



PROGRAMME, PROGRAMME SPECIFIC & COURSE OUTCOMES 2016-17

B.Sc. (Computer Science)

Programme Outcomes (PO)

1. Enabled students to develop problem-solving techniques for complex scientific problems.
2. Developing abilities to apply the knowledge of mathematics, science, and computation.
3. Design solutions for multifaceted problems and design system components that meet the needs of society.
4. Create, select, and apply appropriate techniques, resources, and modern computing software.
5. Trained students to function effectively as an individual, team member, and leader

Programme Specific Outcomes (PSO)

1. Demonstrate mastery of Computer Science in the following core knowledge areas
 - Data Structures and Programming Languages
 - Databases, Software Engineering and Development
 - Computer Hardware and Architecture
2. Apply problem-solving skills and the knowledge of computer science to solve real-world problems.
3. Develop technical project reports and present them orally among the users

Course Outcomes (CO)

| S.NO | SEM | NAME OF THE COURSE | OUTCOMES |
|------|-----|--|---|
| 1 | I | Digital Computer Fundamentals and Microprocessor | <ul style="list-style-type: none">• Understand the number systems.• Understand the concept of gates.• Describe the architecture of the 8085 kits.• Differentiate various pin diagrams and structures.• Describe concepts of embedded systems like IO, |

| | | | |
|---|-----|-----------------------------------|--|
| | | | timers, interrupts, interaction with peripheral devices |
| 2 | | Practical – I (Microprocessor) | <ul style="list-style-type: none"> • Develop simple programs using 8085 microprocessor kit |
| 3 | II | Programming in C | <ul style="list-style-type: none"> • Analyze a computational problem and develop an algorithm/flowchart to find its solution. • Develop readable C programs with branching and looping statements, which use Arithmetic, Logical, Relational or Bitwise operators. • Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem. |
| 4 | | Practical – II (Programming in C) | <ul style="list-style-type: none"> • Write readable C programs with arrays, structure, or union for storing the data to be processed. • Write readable C programs which use pointers for array processing and parameter passing. • Develop readable C programs with files for reading input and storing output. |
| 5 | | SBEC – I (Basics of Internet) | <ul style="list-style-type: none"> • Understand the basic concepts and the usage of the internet, mail creation, online job applications, resume preparation, social networks, etc. • Use modern scientific tools and apply computer skills for creating innovative products. • Utilize computer knowledge in the field of global, economic, and societal context for sustainable development. |
| 6 | III | Programming in C++ | <ul style="list-style-type: none"> • Compare OOPS with other programming techniques. • Implement C++ programs with constructors and destructors. • Develop OOP involving polymorphism using operator overloading and method overloading. • Implement programs with code reusability using inheritance. • Develop Programs with file handling and templates. |
| 7 | | Data Structures and Algorithms | <ul style="list-style-type: none"> • Articulate the knowledge of basic data structures, their classifications, and their importance in computer programs. • Analyze and Implement various operations of different data structures in real-world problems. • Design and implement abstract data types such as linked lists, stacks, queues, and trees to solve the issues. • Understand and implement fundamental algorithms like searching and sorting in various real-time applications |

