

Program Specific Outcome (PSO)

PSO1: Serve as the programmers or the software engineers with the sound knowledge of practical and theoretical concepts for developing software.

PSO2: Design, implements, test, and evaluate a computer system, component, or algorithm to meet desired needs and to solve a computational problem.

PSO-3: To enhance skills and adapt new computing technologies for attaining professional excellence, carrying research and pursue higher studies

Program Outcome (PO)

PO1: To develop problem solving abilities using a computer

PO2: To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.

PO3: To imbibe quality software development practices.

PO4: To train students in professional skills related to Software Industry.

PO5: To prepare necessary knowledge base for research and development in Computer Science

PO6: To help students build-up a successful career in Computer Science

COURSE OUTCOMES - 2020-2021

Course: B.Sc (Computer Science)

Course Code: U18

| S. No: | Course Code | Course Title | Outcomes |
|-------------------|-----------------|----------------------------------|---|
| SEMESTER-1 | | | |
| 1. | CCS 11 | Programming in C | <ul style="list-style-type: none">• The Student will be able to understand the concepts of Constants, Variables, and Data Types, Operators and Expressions• The Student will be able to understand the concepts of Managing Input and Output Operations, Decision Making and Branching, Decision Making and Looping.• The Student will be able to understand the concepts of Arrays, Character Arrays and Strings, User Defined Functions.• The Student will be able to understand the concepts of Structure and Unions, Pointers, File Management in C.• The Student will be able to understand the concepts of Fundamental Algorithms, Factoring Methods. |
| 2. | CPCS 13 | Programming in C Lab | <ul style="list-style-type: none">• Enhance the analyzing and problem solving skills and use the same for writing programs in C.• Write diversified solutions, draw flowcharts and develop a well-documented and indented program according to coding standards.• Learn to debug a given program and execute the C program.• To have enough practice the use of conditional and looping statements.• To implement arrays, functions and pointers. |
| 3. | CPE 10C | Professional English I | <ul style="list-style-type: none">• Students will be enabled to understand the basic objective of the course by being acquainted with specific dimensions of communication skills i.e. Reading, Writing, Listening, Thinking and Speaking.• Students will apply it for practical and oral presentation purposes by being honed up in presentation skills and voice-dynamics.• Students would be able to create substantial base by the formation of strong professional vocabulary for its application at different platforms and through numerous modes as Comprehension, reading, writing and speaking etc. |
| 4. | CAMA 15B | Mathematical Foundation I | <ul style="list-style-type: none">• To know about Logical operators, validity of arguments, set theory and set operations, relations and functions, Binary operations, Binary algebra, Permutations & Combinations, Differentiation, Straight lines, pair of straight lines, Circles, Parabola, Ellipse, Hyperbola. |
| SEMESTER-2 | | | |
| 5. | CCS 21 | C++ and Data Structure | <ul style="list-style-type: none">• The Student will be able to understand the concepts of object oriented programming. Apply structure and inline functions.• The Student will be able to understand the concepts of the types of inheritances and Applying various levels of Inheritance for real time problems apply the OOPs concepts class and object. Understand Explain the file concept and exception handlings in C++• The Student will be able to understand the concepts of Stacks and Queue using array and pointers.• The Student will be able to understand the concepts of Recursion, Binary Search Tree and graphs. |

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| | | | <ul style="list-style-type: none"> The Student will be able to understand the concepts of Sorting and Searching Algorithms. |
| 6. | CPCA 23 | C++ and Data Structure Lab | <ul style="list-style-type: none"> Understand the Creating and Deleting the Objects with the Concepts of Constructors and Destructors. Demonstrate the Polymorphism Concepts and Operator Overloading. Understand basic Data Structures such as Arrays, Linked Lists, Stacks, Queues, Doubly Linked List and Infix to Postfix Conversion. Apply Algorithm for solving problems like Sorting and Searching. Apply Algorithms and use Graphs and Trees as tools to visualize and simplify Problems |
| 7. | CPE 20C | Professional English II | <ul style="list-style-type: none"> Students will apply it at their work place for writing purposes such as Presentation/official drafting/administrative communication and use it for document/project/report/research paper writing. Students will be made to evaluate the correct & error-free writing by being well-versed in rules of English grammar & cultivate relevant technical style of communication & presentation at their work place & also for academic uses. Students will apply techniques for developing inter-personal communication skills and positive attitude leading to their professional competence. |
| 8. | CAMA 25B | Mathematical Foundation II | <ul style="list-style-type: none"> To know about Matrix Operations, Symmetric, Skew-Symmetric, Hermitian, Skew-Hermitian, Orthogonal, and Unitary Matrices. Rank of a Matrix Solutions of linear equations Consistency and Inconsistency, Characteristic roots and Characteristics Vectors, Cayley - Hamilton Theorem, Integration of rational functions, Integration by parts, Reduction formulae, Area and volume using integration, Planes, Straight lines, Spheres, Curves, Cylinders. |

