Mahatma Phule Shikshan Sanstha's

Karmaveer Bhaurao Patil College, Urun-Islampur

Department of B.Sc. Computer Science (Entire)

Program Outcomes and Course Outcomes

Academic Year 2024-25

Program Outcomes:

PO1	Disciplinary Knowledge: Graduates will gain in-depth understanding in their specific major or discipline, mastering the foundational principles and theories, as well as advanced concepts. Execute strong theoretical and practical understanding developed from the specific programme in the area of work.
PO2	Problem-Solving Skills: Graduates will learn to use their knowledge to identify, analyze, and solve problems related to their field of study.
PO3	Analytical Skills: Graduates will gain the ability to collect, analyze, interpret, and apply data in a variety of contexts. They might also learn to use specialized software or equipment.
PO4	Research Skills and Scientific temper: Depending on the field, graduates might learn how to design and conduct experiments or studies, analyze results, and draw conclusions. They might also learn to review and understand academic literature.
PO5	Communication Skills: Many programs emphasize the ability to communicate effectively, both orally and in writing. Graduates may

	learn to present complex information clearly and succinctly, write detailed reports, and collaborate effectively with others.
PO6	Ethics and Professionalism: Graduates may learn about the ethical and professional standards in their field, and how to apply them in real-world situations.
P07	Integration: Integrate knowledge of Computer Science with associated subjects like mathematics, statistics, electronics etc. to build and explore problem solving concepts.

Program Specific Outcomes:

- After completion students will be able to apply standard software engineering practices and strategies in software project development using an open-source programming environment to deliver a quality product for business success.
- Job Opportunities: The program addresses the job requirements in many domains such as web development, mobile development, Testing and one involving an assortment of hardware and software.
- Many graduates begin their careers as junior programmers and, after some experience, are promoted as system analysts. Others seek a n entrepreneurial role in the Information Technology world as independent business owners, software authors, consultants, or suppliers of systems and equipment.
- Career opportunities exist in such areas as software development and hardware integration, technical writing, training others on a computer, software design, software testing and technical support.
- The present curricula focus on the learning aspect from three dimensions viz. Conceptual Learning, Skills Learning and Practical / Hands-on.

Course Outcomes

➢ B.Sc.(C.S.) Entire Part-I (Sem I)

Course Title- : **C Programming**

Course Outcomes

After completing this course, student will be able to

1. The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
2. To help the students become the independent users of English language.
3. To develop in them vital communication skills which are integral to their personal, social and professional interactions..

Course Title- Operating System

Course Outcomes

CO1 Understand basic concepts of operating system, services and their structures.

CO2 Illustrate the concept of process and process life cycle and acquire the knowledge of CPU and I/O concepts.

CO3 Implement the issues and challenges of memory management and file management concept

CO4 Understand the concept of resource allocation and concept of deadlock with its prevention, avoidance, detection and recovery.

Course Title- : **Discrete Mathematics for Computer Science**

Course Outcomes

CO1 Apply basic counting principles and combinatorial arguments. CO2 Solve linear recurrence relations with constant coefficient. CO3 Analyze the logical structure of statements symbolically, including the proper use of logical connectives. CO4 Construct truth tables, prove or disprove a hypothesis and evaluate the truth of a statement using the principles of logic.

Course Title- Algebra

Course Outcomes

CO1 Apply fundamental concepts in Number theory to solve problems on congruence. CO2 Solve problems based on Fermat's theorem and residue classes. CO3 Use fundamental concepts in Mathematics like sets, relations and functions. CO4 learn basic concepts like poset, lattice, Boolean algebra and apply them to find CNF and DNF.

Course Title- Fundamental Electronics

Course Outcomes

CO1: Understand the concept of electronics components. CO2: Understand the transistor Applications. CO3: To study and understand the amplifier and oscillator concept. CO4: To study the concept of operational amplifier and Integrated circuit.

Course Title- : **Basic Digital Electronics**

Course Outcomes

CO1: Understand the concept of Number Systems, CO2: Understand different Computer Codes, CO3: Understand different Logic Gates & Boolean Algebra, CO4: Understand various Combinational Logic circuits,.

Course Title- Vedic Mathematics

Course Outcomes

CO1: To perform simple arithmetic calculations with speed and accuracy

CO2: To generate tables of any number

CO3: To perform products of large numbers quickly

Course Title- Business Statistics using MS Excel/Linux

Course Outcomes

i. perform the visual analysis of data by means of simple diagrams and graphs, also to locate outliers using Excel functions

ii. get basic knowledge of descriptive statistics for data analysis

iii. get the basic knowledge of concepts of spread of data and exhibit variation in data by computing measures of dispersion.

iv. get the knowledge of type and shape of frequency distribution using skewness and kurtosis measures

➢ B.Sc.(C.S.) Entire Part-I (Sem II)

Course Title- Advanced C Programming

Course Outcomes

CO1 Apply code reusability with functions and pointer, Implement string in C programs. CO2 Understand how to allocate memory at runtime using different memory allocation functions. CO3 Understand the need of structure and implement the structure with real life examples. CO4 Understand the basics of file handling mechanism and uses of preprocessors.