| | | | |
|----|----|---|--|
| 8 | | Practical - III (Data Structures using C++) | <ul style="list-style-type: none"> Acquire practical knowledge on the application of data structures. Determine appropriate linear/non-linear data structure operations for solving a given problem. Analyze and develop the program for real-world problems by using data structures. Develop functions to implement data structure operations. |
| 9 | IV | Programming in Java | <ul style="list-style-type: none"> Describe the features of Java. Design classes with object-oriented features. Describe advanced features of Java-like exception handling, multithreading, etc. Develop programs in JAVA featuring its core |
| 10 | | Practical - IV (Java) | <ul style="list-style-type: none"> Solve simple problems using the fundamental syntax and semantics of Java. Analyze and design Java programs using object-oriented principles. Develop simple GUI interfaces with event handling capabilities. Develop and debug java programs using an IDE. |
| 11 | | SBEC – II (Exploring on Word) | <ul style="list-style-type: none"> Able to create a new Word document, Save a file in Word. Able to reorganize text within a paragraph, make text italic, bold, or underlined. Able to change the size, font, and color of text, alignment of text, line spacing of the text. Understand the creation and formatting of numbered and unnumbered lists. Learn inserting text into header and footer, spelling, and grammar errors. Able to create, edit and format a table, insert images, hyperlink and watermark. |
| 12 | | Visual Programming | <ul style="list-style-type: none"> To introduce the concepts of visual and GUI programming using Microsoft foundation classes. To enable the students to develop programs and simple applications using Visual C++. |
| 13 | V | Operating Systems | <ul style="list-style-type: none"> Learn operating system structures and processor management. Familiarize inter-process synchronization in operating systems. Familiarize concepts of memory management that include virtual memory. Implement a file system and risk management. |
| 14 | | Software Engineering | <ul style="list-style-type: none"> Understand different software process models. Identify software requirements engineering activities. Develop the skills necessary for software design. |

| | | | |
|----|----|--|--|
| | | | <ul style="list-style-type: none"> Assimilate the knowledge of software testing strategies. Enumerate different software estimation and project scheduling techniques. |
| 15 | | Elective – I: Computer Networks | <ul style="list-style-type: none"> Understand the basic concept of Data communication. Understand the concept of OSI Layers. Learn different protocols in all layers. Understand the concept of security in networks. |
| 16 | | Practical – V (VB) | <ul style="list-style-type: none"> Design and execute a simple calculator. Design, create and debug employee salary calculation, Students Mark sheet. Compute Electricity bill and library management systems. Implement VB application with back-end database application for data processing. |
| 17 | | SBEC – III (MS Access) | <ul style="list-style-type: none"> Able to examine database concepts and explore the Microsoft Office Access environment. Able to design a simple database. Understand to build a new database with related tables. Learn to manage the data in a table. Understand Query a database using different methods. Able to design a form. Able to generate a report. Understand importing and exporting data. |
| 18 | | SBEC – IV (Soft Skills) | <ul style="list-style-type: none"> Effectively communicate through verbal/oral communication, and 210249 improve the listening skills. Write precise briefs or reports and technical documents. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. Become a more effective individual through goal/target setting, self-motivation, and practicing creative thinking. |
| 19 | VI | Relational Database Management Systems | <ul style="list-style-type: none"> List the different issues involved in the design and implementation of a database system. Give a Study report on the physical and logical database designs, database modeling, relational model. Use data manipulation language to query, update, and manage a database. Understand and database normalization concepts and design a normalized database. Understand programming in PL/SQL. |

| | | |
|----|--|--|
| 20 | Web Designing | <ul style="list-style-type: none"> On successful completion of the course, the students should have understood the fundamentals of Web design and how to program using HTML, ASP, and XML |
| 21 | Elective – II: E-Commerce | <ul style="list-style-type: none"> To define E-Commerce, Types, and components of I way. To explain Electronic Data Interchange and Workflow automation. To define Network Firewall Security and Client-server Security. To explain Consumer-Oriented Application and mercantile Oriented Application. To define electronic payment systems and smart cards and Credit Card. |
| 22 | Elective – III: Data Mining and Ware housing | <ul style="list-style-type: none"> Understand operational database, Data warehousing, the need for a database to meet industrial needs. Identify the components in typical Data warehouse Architecture and understand the multidimensional schemas for the data warehouse. Understand the knowledge about data mining, decision tree, generic algorithms, and the Fuzzy set approach. To introduce the knowledge about data mining and clustering methods. |
| 23 | Practical - VI (Web Designing) | <ul style="list-style-type: none"> Familiarity with internet access, web browsing, and hypertext. Usage of the search engine and Electronic Mail. To use the lists and add images in HTML. Creating a link within a web page and a table. Create links to Audio and Video Files. |
| 24 | SBEC –V (Excel & PowerPoint) | <ul style="list-style-type: none"> Able to create a new excel file, add data to a table, apply table and cell styles, change cell format. Able to add, delete, and move columns and rows, change the width of columns and rows, use Flash Fill. Able to use AutoSum option and other functions and formulas in excel. Able to sort and filter data in a table. Understand to create charts and graphs. Able to create and save a new presentation, add images and clip art, create and insert SmartArt. Understand to add videos and arrange objects. Learn to change the theme on presentations, change slide transition, and animation effects. Able to create charts and graphs in PowerPoint presentations. |