SEMESTER-3

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| 7. | BCS31 | Java programming | <ul style="list-style-type: none"> Students are able to know about a General-purpose and purelyobjectoriented programming language including data types, control statements, and classes. Students are able to Secured, well-suited for internet programming using applets and GUI-based. |
| 8. | BSCS 32 | Statistical Methods and their Applications I | <ul style="list-style-type: none"> Organize, manage and present data. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events. Calculate and interpret the correlation between two variables. |
| 9. | BSCS 33 | Design & Analysis of Algorithm | <ul style="list-style-type: none"> Learn to solve problems in transportation and industries with machines To develop computational skill and logical thinking in formulating industry-oriented problems as a mathematical problem and finding solutions |
| 10. | BPCS 35 | Java Programming Lab | <ul style="list-style-type: none"> How to take the statement of a business problem and able to find the logic for solving the problem Use java APIs for program development |

SEMESTER-4

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| 11. | BCS 41 | Database Management Systems | <ul style="list-style-type: none"> Describe the database architecture and its applications Sketch the ER diagram for real world applications Uses various ER diagram for a similar concepts from various sources. Discuss about the relational algebra and calculus Construct various queries in SQL and PL/SQL Compiles various queries in SQL, Relational Calculus and Algebra. Describe the various normalization forms Apply the normalization concepts for a |
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| | | | <p>table of data Practices a table and implement the normalization concepts.</p> <ul style="list-style-type: none"> • Explain the storage and accessing of data. • Illustrate the query processing in database management. Define the concurrency control and deadlock concept |
| 12. | BACS 42 | Statistical Methods and their Applications II | <ul style="list-style-type: none"> • Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions. • Identify the type of statistical situation to which different distributions can be applied. • Identify the characteristics of different discrete and continuous distributions. |
| 13. | BSCS 43 | Computer Organization and Architecture. | <ul style="list-style-type: none"> • Students are able to identify the types of instructions and the organization of registers and memory • Students are able to describe the translation model of assembly language to machine language. • Students are able to understand the micro-program by mapping the instructions. |
| 15. | BPCS 45 | RDBMS Lab | <ul style="list-style-type: none"> • Design and Implement a database schema for a given problem domain. • Populate and Query a database using SQL DDL/DML Commands. • Build well formed in String Date/Aggregate Functions. • Design and Implement a database query using Joins, Sub-Queries and Set Operations. • Program in SQL including Objects (Functions, Procedures, Triggers). |
| SEMESTER-5 | | | |
| 16. | BCS 51 | Mobile Application Development | <ul style="list-style-type: none"> • This course aims to provide the students with a detailed knowledge on Mobile Application and Development and covers Android programming from fundamentals to building mobile applications for smart gadgets. |
| 17. | BCS 52 | Operating System | <ul style="list-style-type: none"> • Enable the student to get sufficient knowledge on various system resources. |
| 18. | BCS 53 | Data Communication & Networks | <ul style="list-style-type: none"> • To equip students to basics of Data Communication and prepare them for better computer networking |
| 19. | BECS 54A | Elective-I Data Mining | <ul style="list-style-type: none"> • Enable the student to get sufficient knowledge on mining the data |
| 20. | BECS 54B | Elective-I Computer Graphics | <ul style="list-style-type: none"> • To equip students to basics of computer drawing and prepare them for computer modelling of objects |
| 21. | BECS 54C | Elective-I Information Security | <ul style="list-style-type: none"> • To enable the student to understand various methodology available for securing information. |
| 22. | BSCS 55 | Software Engineering | <ul style="list-style-type: none"> • This course introduces the concepts and methods required for the construction of large software intensive systems. |
| 23. | BPCS 56 | Mobile Application Development | <ul style="list-style-type: none"> • Understand the installation of Android Development Kit • Design GUI for their simple applications • Perform multiscreen applications |

