

## COURSE AND PROGRAM OUTCOMES

### BCA (BACHELOR OF COMPUTER APPLICATIONS )

Course no : 1.1

Fundamental Of Computers

#### Objective:

This course is designed with an objective so that the students will be able to

- Discuss about computers and their applications.
- Explain fundamental concepts of computer hardware and software and become familiar with a variety of computer applications, including word processing, spreadsheets, databases, and multimedia presentations.
- Explore about computer viruses and the operating system environment, both Windows and Linux.

#### Learning Outcome:

At the end of the course, students are expected to be able to:

- Identify computer hardware and peripheral devices
- Familiar with software applications
- Discuss about file management
- Accomplish creating basic documents, worksheets, presentations and databases
- Distinguish the advantages and disadvantages of different operating systems
- Explore about the computer viruses.

Course no: 1.2

Course Name: Mathematics-I

#### Objective:

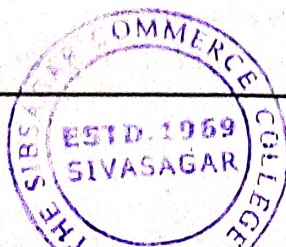
This course is designed with an objective to

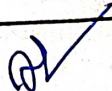
- Illustrate the ideas and techniques from discrete mathematics which are widely used in computer science.
- Introduce mathematical logic among students of Computer Science.
- Introduce set, function, relations, permutation and combinations which are used in database management, Programming Techniques, Turing Machine etc.
- Develop the use of matrix algebra techniques used in analyzing the relationship between the vertices of a graph and movement of robots and many other areas.

#### Learning outcomes

On completion of the course, the students will be able to:

- Define and explain various methods pertaining to Combinatorics, Matrix Algebra, Determinants and apply them through computer programs.
- Explain and apply the basic methods of discrete mathematics in Computer Science



  
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**Course no : 1.3**  
**Course Name: Digital Design**

**Objective:**

This course is designed with an objective, so that the students will be able to

- Describe the fundamental principles of digital design.
- Represent and manipulate decimal numbers in different coding systems.
- Gaining experience with several levels of digital systems, from simple logic circuits to *programmable logic devices and hardware description language, analysis and design* is another likely outcome

**Learning Outcome:**

After completion of this course ,the students will be able to

- Differentiate different number systems.
- Write Boolean algebra and the *operation* of logic components.
- *Construct logic circuit using logic gates.*
- Design both combinational and sequential logic circuits.

**Course No:1.4**

**Course Name: Communicative English and Personality Development**

**Objective:**

The course is designed with an objective to

- Acquire better communication skills.
- Have a better personality which can help in dealing with different situations.
- Have a positive attitude and constructive professional mind
- Listen for different needs and ideas

**Learning Outcome:**

On completion of the course, students will be able to:

- Exhibit professional attitude in their career perspectives.
- Show better communication skills
- Develop grooming techniques
- Build a constructive professional personality

**Course no: 1.5**

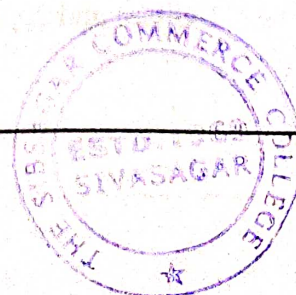
**Course Name: Programming with C**

**Objective:** The course is designed with an objective to

- Developing programming logic using C.

**Learning Outcome:** On completion of the course, students will be able to:

- Write programs using C as a language.
- Write the basic terminology used in computer programming



**Course no: 2.1**  
**Course Name: Mathematics-II**

**Objective:**

This course is designed with an objective to

- Describe problems of differential calculus and integral calculus.
- Introduce the idea of double and triple integral.
- Appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated.

**Learning outcome**

On completion of the course, students will be able to:

- Solve problems of differential calculus and integral calculus.
- Explain the idea of definite and multiple integrals.
- Find the Laplace and its inverse transforms of a function.

**Course Code: 2.2**  
**Course Name: Data Structures**

**Objective:** The course is designed with an objective to

- Demonstrate the major algorithms in data structures.
- Analyze performance of algorithms.
- Discuss which algorithm or data structure to use in different scenarios.
- Demonstrate the properties of various data structures such as stacks, queues, lists, trees.
- Demonstrate various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort, merge sort, quick sort.
- *Demonstrate understanding of various searching algorithms.*

**Learning Outcome:** On completion of the course, students will be able to:

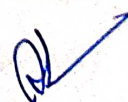
- Distinguish between linear and non-linear data structure.
- Apply non-linear data structure in appropriate areas.
- Apply various sorting and searching algorithms in different problems.