| | | | |
|----|--|-------------------|--|
| 25 | | SBEC –VI (Flash) | <ul style="list-style-type: none">• Learn basic concepts of 2D Animation, Storyboarding and create animated digital multimedia content for media using the tools and techniques available in the Adobe Flash software. |
|----|--|-------------------|--|

Programme Outcomes (PO)

1. To create, select, and apply appropriate techniques, resources, and modern computing and IT tools; that include prediction and modeling to complex scientific activities with limitations.
2. To apply to reason informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional practice.
3. To communicate society scientifically, we prepare students to write reports, design documents, make effective presentations, etc.
4. As a member or a team leader to face real-life situations demonstrated scientific management principles to manage projects in multidisciplinary environments.

Programme Specific Outcomes (PSO)

1. To communicate computer science concepts, designs, and solutions effectively and professionally.
2. To apply knowledge in computing and to produce effective design and solutions for specific problems.
3. To use software development tools, software systems, and modern computing platforms.

Course Outcomes (CO)

| S.NO | SEMESTER | NAME OF THE COURSE | OUTCOMES |
|------|----------|-----------------------------------|---|
| 1 | | Design and Analysis of Algorithms | <ul style="list-style-type: none">• Understand the number systems.• Understand the concept of gates.• Describe the architecture of the 8085 kits.• Differentiate various pin diagrams and structures.• Describe concepts of embedded systems like IO, timers, interrupts, |

| | | | |
|---|---|--|--|
| | | | interaction with peripheral devices |
| 2 | | Computer Architecture and Parallel Processing | <ul style="list-style-type: none"> • Develop simple programs using 8085 microprocessor kit |
| 3 | I | .NET Programming | <ul style="list-style-type: none"> • Analyze a computational problem and develop an algorithm/flowchart to find its solution. • Develop readable C programs with branching and looping statements, which use Arithmetic, Logical, Relational or Bitwise operators. • Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem. |
| 4 | | Object Oriented Analysis and Design | <ul style="list-style-type: none"> • Write readable C programs with arrays, structure, or union for storing the data to be processed. • Write readable C programs which use pointers for array processing and parameter passing. • Develop readable C programs with files for reading input and storing output. |
| 5 | I | Elective Course I: Software Project Management | <ul style="list-style-type: none"> • Understand the basic concepts and the usage of the internet, mail creation, online job applications, resume preparation, social networks, etc. • Use modern scientific tools and apply computer skills for creating innovative products. • Utilize computer knowledge in the field of global, economic, and societal context for sustainable development. |
| 6 | | Lab – I .Net Programming Lab | <ul style="list-style-type: none"> • Compare OOPS with other programming techniques. • Implement C++ programs with constructors and destructors. |

| | | | |
|---|----|--|--|
| | | | <ul style="list-style-type: none"> • Develop OOP involving polymorphism using operator overloading and method overloading. • Implement programs with code reusability using inheritance. • Develop Programs with file handling and templates. |
| 7 | II | Advanced Java Programming | <ul style="list-style-type: none"> • Articulate the knowledge of basic data structures, their classifications, and their importance in computer programs. • Analyze and Implement various operations of different data structures in real-world problems. • Design and implement abstract data types such as linked lists, stacks, queues, and trees to solve the issues. • Understand and implement fundamental algorithms like searching and sorting in various real-time applications |
| 8 | | Distributed Computing and Linux | <ul style="list-style-type: none"> • Acquire practical knowledge on the application of data structures. • Determine appropriate linear/non-linear data structure operations for solving a given problem. • Analyze and develop the program for real-world problems by using data structures. • Develop functions to implement data structure operations. |
| 9 | | Elective Course II: Client/Server Technology | <ul style="list-style-type: none"> • Describe the features of Java. • Design classes with object-oriented features. • Describe advanced features of Java-like exception handling, multithreading, etc. • Develop programs in JAVA featuring its core |

