects of soft skills and learn ways to develop personality
<b>C02</b>	Understand the importance and type of communication in personal and professional Environment
<b>C03</b>	To provide insight into much needed technical and non-technical qualities in career planning
<b>C04</b>	Learn about Leadership, team building, decision making and stress management

## *Course: Open Source Technologies*

<b>C01</b>	Upon completion of this course, students should have a good working knowledge of Open-Source ecosystem, its use, impact and importance
<b>C02</b>	This course shall help student to learn Open- Source methodologies, case studies with real life examples

## *Course: Descriptive Statistical Technique And Probability*

<b>C01</b>	Understand various quantitative & statistical methods
<b>C02</b>	Understand data and draw inference from data
<b>C03</b>	Calculate and interpret statistical values by using statistical tool (correlation & regression)
<b>C04</b>	Demonstrate an ability to apply various statistical tools to solve business problem

### ***Course: Database Management System***

<b>C01</b>	Students should be able to evaluate business information problems and find the requirements of a problem in terms of data
<b>C02</b>	Students should be able to design the database schema with the use of appropriate data types for storage of data in the database.

### ***Course: Discrete Mathematics***

<b>C01</b>	Ability to apply mathematical logic to solve problems
<b>C02</b>	Understand sets, relations, functions and discrete structures
<b>C03</b>	Able to use logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions
<b>C04</b>	Able to formulate problems and solve recurrence relations
<b>C05</b>	Able to model and solve real world problems using graphs and trees

### ***Course: Introduction To Programming With Python***

<b>C01</b>	Students should be able to understand the concepts of programming before actually starting to write programs
<b>C02</b>	Students should be able to develop logic for Problem Solving
<b>C03</b>	Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc
<b>C04</b>	Students should be able to apply the problem solving skills using syntactically simple language

### ***Course: Computer Organization and Design***

<b>C01</b>	To understand the structure and operation of modern processors and their instruction sets
<b>C02</b>	It understands various programming languages that support instruction set architecture
<b>C03</b>	To explore and understand the concepts of main components of a processor
<b>C04</b>	Knowledge of fundamentals concepts of pipeline and vector processing

## **Sem 2**

### **Course: Calculus**

<b>C01</b>	Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions
<b>C02</b>	Ability to appreciate real world applications which uses these concepts
<b>C03</b>	Skill to formulate a problem through Mathematical modeling and simulation

### **Course: Linux**

<b>C01</b>	Upon completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution
<b>C02</b>	This course shall help students to learn advanced subjects in computer science practically
<b>C03</b>	Students shall be able to progress as a Developer or Linux System Administrator using the acquired skill set

### **Course: Statistical Methods And Testing Of Hypothesis**

<b>C01</b>	Enable learners to know descriptive statistical concepts
<b>C02</b>	Enable study of probability concept required for Computer learners

### **Course: Programming With C**

<b>C01</b>	Students should be able to write, compile and debug programs in C language
<b>C02</b>	Students should be able to use different data types in a computer program
<b>C03</b>	Students should be able to design programs involving decision structures, loops and functions
<b>C04</b>	Students should be able to explain the difference between call by value and call by reference
<b>C05</b>	Students should be able to understand the dynamics of memory by the use of pointers
<b>C06</b>	Students should be able to use different data structures and create/update basic data files

### ***Course: Programming With Python – II***

<b>C01</b>	Students should be able to understand how to read/write to files using python
<b>C02</b>	Students should be able to catch their own errors that happen during execution of programs
<b>C03</b>	Students should get an introduction to the concept of pattern matching
<b>C04</b>	Students should be made familiar with the concepts of GUI controls and designing GUI applications
<b>C05</b>	Students should be able to connect to the database to move the data to/from the application
<b>C06</b>	Students should know how to connect to computers, read from URL and send email

### ***Course: Data Structure***

<b>C01</b>	Learn about Data structures, its types and significance in computing
<b>C02</b>	Explore about Abstract Data types and its implementation
<b>C03</b>	Ability to program various applications using different data structure in Python

### ***Course: Green Technologies***

<b>C01</b>	Learn about green IT can be achieved in and by hardware, software, network communication and data center operations
<b>C02</b>	Understand the strategies, frameworks, processes and management of green IT

### **Sem 3**

#### **Course: Combinatorial And Graph Theory**

<b>CO1</b>	Demonstrate the knowledge of Fundamental concepts in graph theory, including properties and characterization of graphs and trees
<b>CO2</b>	Use graphs for solving real life problems
<b>CO3</b>	Distinguish between planar and non-planar graphs and solve problems
<b>CO4</b>	Develop efficient algorithms for graph related problems in different domains of engineering and science

#### **Course: Physical Comp & IOT Prog**

<b>CO1</b>	Enable learners to understand System on Chip Architectures
<b>CO2</b>	Introduction and preparing Raspberry Pi with hardware and installation
<b>CO3</b>	Learn physical interfaces and electronics of Raspberry Pi and program them using practical
<b>CO4</b>	Learn how to make consumer grade IoT safe and secure with proper use of protocols

#### **Course: Database Management System**

<b>CO1</b>	Students should be able to understand the concepts of programming before actually starting to write programs
<b>CO2</b>	Students should be able to develop logic for Problem Solving
<b>CO3</b>	Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc

### ***Course: Core Java***

<b>C01</b>	Object oriented programming concepts using Java
<b>C02</b>	Knowledge of input, its processing and getting suitable output
<b>C03</b>	Understand, design, implement and evaluate classes and applets
<b>C04</b>	Knowledge and implementation of AWT package

### ***Course: Theory Of Computation***

<b>C01</b>	Understand Grammar and Languages
<b>C02</b>	Learn about Automata theory and its application in Language Design
<b>C03</b>	Learn about Turing Machines and Pushdown Automata
<b>C04</b>	Understand Linear Bound Automata and its applications

### ***Course: Web Programming***

<b>C01</b>	To design valid, well-formed, scalable, and meaningful pages using emerging technologies
<b>C02</b>	Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
<b>C03</b>	To develop and implement client-side and server-side scripting language programs
<b>C04</b>	To develop and implement Database Driven Websites
<b>C05</b>	Design and apply XML to create a markup language for data and document centric applications

### ***Course: Operating System***

<b>C01</b>	To provide an understanding of the operating system, its structures and functioning
<b>C02</b>	Develop and master understanding of algorithms used by operating systems for various purposes

## Sem 4

### *Course: Fundamental Of Algorithm*

<b>C01</b>	Understand the concepts of algorithms for designing good program
<b>C02</b>	Implement algorithms using Python

### *Course: Advanced Java*

<b>C01</b>	To remember the concepts of Core Java
<b>C02</b>	Understand the concepts related to servlets of Java Technology
<b>C03</b>	To use of Java Server Programming
<b>C04</b>	Students should create applications using Java Beans, MVC Architecture & JDBC

### *Course: Computer Networks*

<b>C01</b>	Learners will be able to understand the concepts of networking, which are important for them to be known as networking professionals
<b>C02</b>	Useful to proceed with industrial requirements and International vendor certifications

### *Course: Software Engineering*

<b>C01</b>	To provide knowledge of software engineering discipline
<b>C02</b>	To analyze risk in software design and quality
<b>C03</b>	To introduce the concept to advance software methodology

### *Course: Net Technologies*

<b>C01</b>	Understand the .NET framework
<b>C02</b>	Develop a proficiency in the C# programming language
<b>C03</b>	Proficiently develop ASP.NET web applications using C#.
<b>C04</b>	Use ADO.NET for data persistence in a web application

### ***Course: Linear Algebra Using Python***

<b>C01</b>	Appreciate the relevance of linear algebra in the field of computer science
<b>C02</b>	Understand the concepts through program implementation
<b>C03</b>	Instill computational thinking while learning linear algebra

### ***Course: Android Developer Fundamentals***

<b>C01</b>	Understand the requirements of the Mobile programming environment
<b>C02</b>	Learn about basic methods, tools and techniques for developing Apps
<b>C03</b>	Explore and practice App development on Android Platform
<b>C04</b>	Develop working prototypes of working systems for various uses in daily lives

## **Sem-V**

### **Course: Information And Network Security**

<b>CO1</b>	To provide students with knowledge of basic concepts of computer security including network security and cryptography
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### **Course: Game Programming**

<b>CO1</b>	Learners should get the understanding of computer Graphics programming using DirectX or OpenAL along with the VR and AR they should also be aware of GPU, newer technologies and programming using the most important API for windows
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### **Course: Software Testing And Quality Assurance**

<b>CO1</b>	Understand various software testing methods and strategies
<b>CO2</b>	Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software
<b>CO3</b>	Design SQA activities, SQA strategy, formal technical review report for Software quality control and assurance

### **Course: Artificial Intelligence**

<b>CO1</b>	To impart knowledge about Artificial Intelligence
<b>CO2</b>	To give understanding of the main abstractions and reasoning for intelligent systems
<b>CO3</b>	To get a clear understanding of AI and different search algorithms used for solving problems
<b>CO4</b>	To enable the students to understand the basic principles of Artificial Intelligence in various applications

### **Course: Web Services**

<b>CO1</b>	Emphasis on SOAP based web services and associated standards such as WSDL
<b>CO2</b>	Design SOAP based/ RESTful/ WCF services Deal with Security and QoS issues of Web Services

## **Sem-VI**

### **Course: Wireless Sensor Networks And Mobile Communication**

<b>CO1</b>	After completion of this course, the learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks
<b>CO2</b>	Also implement and evaluate new ideas for solving wireless sensor network design issues

### **Course: Digital Image Processing**

<b>CO1</b>	Learners should review the fundamental concepts of a digital image processing system
<b>CO2</b>	Analyze the images in the frequency domain using various transforms
<b>CO3</b>	Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques
<b>CO4</b>	They will be familiar with basic image processing techniques for solving real problems

### **Course: Ethical Hacking**

<b>CO1</b>	Learner will know to identify security vulnerabilities and weaknesses in the target applications
<b>CO2</b>	They will also know how to test and exploit systems using various tools and understand the impact of hacking in real time machines

### ***Course: Data Science***

<b>CO1</b>	The students should be able to understand & comprehend the problem and should be able to define suitable statistical methods to be adopted
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### ***Course: Cloud Computing***

<b>CO1</b>	Learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology
<b>CO2</b>	Learners should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc
<b>CO3</b>	They should explain the core issues of cloud computing such as security, privacy, and interoperability