Shri Vithal Institute of Progessive Education's

SVIPE

Institute of Computer & Management studies, Kasegaon

(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

BACHELOR OF SCIENCE (ENTIRE COMPUTER SCIENCE) [B.Sc. (ECS)]
PROGRAMME OUTCOME (PO)

At the end of the three-year B.Sc. (ECS) programme the students will be able to:

- **PO1-Computer Systems Knowledge:** Understand the computer systems, including hardware architecture, operating systems, and networking principles, enabling them to develop efficient and reliable software solutions.
- **PO2-Problem-Solving & Analysis:** Able to think rationally, analyse and solve problems adequately
- **PO3-Software Engineering Proficiency**: Apply standard software engineering practices and strategies in software project development
- **PO4-Diverse Programming Skills:** Understand, analyse and develop computer programs in the areas related to algorithm, web design and networking for efficient design of computer-based system.
- **PO5-Effective Communication:** Ability to speak, read, write and listen clearly in person and through electronic media in English and make use of technology
- **PO6-Ethical Awareness:** Identify various value systems, assess moral dimensions of decisions, and take accountability for them.

PROGRAMME SPECIFIC OUTCOME (PSO)

B.Sc. (ECS) Graduates will be able to:

- **PSO-1:** Understand, analyse and develop computer programs in the areas related to algorithm, system software, web design and networking for efficient design of computer-based system.
- **PSO-2:** Apply standard software engineering practices and strategies in software project development using appropriate computer language to deliver a quality of product for business success.

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

SVIPE
Shri Vithal Institute of Progessive Education, Kasegaon
Regd.No.: F-16037 (Solapur) Dt. 20-9-2005
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233

Course Outcome for B.Sc.(ECS)

B.Sc.(ECS)-I Sem. I

Sr. No.	Course Name	Course Outcome
1	Fundamental of Computer	1. To understand basic concepts and terminology of information technology.
		2. To a basic understanding of personal computers and their operations.
		3. To understand various input and output devices
		4. To understand memory management
2	Basics of Operating System	1. To understand the main components of an OS & their functions
		2. Describe the functions of a modern OS with respect to convenience, efficiency and the ability to evolve.
		3. To make aware of different types of OS and their services.
		4. To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system
3	Programming using 'C'	1. To understand the fundamentals of C programming.
		2. To read, Understand, Write and Execute the programs using C.
		3. To apply logical thinking to a given program and write the code.
		4. To Identify the correct and efficient ways of solving problems
4	Python - I	1. Understand the basic concepts and applications of Python.
		2. Design, create, build, and debug python applications.
		3. Explore Integrated Development Environment (IDE)
		4. Write and apply decision structures for different operations
		5. Write loop structures to perform iterative tasks
5	Numerical Methods	1. Ability to appreciate real world applications which use these concepts.
		2. Skill to formulate a problem through Mathematical Modeling and programming.
6	Graph Theory	1. Understand the notion of mathematical thinking, and mathematical proofs and to apply them in problem solving.
		2. Ability to understand and apply concepts of graph theory in solving real world problems and ability to reason logically

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
SVIPE
Institute of Computer & Management studies, Kasegaon
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-I Sem. I

Sr. No.	Course Name	Course Outcome
7	Basic Electronics	1.Learn how to develop and employ circuit models for elementary electronic components, e.g., resistors, inductors, capacitors, diodes and transistors.
		2. Gain an intuitive understanding of the role of power flow and energy storage in electronic circuits.
		3. Develop different power supplies in the computer system.
8	Advanced Electronics	1. Develop the Integrated circuits (IC) in electronics systems. E.g. Computer systems, Microprocessor, Microcontroller, Mobile, etc.
		2. Manufacturing Resistors, Capacitors, Diode and Transistor in IC
		3. Understand different Display devices, Sensors and PCB technologies used in Computer System.

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

B.Sc.(ECS)-I Sem. II

Sr. No.	Course Name	Course Outcome
9	Introduction to Web Technology	1. Explain the history of the internet and related internet concepts that are vital in understanding web development.
		2. Discuss the insights of internet programming and implement complete applications over the web.
		3. Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.
		4. Utilize the concepts of JavaScript.
10	Operating System	1. Describe and analyze memory management and its allocation policies.
		2. Identify the use and evaluate the storage management policies concerning different storage management technologies.
		3. To understand different approaches to memory management.
11	Object Oriented Programming using C++	1. escribe the procedural and object oriented paradigm with concepts of streams classes, functions, data and objects.
		2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc.
		3. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
		4. Classify inheritance with the understanding of early and late binding, usage of exception handling, and generic programming.
		5. Demonstrate the use of various OOPs concepts with the help of programs
12	Python - II	1. Write and implement a functional approach to application development.
		2. Write and implement a modular approach to application development.
		3. Design an application using object-oriented paradigm.
		4. Create error free applications by applying the exception handling concept.
		5. Design an application that contains the use of different files for data processing
13	Linear Algebra	1. Understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.
		2. Understand the basics of combinatorics, and be able to apply the methods from these subjects in problem solving.
		3. Use effectively algebraic techniques to analyse basic discrete structures and algorithms.
		4. Understand asymptotic notation, and its significance, and be able to use it to analyse asymptotic performance for some basic algorithmic examples.
		5. Understand some basic properties of graphs and related discrete structures, and be able to relate these to practical examples.