Course Title Essentials of Software Engineering

Course Outcomes

CO1 Understand the problem domain to choose process models correctly.

CO2 Choose software projects using appropriate design notations

CO3 Measure the product and process performance using various metrics.

CO4 Evaluate the system with various testing techniques and strategies

Course Title- Graph theory

Course Outcomes

CO1 Achieve command of the fundamental definitions and concepts of graph theory. CO2 Model problems using graphs and solve these problems algorithmically. CO3 Illustrate fundamentals of spanning tree, circuits and cut-sets.

CO4 Apply this knowledge in (especially) computer science applications.conditioning circuits, data converters & digital instruments.. CO4: Understanding of different Actuators, Data Acquisition Systems & Data loggers.

Course Title- Group and Coding Theory

Course Outcomes

CO1 Learn Group structure and its properties. CO2 Understand fundamental properties of sub-groups, cyclic groups, permutation groups. CO3 identify different types of group structure and apply them in Cryptography CO4 Compile the concepts, properties, aspects of Algebra and apply them in computer science.

Course Title- Sensors and Signal Conditioning

Course Outcomes

CO1: On completion of the course, the students will be able to: CO1: After completion of this course, student will be able to understand the sensors. CO2: Describe the working principle, selection criteria and applications of various transducers used in the instrumentation systems. CO3: Getting a knowledge of signal conditioning circuits, data converters & digital instruments.. CO4: Understanding of different Actuators, Data Acquisition Systems & Data loggers.

Course Title- Advanced Digital Electronics

Course Outcomes

CO1 Understand the Sequential Circuits like Flip-Flop, CO2 Understand the various digital Counters & Shift registers, CO3 Understand 8-bit Microprocessor-8085 architecture, CO4 Understand 8085-microprocessor Instruction set & assembly language programming.

Course Title- Business Statistics using MS Excel/Linux Practical – II

Course Outcomes

i. get the basic knowledge of bivariate data analysis by computing correlation coefficient and performing linear regression analysis.
ii. get the knowledge of discrete probability distributions.
iii. implement the probability distribution concepts using model sampling.
iv. acquire the insights of time series and index number theories with its application.

Course Title- Continues probability Distribution And Testing Hypothesis

Course Outcomes

CO1. to distinguish between random and non-random experiments. CO2. to find the probabilities of events. CO3. to obtain a probability distribution of random variable (one or two dimensional) in the given situation, and CO4. to apply standard discrete probability distribution to different situations CO5 Use Poisson, exponential distributions to solve statistical problems.

➢ B.Sc.(C.S.) Entire Part-II (Sem III)

Course Title- RDBMS with mysql

Course Outcomes

CO1.Understand the concept of Database, Database management system Concept of Data models Understand of MySQL with different Commands (Create, insert, select, update, Delete) Understand different SQL Operators, functions and clauses Design & develop proper database and get Knowledge of Sub Queries and Joins

Course Title- Object Oriented Programming

Course Outcomes

CO1.Understand basic concepts of object-oriented programming and Use of various control structures to improve programming logic. Design classes, objects and functions. CO2.Use constructor and destructor. Implement inheritance and polymorphism concept.

Course Title- Computer Organization

Course Outcomes

CO1.Understand code converters, digital comparators and counter design. Understand design of memory system with its expansion and mapping techniques. CO2.Understand various data transfer techniques in digital computer and the I/O interfaces. CO3.Understand the basics of register, stack, organization and study of ALU with instruction format.

Course Title- Computer Instrumentation

Course Outcomes

CO1.Describe the working principle, selection criteria and applications of various transducers used in instrumentation systems Gain knowledge about different type of signal conditioning circuits, data converters. CO2. Understand various types of Actuators and Data Acquisition systems. CO3.Understand construction, working principle of different types of digital instruments and display devices.

Course Title- Linear Algebra

Course Outcomes

CO1.Understand the concept of linear transformation and its application to real life applications. CO2.Evaluate mathematical expressions to compute quantities that deal with linear systems and eigenvalue problems.CO3. Analyze mathematical

statements and expressions. Reason mathematically. Understand the notion of vector space, subspace, basis

Course Title- Numerical Method

Course Outcomes

CO1.Understand how to find the roots of transcendental equations. CO2.Understand learn numerical solution of differential equations. CO3.Understand how to find the roots of transcendental equations. CO4.Understand how to interpolate the given set of values.

Course Title- HTML

Course Outcomes

CO1.. Understand basic as well as advanced concepts of HTML CO2. Understand basics of CSS to design a page. CO3. Design and develop website using HTML and CSS

Course Title- Environmental studies

Course Outcomes

CO1. An Environmental Studies major will be able to critically examine all sides of environmental issues and apply understanding from disciplines such as history, economics, psychology, law, literature, politics, sociology, philosophy, and religion to create informed opinions about how to interact with the environment on both a personal and a social level.