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| 24. | BPCS 57 | Operating system Lab | <ul style="list-style-type: none"> • Exposure to different OS. • Build 'C' program for process and file system management using system calls. • Choose the best CPU scheduling algorithm for a given problem instance. • Experiment with UNIX commands and shell programming. |
| SEMESTER 6 | | | |
| 25. | BCS 61 | Cloud Computing | <ul style="list-style-type: none"> • To enable the students to learn the basic functions, principles and concepts of cloud Systems. |
| 26. | BCS 62 | Open Source Programming | <ul style="list-style-type: none"> • To discuss techniques that can be effectively applied in practice about HTML5, JavaScript, PHP , CSS and Linux |
| 27. | BECS 63A | Elective –II Software Testing | <ul style="list-style-type: none"> • To make the student more proficient with error free software development. |
| 28. | BECS 63B | Elective –II Mobile Computing | <ul style="list-style-type: none"> • To impart good knowledge of wireless communication to students |
| 29. | BECS 63C | Elective –II Microprocessors and its applications | <ul style="list-style-type: none"> • To learn the architecture, programming, interfacing and rudiments of system design of microprocessors. |
| 30. | BECS 64A | Elective –III Internet of Things | <ul style="list-style-type: none"> • To prepare the student for better application of internet technology. |
| 31. | BECS 64B | Elective –III System Software | <ul style="list-style-type: none"> • To make the student to become more proficient with system programming |
| 32. | BECS 64C | Elective –III Multimedia systems | <ul style="list-style-type: none"> • This course presents the Introduction to Multimedia, Images & Animation and enables the students to learn the concepts of Multimedia. |
| 33. | BSCS 65 | ASP.NET | <ul style="list-style-type: none"> • Students to become well aware of .NET technology |
| 34. | BPCS 66 | Open Source Programming | <ul style="list-style-type: none"> • Explore different open source technology like Linux, PHP & MySQL with different packages. • Execute Linux commands for programming. |

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| | | Lab | <ul style="list-style-type: none">• Execute programs of PHP with MySQL connection |
| 35. | BPCS 67 | ASP.NET Lab | <ul style="list-style-type: none">• Create and modify multi-page Web Form applications that involve and demonstrate features such as flow control, the use of style sheets, state management, data access, data binding, security, and data verification and validation.• Create and modify simple web services. |

COURSE OUTCOMES - 2020-2021

Course: M.Sc (Computer Science)

Course Code: P15

| S. No: | Course Code | Course Title | Outcomes |
|--------------------------|-----------------|--|---|
| SEMESTER-1 | | | |
| 1. | DCS 11 | Relational Database Management System | <ul style="list-style-type: none">• Students are able to have a broad understanding of database concepts and database management system software• Students are able to have a high-level understanding of major DBMS components and their function• Students are able to model an application's data requirements using conceptual modelling tools like ER diagrams and design database schemas based on the conceptual model.• Students are able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.• Students are able to program a data-intensive application using DBMS APIs. |
| 2. | DCS 12 | Enterprise Java Programming | <ul style="list-style-type: none">• Students are able to develop Applet Programming using various techniques• Students are able to develop applications using Abstract Window Toolkit and Events• Students are able to update and retrieve the data from the databases using JDBC/ODBC• Students are able to develop server side programs in the form of Servlets• Students are able to build up Java Applications using collections and JSP Tags. |
| 3. | DCS 13 | Programming using C#.NET | <ul style="list-style-type: none">• Students are able to know the differences between desktop application and web application.• Students are able to construct classes, methods, and access modifier and instantiate objects.• Students are able to create and manipulate GUI components in C# for windows application.• Students are able to code solutions and compile C# projects within the .NET framework.• Students are able to build the desktop application with Database. |
| INTERNAL ELECTIVE | | | |
| 4. | DECS 14A | Computer Organization | <ul style="list-style-type: none">• Students are able to identify the types of instructions and the organization of registers and memory• Students are able to describe the translation model of assembly language to machine language.• Students are able to understand the micro-program by mapping the instructions.• Students are able to recognize the types of computer organizations.• Students are able to accept the better way of processing by Parallel and Vector processing |

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| | DECS 14B | Parallel Computing | <ul style="list-style-type: none"> • Students are able to compute speedup, efficiency, and scaled speedup of parallel computations, given appropriate data • Students are able to apply Amdahl's Law to predict the maximum speedup achievable from a parallel version of a sequential program, given its execution profile • Students are able to analyze the efficiency of a parallel algorithm • Students are able to explain the relative advantages and disadvantages of mesh, hypercube, and butterfly networks with respect to diameter, bisection width, and number of edges/node • Students are able to explain the advantages and disadvantages of constructing parallel computers using |
| | DECS 14C | Embedded System | <ul style="list-style-type: none"> • Students are able to understand basic concepts in the embedded computing systems area; • Students are able to determine the optimal composition and characteristics of an embedded system; • Students are able to understand what is a microcontroller, microcomputer, embedded system • Students are able to design and program an embedded system at the basic level; • Students are able to develop hardware-software complex with the use of the National Instruments products. |