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
SVIPE
Institute of Computer & Management studies, Kasegaon
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-I Sem. II

Sr. No.	Course Name	Course Outcome
14	Discrete Mathematics	1. To understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.
		2. To understand the basics of combinatorics, and be able to apply the methods from these subjects in problem solving.
		3. To use effectively algebraic techniques to analyse basic discrete structures and algorithms
		4. To understand asymptotic notation, and its significance, and be able to use it to analyze asymptotic performance for some basic algorithmic examples.
		5. To understand some basic properties of graphs and related discrete structures, and be able to relate these to practical examples.
15	Digital Electronics and Microprocessor	1. Design and construct logic as well as arithmetical circuits
		2. Calculate various important parameters of Digital logic families
		3. Design & analyze combinational logic circuits
		4. Design & analyze sequential logic circuits
		5. Execute 8085 Microprocessor Assembly language programming.
16	Introduction to Microcontroller and Embedded System	1. Design, test and critically evaluate embedded solutions to real-world situations using digital components (sequential and combinational).
		2. Recognize the key features of embedded systems in terms of computer hardware and be able to discuss their functions. You will be aware of the key factors affecting computing hardware evolution.
		3. Design, test and critically evaluate embedded solutions to real-world situations using (embedded) computer systems interfaced with digital hardware

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
Institute of Computer & Management studies, Kasegaon
SVIPE
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-II Sem. III

Sr. No.	Course Name	Course Outcome
17	Data Structure using C++	1. Able to identify the appropriate data structures and algorithms for solving real world problems.
		2. Able to implement various kinds of searching and sorting techniques.
		3. Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.
18	Software Engineering	1. Basic knowledge and understanding of the analysis and design of complex systems.
		2. Ability to apply software engineering principles and techniques.
		3. Ability to develop, maintain and evaluate large-scale software systems.
		4. To produce efficient, reliable, robust and cost-effective software solutions.
		5. Ability to perform independent research and analysis.
19	Software Testing	1. Apply software testing knowledge and engineering methods
		2. Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods
		3. Analyze and understand the use of software testing methods and modern software testing tools for their testing projects
		4. Identify defects and manage those defects for improvement in quality for given Software
20	Probability Theory	1. Understands the basics of probability, sample space, events, statistics and apply them to real life problems
		2. Distinguish probability density and distribution functions for single and multiple random variables.
		3. Calculate the statistical parameters for random variables.
		4. Analyze the concept of random process along with its parameters
		5. Estimate the correlation, covariance and PSD for random processes.
21	Introduction to Python programming	1. Learn new concepts from industry experts
		2. Gain a foundational understanding of a subject or tool
		3. Develop job-relevant skills with hands-on projects
		4. Earn a shareable career certificate

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
SVIPE
Institute of Computer & Management studies, Kasegaon
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-II Sem. IV

Sr. No.	Course Name	Course Outcome
22	Database Management System	1. Demonstrate the basic elements of a relational database management system.
		2. Identify the data models for relevant problems.
		3. Demonstrate their understanding of key notions of query evaluation and optimization techniques.
		4. Extend normalization for the development of application software's
23	MYSQL	1. Understand SQL functions, join techniques, database objects and be able to write queries and stored procedures.
		2. Applicable Job Roles: web programmers, web application developers, database administrator, webmasters, and web project managers.
		3. Understand SQL functions, join techniques, database objects and be able to write queries and stored procedures.
24	Operating System	1. Describe and analyze memory management and its allocation policies.
		2. Identify the use and evaluate the storage management policies concerning different storage management technologies.
		3. Understand different approaches to memory management.
25	Linux OS and Shell Scripting	1. Understand the basic commands of linux operating system and can write shell script
		2. Create file systems and directories and operate them
		3. Create processes background and fore ground etc..by fork() system calls
		4. Create shared memory segments, pipes ,message queues and can exercise inter process communication
26	Statistics for Data Science	1. Become proficient in the statistical analysis of data and the use of computation tools for data analysis.
		2. Apply statistical and computational tools to applied problems, and clearly communicate the results in both written reports and oral presentations.
		3. Understand the importance of proper data management, documentation of work to allow reproducibility of results, and how to assess the ethical considerations of a data science project.
27	Web Development using PHP	1. Develop program using control statement
		2. Perform operations based on arrays and graphics
		3. Perform database operations in PHP

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
SVIPE
Institute of Computer & Management studies, Kasegaon
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-II Sem. IV

Sr. No.	Course Name	Course Outcome
28	Environmental studies	1. Recognize the physical, chemical, and biological components of the earth's systems and show how they function.
		2. Do independent research on human interactions with the environment.
		3. Apply lessons from various courses through field experiences. These experiences will allow students to develop a better sense of not only individual organisms, but of the systems in which these organisms live. Students will also see how natural systems and human-designed systems work together, as well as in conflict with each other.