**Course No: 2.3**  
**Course Name: Accounting And Financial Management**

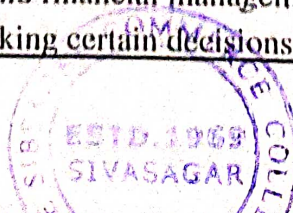
**Objective:**

This course is designed with an objective so that the students will be able to

- Discuss basics of accounts and accounting.
- Explain basics of finance and financial management.
- Apply financial tools for taking certain decisions.



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- Describe application of computer in accounting and finance

**Learning Outcome:**

- At the end of the course, students are expected to be able to discuss the concept of Accounting and Financial Management with practical Approach.

**Course Code :2.4**

**Course Name: Computer Architecture & Organisation**

**Objective:**

This course is designed with an objective to

- Describe the basic structure and operation of a digital computer.
- Describe the different ways of communicating with I/O devices and standard I/O interfaces

**Learning outcome:**

After completion of this course ,the students will be able to

- Describe different components of computer.
- Identify high performance architecture design.
- Develop independent learning skills and be able to illustrate more about different computer architectures and hardware.
- Create an assembly language program to program a microprocessor system.

**Course Code:2.5**

**Course Name: Object Oriented Programming Using Java**

**Objective:**

The course is designed with an objective to:

- Explain Object-Oriented programming concepts and techniques using Java Programs.
- Explain exception handling and multithreading in Java, Demonstrate core Java Programs.

**Learning Outcome:**

On completion of the course, students will be able to:

- Implement the OOP concepts of encapsulation, inheritance and polymorphism in java.
- Apply Java programming syntax, control structures and Java programming concepts.
- Develop Java programs.
- Differentiate Object Oriented approach from Procedural Approach

**Course no: 3.1**

**Course Name: Mathematics III**

**Objective:**

This course is designed with an objective to

- Introduce the basic notions of groups, rings, fields.
- Demonstrate graphs as a modeling tool in computer science.

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- Describe graph & tree concepts and their applications in network security.

### Learning outcome

On completion of the course, students will be able to:

- Describe algebraic structures like groups, ring and field.
- Define the notion of vector space and describe its various properties.
- Solve problems by applying graph theoretic results and algorithms

**Course Code: 3.2**

**Course Name: Formal Language and Automata Theory**

### Objective:

This course is designed with an objective to

- Identify different formal language classes and their relationships
- Design grammars and recognizers for different formal languages

### Learning Outcomes:

On completion of this course, the students will be able to:

- Design automata, regular expressions and context-free grammars accepting or generating a certain language;
- Make transformation between equivalent deterministic and non-deterministic finite automata, and regular expressions;
- Simplify automata and context-free grammars;
- Determine if a certain word belongs to a language or not.

**Course no.:3.3**

**Course Name: Software Engineering**

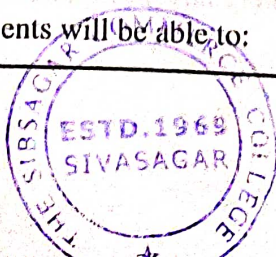
### Objective:

The course is designed with an objective to:

- Demonstrate software process models such as the waterfall and evolutionary models.
- Discuss the role of project management including planning, scheduling, risk management, etc.
- Define software engineering and explain its importance.

### Learning Outcome:

On completion of the course, students will be able to:



  
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- Create software from the root level starting from requirement gathering to maintenance with the appropriate SDLC.
- Define software engineering and explain its importance.
- Identify the processes to be followed in the software development life cycle.

**Course No:3.5**

**Course Name:Operating System**

**Objective:**

This course is designed with an objective to

- Discuss and explain the basic concepts of Operating System, process management, memory management, file management, Input / Output management and the potential problem of deadlocks.

