



SSSVPM'S

Arts, Commers, Science College Ravalgaon,

Tal. Malegaon, Dist Nashik-423108

(Affiliated to Savitribai phule pune University)

(ACCREDITED BY NAAC WITH 'B+' GRADE & ISO CERTIFIED)

Department Of Computer Science

PO/CO for Academic Year 2025-26

PO NO's	PROGRAM OUT-COMES:
PO1	Develop creative skills, critical thinking, analytical skills and research to address the Real-world problems using computational skills
PO2	Understand and apply mathematical foundation, computing and domain knowledge and develop computing models for defined problems
PO3	Understand software project management and computing principles with computing knowledge to manage projects in multidisciplinary environments
PO4	Illustrate the concepts of systems fundamentals, including architectures and organization, operating systems, networking and communication
PO5	Understand and apply the concepts of Digital Electronics, Computer Architecture, IoT etc.
PO6	Recognize the need for and develop the ability to engage in continuous learning as a Computing professional
PO7	Apply modern computing tools, skills and techniques necessary for innovative software solutions
PO8	Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations
PO9	Gain Self Discipline and commit Professional Ethics in global economic environment
PO10	Individual & Team Work: Ability to work as a member or leader in diverse teams in multidisciplinary environment
PO11	Identify opportunities, entrepreneurship vision and use innovative ideas to create value and wealth for the betterment of the individual and society

Name of Class	Course Code	Course title	Course Outcomes
FY BCS I Sem	Cs-101-T	Problem Solving Using Computer and 'C'	• Explore algorithmic approaches to problem solving. • Develop modular programs using control structures and arrays in 'C'
	Cs-102-P	Practical course on Problem Solving using Computer and 'C' programming	• Devise pseudocodes and flowchart for computational problems. • Write, debug and execute simple programs in 'C'. • Create database tables in post-Gre-SQL. • Write and execute simple, nested queries.
	MTC-101-T	Matrix Algebra	• Students will get equipped with the knowledge of various properties of matrices and how matrices help in solving problems in different dimensions. • Students will be able to perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms. • Students will be able to solve linear systems both by using computer and by hand using mathematical techniques. • Students will develop their basics for the course of Linear Algebra of second semester. • Students will be able to write cohesive and comprehensive solutions to exercises and be able to defend their arguments.

	MTC-102-P	Mathematics practical-I	• Work with graphs and identify certain parameters and properties of given graphs. • Perform specific algorithms, justify their function, and estimate their running times. • Solve basic exercises, such as proving graph with certain properties also has another specific property.
	ELC-101-T	Principle of Analog Electronics	• Understand the concept of semiconductor diodes. • Understand the different applications of FET, BJT and MOSFET. • Understand the working principle of different sensors. • Use Op-amp for different application
	ELC-102-P	Electronics Practical Course-I	• Use different semiconductor diodes for various applications. • Understand the different applications of FET, BJT and MOSFET. • Use of different sensors for parameter measurement

	IKS-100-T	Generic IKS	• Understand the concept, definition, and scope of the Indian Knowledge System (IKS). • Explain the historical evolution of IKS, including contributions from ancient civilizations like the Indus Valley, Vedic period, etc. • Familiarize with major streams of Indian intellectual traditions, such as philosophy, logic, mathematics, astronomy, medicine, architecture, and arts. • Analyse how traditional Indian knowledge relates to contemporary issues, such as sustainability, health, governance, and technology. • Compare the Indian knowledge paradigm with modern scientific paradigms, identifying complementarities and contrasts.
	SEC-101-CS	Statistical Method for Computer Science-I	• Present the complex data in tabular format. • Use various diagrammatic and graphical techniques to represent statistical data and interpret the data. • Compute various measures of central tendency, dispersion, skewness, and kurtosis using MS-Excel and interpret the results. • Establish relation between variables and estimate response for given bivariate data using software and interpret the results.

FYBC II Sem	CS-151-T	Advanced C programming	• Develop modular programs using control structures, Functions, Pointers, Arrays, strings and structures • Design and develop solutions to real world problems using C. • Understand and repeat the sequence of instructions and points for a memory location. • identification, analyzation, development, verify and document the requirements for a computing environment.
	CS-152-P	Lab course based on cs-151-T	• Develop modular programs using function, pointers, arrays, strings and structures • Design and develop solutions to real world problems using Advanced C programming.
	MTC-151-T	Graph Theory	• Work with graphs and identify certain parameters and properties of the given graphs. • Perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms. • Solve basic exercises of the type: given a graph with properties X, prove that the graph also has property Y. • Develop an appreciation for the literature on the subject and be able to read and present results from the literature. • Write cohesive and comprehensive solutions to exercises and be able to defend their arguments.