➢ B.Sc.(C.S.) Entire Part-II (Sem IV)

Course Title- Data Structure Using C++

Course Outcomes

CO1.Understand concept of data structure and concept of array operations and applications of array.CO2. Understand different sorting and searching algorithms for problem solving. CO3.Implement algorithms to solve problems using appropriate data structures. CO3.Understand implementations of linked list and basics of Trees

Course Title- System Analysis & Design

Course Outcomes

After completion of this course student should be able to Understand concept of system, life cycle of system, different fact-finding techniques in system analysis. Design different charting techniques like decision table, decision trees, ERD, DFD to develop a system Understand input and output design of a system and also different testing techniques. Design different systems using system development life cycle.

Course Title- Java Script

Course Outcomes

After completion of this course students should be able to: 1. Understand basics of Java Script 2. Design a web page to interact with user. 3. Handle different events like mouse, key, focus for user interaction. 4. Design web form using JQuery

Course Title- Microcontroller Architecture & Programming

Course Outcomes

CO1.Understand the architecture of 8051 microcontroller and its comparative family.CO2. Understand the detailed Instruction set of 8051 with addressing modes. CO3.Understand Facilities in 8051viz. Timer, Counter, Delay calculations and Serial Communication with its operating modes. Understand 8051 and Real-world interfacing using I/O peripherals.

Course Title- Principles of Electronics Communication

Course Outcomes

CO1.Understand the functioning of basic communication system. CO2.Understand the concept of basic analog modulation techniques. CO3.Understand digital modulation and demodulation techniques. CO4Understand wireless communication systems and mobile communication concept.

Course Title- Computational Geometry

Course Outcomes

CO1.Understand how to represent point, lines, transformations and matrices, CO2.Understand how to Various types of transformations. Solve multiple transformation and projection on three dimensional. CO3.Understand the concepts curve, its properties and B-spline curve

Course Title- Operation Research

Course Outcomes

CO1.To learn about characteristics, scope of operation Research. Understand the Assignment problem.CO2. Understand the Transportation problem Initial Solution and Optimization. CO3.To know the fundamental of game theory.

➢ B.Sc.(C.S.) Entire Part-III (Sem V)

Course Title- Core Java

Course Outcomes

CO1. Implement Object oriented concepts using java CO2. Develop Object oriented software application CO3. Develop multithreading applications CO4. Handle exceptions while executing programs

Course Title- C# Programming

Course Outcomes

CO1.Understand working of .Net Framework CO2. Demonstrate concept of object oriented programming using C# CO3. Study importance and applications of exception handling CO4. Understand working of file handling in C#.

Course Title- Software Engineering

Course Outcomes

CO1. Understand the problem domain to choose process models correctly. CO2. Choose software projects using appropriate design notations. CO3. Measure the product and process performance using various metrics. CO4. Evaluate the system with various testing techniques and strategies CO5. Able to analyze, design, verify, validate, implement, and maintain software systems.

Course Title- Data Communication

Course Outcomes

CO1. Identify key considerations in selecting various transmission media in networks. CO2. Familiar with switching and routing techniques in networking. CO3. Understand different data communication modes. CO4. Understand OSI model and networking protocols.

Course Title- PHP-Part-I

Course Outcomes

CO1. Identify basic PHP syntax CO2. Create basic PHP scripts CO3. Know how to send data to the Web Browser CO4. Apply variables, string, and constant to a PHP a script

Course Title- English for Communication III

Course Outcomes

CO1.comprehend communication process, methods of communication and flow of communication in business context.Apply acquired LSRW skills into real life situations and in professional context Compose effective business letters using standard language, style and structure

- **B.Sc.(C.S.) Entire Part-III (Sem VI)**

Course Title- Advance Java

Course Outcomes

CO1. Develop GUI using Java CO2. Handle Database connectivity using java CO3. Develop dynamic web pages using servlet and JSP CO4. Develop client-server application

Course Title- ASP.net

Course Outcomes

CO1. Understand working of Asp.Net web application CO2. Demonstrate Asp.Net server controls. CO3. Study database operations using ADO.Net. CO4. Understand importance and working of state management.

Course Title- Software Project Management

Course Outcomes

CO1.. Implement the basics of Project Management. CO2. Choose correct Scheduling Techniques as per the software. CO3. Develop Team Development skills and reduce conflicts. CO4. Implement various Software Quality Standards. CO5. Using CASE tools, Software Re-Engineering for creating efficient softwares.

Course Title- Computer Network

Course Outcomes

CO1. Familiar with network basics concepts like protocols, topology etc CO2. Familiar with OSI layered model services CO3. Understand with switching and routing concepts in networking technologies. CO4. Familiar with network security concepts

Course Title- PHP Part _II

Course Outcomes

CO1. Create and call functions using PHP CO2. Create functions that take arguments and return values CO3. How error is handled using exception handling CO4. Display and handle HTML forms within a single PHP script

Course Title- English for Communication IV

Course Outcomes

CO1.. Comprehend the employment skills to have an effective first impression CO2. Construct effective technical reports and prepare effective presentations CO3. Use various interpersonal skills as per the need of situation and context