| | | | |
|----|-----|---|--|
| 10 | | Lab – II Linux Lab | <ul style="list-style-type: none"> • Solve simple problems using the fundamental syntax and semantics of Java. • Analyze and design Java programs using object-oriented principles. • Develop simple GUI interfaces with event handling capabilities. • Develop and debug java programs using an IDE. |
| 11 | | Lab – III Advanced Java Programming Lab | <ul style="list-style-type: none"> • Able to create a new Word document, Save a file in Word. • Able to reorganize text within a paragraph, make text italic, bold, or underlined. • Able to change the size, font, and color of text, alignment of text, line spacing of the text. • Understand the creation and formatting of numbered and unnumbered lists. • Learn inserting text into header and footer, spelling, and grammar errors. • Able to create, edit and format a table, insert images, hyperlink and watermark. |
| 12 | | Data Mining and Warehousing | <ul style="list-style-type: none"> • To introduce the concepts of visual and GUI programming using Microsoft foundation classes. • To enable the students to develop programs and simple applications using Visual C++. |
| 13 | III | Network Security and Cryptography | <ul style="list-style-type: none"> • Learn operating system structures and processor management. • Familiarize inter-process synchronization in operating systems. • Familiarize concepts of memory management that include virtual memory. • Implement a file system and risk management. |

| | | | |
|----|--|--|--|
| 14 | | Soft Computing | <ul style="list-style-type: none"> • Understand different software process models. • Identify software requirements engineering activities. • Develop the skills necessary for software design. • Assimilate the knowledge of software testing strategies. • Enumerate different software estimation and project scheduling techniques. |
| 15 | | Elective Course III: Mobile Computing | <ul style="list-style-type: none"> • Understand the basic concept of Data communication. • Understand the concept of OSI Layers. • Learn different protocols in all layers. • Understand the concept of security in networks. |
| 16 | | Elective Course IV: Principles of Programming Language | <ul style="list-style-type: none"> • Design and execute a simple calculator. • Design, create and debug employee salary calculation, Students Mark sheet. • Compute Electricity bill and library management systems. • Implement VB application with back-end database application for data processing. |
| 17 | | Lab-IV Mini project | <ul style="list-style-type: none"> • Able to examine database concepts and explore the Microsoft Office Access environment. • Able to design a simple database. • Understand to build a new database with related tables. • Learn to manage the data in a table. • Understand Query a database using different methods. • Able to design a form. |

| | | | |
|----|----|----------------------------|---|
| | | | <ul style="list-style-type: none"> • Able to generate a report. • Understand importing and exporting data. |
| 18 | IV | E-Technologies | <ul style="list-style-type: none"> • Effectively communicate through verbal/oral communication, and 210249 improve the listening skills. • Write precise briefs or reports and technical documents. • Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. • Become a more effective individual through goal/target setting, self-motivation, and practicing creative thinking. |
| 19 | | Digital Image Processing | <ul style="list-style-type: none"> • List the different issues involved in the design and implementation of a database system. • Give a Study report on the physical and logical database designs, database modeling, relational model. • Use data manipulation language to query, update, and manage a database. • Understand and database normalization concepts and design a normalized database. • Understand programming in PL/SQL. |
| 20 | | Dissertation and Viva-Voce | <ul style="list-style-type: none"> • On successful completion of the course, the students should have understood the fundamentals of Web design and how to program using HTML, ASP, and XML |