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's

SVIPE

Institute of Computer & Management studies, Kasegaon

(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-III Sem. V

Sr. No.	Course Name	Course Outcome
29	Data Communication and Networking	1. Familiarize with contemporary issues in network technologies
		2. Know the layered model approach explained in OS Iand TCP/IP network models
		3. Identify different types of network devices and their functions within a network.
		4. Know the Basic routing mechanisms, IP addressing scheme and internetworking concepts
		5. Familiarize with IPand TCP Internet protocols
		6. Understand major concepts involved in design of WAN, LAN and wireless networks.
		7. Know the basics of network configuration and maintenance
		8. Know the fundamentals of network security issues.
30	Theory of Computer Science	1. Understand the basic concepts and application in Theory of Computation.
		2. Apply the basic knowledge of Theory of Computation in the computer field to solve computational problems and in the field of compiler also.
31	Visual Programming	1. Design, create, build, and debug Visual programming applications.
		2. Programming Integrated Development Environment(IDE).
		3. Implement syntax rules in Visual programming.
		4. Explain variables and data types used in program development.
		5. Write and apply decision structures for determining different operations.
		6. Write and apply loop structures to perform repetitive tasks.
		7. Write and apply procedures, sub-procedures, and functions to create manageable code.
32	Advanced Java	1. Design, create, build, and debug Java applications.
		2. Explore Integrated Development Environment (IDE).
33	Advanced Python Programming	1. Design, Create, Build, and Debug Python applications.
		2. Explore Integrated Development Environment (IDE).

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's
SVIPE
Institute of Computer & Management studies, Kasegaon
(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-II Sem. IV

Sr. No.	Course Name	Course Outcome
34	System Security	1. Develop an understanding of information assurance as practiced in computer operating systems, distributed systems, networks and representative applications.
		2. Understand to prevalent network and distributed system attacks, defense saga inst them, and forensics to investigate the aftermath.
		3. Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniques used today.
		4. Develop an understanding of security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in the form of message exchanges.
35	Compiler Construction	1. Apply crucial knowledge theoreticaly and practicaly to implement a programming language.
		2. Understanding of a language in order to make better use of the language (optimization is just one example).
36	Internet Programming using ASP .Net	1. Create, Design, Debug and Deploy Web-applications
		2. Explore Integrated Development Environment (IDE).
37	Angular JS	1. Create, Design, Debug and Deploy Web-applications.
		2. Explore Integrated Development Environment (IDE)
38	Mobile Application Development	1. Create, Design, Debug and Deploy Android applications
		2. Explore Integrated Development Environment (IDE).

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management Studies, Kasegaon. Tal. Pandharpur

Shri Vithal Institute of Progessive Education's

Institute of Computer & Management studies, Kasegaon

SVIPE

(Approved by Govt. of Maharashtra and Affiliated to Solapur University, Solapur)
B.C.A. & B.Sc. (Entire Computer Science)
Old - Kasegaon Road, Kasegaon, Tal. Pandharpur Dist. Solapur Pin. 413304, Ph.No. 02186-232233
Email.: icmskasegaon@yahoo.com , Website.: http://www.icms.svipe.edu.in

B.Sc.(ECS)-III Sem. VI

Sr. No.	Course Name	Course Outcome
39	English (Business English)	1. Review the grammatical forms of English and the use of these forms in specific communicative contexts, which include: class activities, homework assignments, reading of texts and writing
		2. Attain and enhance competence in the four modes of literacy: writing, speaking, reading and listening
		3. Develop their ability as critical readers and writers
		4. Produce a short research paper using the drafting process
40	Data Warehouse and Data Mining	1. Get knowledge of Data preprocessing and data quality.
		2. Able to apply acquired knowledge for understanding data and select suitable methods for data analysis.
41	Compiler Construction	1. Apply crucial knowledge theoreticaly and practicaly to implement a programming language.
		2. Understand language in order to make better use of the language (optimization is just one example).
42	Internet Programming usingASP.Net	1. Design web applications using ASP.NET
		2. Use ASP.NET controls in web applications
		3. Create database driven ASP.NET web applications and web services
43	Angular JS	1. Create, Design, Debug and Deploy Web-applications.
		2. Explore Integrated Development Environment (IDE)
44	Mobile Application Development	1. Create, Design, Debug and Deploy Android applications.
		2. Explore Integrated Development Environment(IDE)

Institute of Computer and Management Studies Kasegaon

PRINCIPAL,
Institute of Computer and Management
Studies, Kasegaon. Tal. Pandharpur