5 .OPEN ELECTIVE

SEMESTER-2

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| 6 | DCS 21 | Advanced Enterprise Java Programming | <ul style="list-style-type: none"> • Students are able to work with JSP, JSF and Servlet using MVC approach. • Students are able to develop the web applications using the MVC framework provided by Apache Struts • Students are able to develop Enterprise web application using EJB. • Students are able to implement the Object-Relation Mapping technique using Hibernate • Students are able to gets knowledge of Aspect Oriented Programming using Spring and Spring MVC |
| 7 | DCS 22 | Design and Analysis of Algorithms | <ul style="list-style-type: none"> • Students are able to prove the correctness and analyze the running time of the basic algorithms for those classic problems. • Students are able to understand the basic knowledge of algorithm design and its implementation. • Students are able to learn the key techniques of Divide-and-Conquer and Greedy Method. • Students are able to recognize the concept of Dynamic Programming and its algorithms • Students are able to familiarize with Backtracking algorithms. • Students are able to understand Branch and Bound techniques for designing and analyzing algorithms. |
| 8 | DCS 23 | Web Application using C#.NET | <ul style="list-style-type: none"> • Students are able to know the differences between desktop application and web application. • Students are able to construct classes, methods, and access modifier and instantiate objects. |

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| | | | <ul style="list-style-type: none"> • Students are able to create and manipulate GUI components in C# for windows application. • Students are able to code solutions and compile C# projects within the .NET framework. • Students are able to build the desktop application with Database. |
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9 INTERNAL ELECTIVE

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| | DECS 24A | Human Computer Interaction | <ul style="list-style-type: none"> • Students are able to plan and Develop procedures and life cycle of Human Computer Interaction • Students are able to analyze product usage through appropriate assessments and testing techniques. • Students are able to apply the interface structure standards/rules for different users. • Students are able to encourage communication between understudies of brain science, structure, and software engineering on UI improvement projects. • Students are able to understand the intensity of HCI in the cutting edge world and the job it can play in advancing value, openness, and progress. |
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| | DECS 24B | Social Information N/W | <ul style="list-style-type: none"> • Students are able to clear understanding of real world applications • Students are able to comprehend the elements of the social network • Students are able to demonstrate and envision the social network • Students are able to understand the role of web in the social network • Students are able to apply the concept of social network in appropriate application |
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| | DECS 24C | Cloud Computing | <ul style="list-style-type: none"> • Students are able to understand the broad perceptive of cloud architecture and model. • Students are able to understand the concept of parallel and distributed computing • Students are able to understand the different technologies. • Students are able to understand the features of virtualization. • Students are able to learn to design the trusted cloud computing system with different cloud platforms |
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10 OPEN ELECTIVE

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| 11 | DHR 20 | Human Rights | <ul style="list-style-type: none"> • Provides the student with the capacity to identify issues and problems relating to the realisation of human rights. • Strengthens the ability to contribute to the resolution of human rights issues and problems. • Also develops investigative and analytical skills. |
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SEMESTER III

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| 12 | MCS 31 | Distributed Operating System | <ul style="list-style-type: none"> • To provide hardware and software issues in modern distributed systems. • To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems. • To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed. |
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| | | | <ul style="list-style-type: none"> • To know about Shared Memory Techniques. • Have sufficient knowledge about file access. • Have knowledge of Synchronization and Deadlock. |
| 13 | MCS 32 | Software Project Development | <ul style="list-style-type: none"> • Apply information technology principles and practices to real-world solutions • Demonstrate effective use of written, verbal, and non-verbal communication, employing relevant knowledge, skills, and judgment in a business setting • Manage a simple project and be able to contribute to a more complex project as a team member • Program using one of at least two software languages to develop and evaluate software, hardware infrastructure, and network solutions to meet desired client outcomes • Work as a professional maintaining high standards of practice, making ethical/legal judgments and decisions, and sustaining a professional standing through a commitment to life-long learning • Develop and apply personal management and team member skills as a professional software developer • Demonstrate employability skills and a commitment to professionalism |
| 14 | MCS 33 | Mobile Computing | <ul style="list-style-type: none"> • The basics of mobile Computing • Functionality of Mobile IP and Transport Layer • Different types of mobile telecommunication systems • Demonstrate the Adhoc networks concepts and its routing protocols • Make use of mobile operating systems in developing mobile applications |
| 15 | MCS 34 | Design and analysis of Algorithms | <ul style="list-style-type: none"> • Apply design principles and concepts to algorithm design • Have the mathematical foundation in analysis of algorithms (a, j) • Understand different algorithmic design strategies (j) |
| 16 INTERNAL ELECTIVE | | | |
| | MCS 35A | Software Quality Assurance | <ul style="list-style-type: none"> • Develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software at low cost and with a small cycle time • Student learn systematic approach to the development, operation, maintenance, and retirement of software • Student learn how to use available resources to develop software, reduce cost of software and how to maintain quality of software |
| SEMESTER IV | | | |
| 17 | MCS 41 | Project Work and Viva Voce | <ul style="list-style-type: none"> • |