**Learning Outcome:**

At the end of the course, students are expected to be able to:

- Describe the general architecture of computers,
- Describe, contrast and compare differing structures for operating systems,
- Analyze theory of processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O and files

**Course No:4.1**

**Course name - Introduction to Artificial Intelligence**

**Objective:**

The course is designed with an objective to

- Discuss about Artificial Intelligence and its importance.
- Explain Problems and Heuristic Searches.
- Illustrate Knowledge representation and Predicate logic.

**Learning Outcome:**

On completion of the course, students will be able to:

- Identify different types of AI agents.
- Apply various AI search algorithm
- Comprehend fundamentals of knowledge representation

**Course No: 4.2**

**Course Name: Database Management System**

**Objective:**

The course is designed with an objective to

- Construct simple and moderately advanced database queries using Structured Query Language (SQL)

- Apply logical database design principles, including E-R diagrams and database normalization.

**Learning Outcomes:**

On completion of this course, the student will be able to:

- Describe the principles of the relational database Access.
- Define and manipulate data using SQL
- Construct and normalize conceptual data models.

Course no:4.3

Course Name:Data Communication and Computer Network

**Objective:**

The course is designed with an objective to

- Introduce Data Communications and Computer Networks.
- Enable students to design and deployment of networks.

**Learning Outcome:**

On completion of the course, students will be able to:

- Describe various concepts of data communication and computer networks.
- Illustrate the Layers of ISO/OSI and TCP/IP reference model.
- Design , install and deploy networks

Course no: 4.4

Course Name:Scientific Computing using Mathematical Software

**Objective:**

This course is designed with an objective to

- Introduce numerical techniques that can be used on computers.
- Make the students develop computer programs.
- Interpret the reliability of numerical results,
- Explain the possible uses of numerical methods, matrices .

**Learning Outcomes:**

On completion of the course the student will be able to

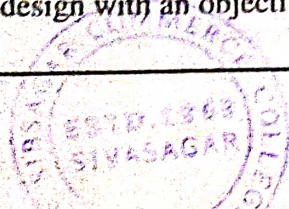
- Develop numerical methods that account for accuracy, convergence and stability.
- Design algorithms to solve numerical problems.
- Develop codes for numerical methods.

Course Code: 5.1

Course Name:Introduction to Computer Graphics

**Objective:**

The Course is design with an objective to:



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- Discuss different graphics packages, demonstrate functionality of display devices.
- Explain all aspects of computer graphics including hardware, software and applications.
- Illustrate how an animation is created.

**Learning outcome:**

On completion of this course students will be able to:

- Develop graphical algorithm to design different graphical pattern
- Design simple graphical pattern using C
- Resolve programming problem using graphics packages.

**Course Code: 5.2**

**Course Name: Operations Research**

**Objective:**

This course is designed with an objective to

- Discuss definition, scope, objectives, phases, models & limitations of operations research
- Analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively
- Explain graphical method, simplex method and duality.
- Solve transportation problem.
- Describe how to write case study report.

**Learning outcome**

On completion of the course students will be able to:

- Discuss the importance and value of Operations Research and mathematical modeling involving practical problems in industry.
- Model mathematically real life managerial decision making problems.
- Use computer tools to solve a mathematical model for a practical problem.
- Construct case study report.

**Course Code: 5.3**

**Course Name: Internet & Web Programming Technology**

**Objective:** The course is designed with an objective to

- Design a webpage using HTML and CSS.
- Make an interactive webpage using JavaScript.
- Use Server side scripting language to make a dynamic webpage.

**Learning Outcome:** On completion of the course, students will be able to:

  
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- Design dynamic and interactive web pages by embedding Java Script code in HTML and using Java Script to validate user input.
- Apply CSS in WebPages.
- Recognize the HTML and XML DOM.
- Create website using Server Side Scripting language.
  - Apply AJAX in WebPages.

**Course no:TH:5.4**

**Course Name:Cloud Computing**

**Objective:**

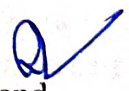
The course is designed with an objective to

- To introduce the broad perceptive of cloud architecture and model
- To understand the concept of Virtualization.
- To be familiar with the lead players in cloud.
- To understand the features of cloud simulator
- To apply different cloud programming model as per need.
- To be able to set up a private cloud.
- To understand the design of cloud Services.
  - To learn to design the trusted cloud Computing system

**Learning Outcome:**

On completion of the course, students will be able to:

- Compare the strengths and limitations of cloud computing
- Identify the architecture, infrastructure and delivery models of cloud computing
- Apply suitable virtualization concept.
- Choose the appropriate cloud player.
- Choose the appropriate Programming Models and approach.
- Address the core issues of cloud computing such as security, privacy and interoperability Design Cloud Services
- Set a private cloud



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## COURSE AND PROGRAM OUTCOMES :

### POST GRADUATE DIPLOMA OF COMPUTER APPLICATION (P.G.D.C.A.) COURSE

Course No: 101

Course Name: Fundamental of Computer

#### Objective:

The course is designed with an objective to

- Discuss about computers and their applications,
- Explain the concept of various number systems
- Explain fundamental concepts of computer hardware and software,
- Discuss the various operating system environments.
- Introduce the various features of Microsoft Office.

#### Learning Outcome:

On completion of the course, students will be able to

- Identify computer hardware and peripheral devices,
- Differentiate various number systems,
- Distinguish the advantages and disadvantages of various operating systems.
- Use Microsoft Office suite.

Course No: 102

Course Name: Programming with C

#### Objective:

The course is designed with an objective to

- Explain the fundamental concepts of C programming language.
- Demonstrate C coding.
- Explain the skills for problem solving using C Program.

#### Learning Outcome:

On completion of the course, students will be able to

- Comprehend fundamental concepts of C program.
- Develop C code for different problems.

Course No: 103

Course Name: Relational Database Management System

#### Objective:

The course is designed with an objective to

- Discuss the concept of database
- Explain data modeling and database design.
- Discuss the use of SQL

#### Learning Outcome:

On completion of the course, students will be able to

- Define database.
- Explain the advantages of database.
- Construct database model.
- Use RDBMS's back end and front end tools.

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**Course No: 104**

**Course Name: Data Communication and Computer Network**

**Objective:**

The course is designed with an objective to

- Introduce basics of Data Communications and Computer Networks

**Learning Outcome:**

On completion of the course, students will be able to

- Describe fundamental concepts of data communication and computer networks.
- Illustrate the Layers of ISO/OSI and TCP/IP reference model.

**Course No: 105**

**Course Name: Project I**

**Objective:**

The course is designed with an objective to

- Explain basics of system analysis and design.
- Implement the concepts of 1st semester courses.

**Learning Outcome:**

On completion of the course, students will be able to

- Comprehend fundamental concepts of system analysis and design
- Use and apply the concepts of courses of the 1st semester PGDCA programme.

**Course No: 201**

**Course Name: Introduction to Multimedia**

**Objective:**

The course is designed with an objective to

- Introduce the fundamental elements of multimedia.
- Describe how still images, sound, and video can be digitized on the computer.

**Learning Outcome:**

On completion of the course, students will be able to

- Summarize the key concepts in current multimedia technology.
- Create quality multimedia software titles.

**Course No: 202**

**Course Name: Desktop Publishing**

**Objective:**

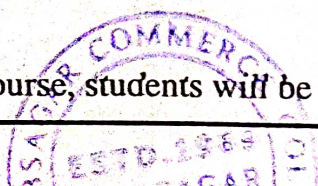
The course is designed with an objective to

- Introduce PageMaker, CorelDraw and Photoshop
- Explain the basics of different kinds of printings

**Learning Outcome:**

On completion of the course, students will be able to

  
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**Course No: 203**

**Course Name: Internet & Web Technology**

**Objective:**

The course is designed with an objective to

- Discuss different technology aspects of internet.
- Explain about importance of E-commerce, internet security,
- Explain how an internet works.
- Write program in HTML, java Scripts to design web pages

**Learning Outcome:**

On completion of the course, students will be able to

- Develop and publish web sites.
- Resolve Code and troubleshoot HTML web pages, incorporating CSS and JavaScripts.

**Course No: 204**

**Course Name: Mobile Technology**

**Objective:**

The course is designed with an objective to

- Discuss different mobile operating system.
- Discuss different methods for mobile application development.

**Learning Outcome:**

On completion of the course, students will be able to

- Explain different mobile operating system.
- Discuss various mobile technologies.
- Develop mobile applications.

**Course No: 205**

**Course Name: Project II**

**Objective:**

The course is designed with an objective to

- Implement the concepts in real life applications.

**Learning Outcome:**

On completion of the course, students will be able to

- Use and apply the concepts of courses of the PGDCA programme.

  
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