	MTC-152-P	Mathematics practical-II	• Write Python programs to solve the given problem • Utilize the data structures such as lists, dictionaries, tuples and sets. • Use built-in and user defined modules and packages.
	ELC-151-T	Principle of Digital Electronics	• To learn different number system and their inter conversion. • To understand logic gates and their applications. • To study rules and laws of Boolean Algebra.
	ELC-152-P	Electronics Practical Course-II	• Understand the design and build of digital circuits using logic gates. • Use breadboard / tag-board for building small electronic circuits. • Design digital circuits for different applications. • Validate observed outputs with expected theoretical outputs.
	SEC-151-CS-P	Statistical Method for Computer Science-II	• Fit second-degree curve, and exponential curves. • Estimate trends by using time series data. • Understand concept of probability. • estimate probabilities of standard probability distributions • Perform tests based on normal, Chi-Square, t and F distributions.

SYBCS III Sem	CS-201-MJ-T	DATA STRUCTURE -I	• Explore algorithmic approaches to problem-solving. • Control the sequence of the program and provide logical outputs. • Develop modular programs using control structures and arrays in 'C'. • Organize code with complex data types, including structures, unions, and pointers. • Work with files for input and output operations. • Implement advanced features such as pointers, strings, and preprocessor directives to solve complex computational problems.
	CS-202-MJ-T	DATABASE MANGEMENT SYSTEM-I	• Solve real world problems using appropriate relational data model. • Construct E-R Model for given requirements and convert it into database tables. • Write efficient SQL queries and use PL/SQL • Apply database management operations • Describe mechanisms for transaction management • Demonstrate understanding of database security

CS-203-MJ-P	LAB COURSE BASED ON CS- 201-MJT & CS- 202-MJ-T	• Apply appropriate data structures to solve the given problem • Design an efficient algorithm for the given problem and implement. • Determine the time and space complexity of a given algorithm • Design E-R Model for given requirements and convert the same into database tables. • Design and create relational database systems. • Use SQL DDL and DML commands • Apply constructs in PL/PGSQL
IKS-200-T	CS-200-IKS-T	• List India's contributions to Computing 2. Apply Ancient Indian Mathematical concepts in Computing • Utilize Linguistic and Computational aspects of Sanskrit from IKS in Modern Computing • Describe Cryptographic techniques from IKS • Make use of Cybersecurity techniques from IKS CO6: Illustrate the Role of IKS in Emerging Technologies
CS-231-FP	MINI PROJECT	• Apply methodology to perform field work • Identify and define real-world issues or problems. • Analyse the data collected and propose solution to solve real-world problem

	CS-241-MN-T	MATHEMATICS-I	• Write Python programs to solve the given problem • Utilize the data structures such as lists, dictionaries, tuples and sets. • Use built-in and user defined modules and packages. • Apply operations involving file systems and data handling
	CS-242-MN-P	MATHEMATICS PRACTICAL-II	• Write Python programs to solve the given problem • Utilize the data structures such as lists, dictionaries, tuples and sets. • Use built-in and user defined modules and packages. • Apply operations involving file systems and data handling.
	CS-221-VSC-T	ADVANCE PYTHON PROGRAMMING	• Understand Python syntax and programming constructs. • Apply loops, functions, modules, and packages. • Use file handling and exception handling. • Use libraries (NumPy/Matplotlib) for computation. • Develop Python-based mini applications.

	CS-251-MJ-T	DATA STRUCTURE -II	Understand the concepts of advanced data structures such as AVL trees, B-trees, Red-Black trees, and heap structures.
			- Analyse and evaluate the time and space complexities of advanced data structures and related algorithms. - Apply appropriate data structures (trees, heaps, hashing, graphs) to solve real-world computational problems. - Implement advanced data structures using a programming language and demonstrate their functionality through programs.
SYBCS IV SEM	CS-252-MJ-T	DATABASE MANGEMENT SYSTEM-II	- Understand data models and DBMS architecture. - Write SQL queries for data retrieval. - Design ER diagrams and convert to relational schema. - Apply normalization for efficient databases. - Develop basic database applications.
	CS-253-MJ-P	LAB COURSE BASED ON CS- 251-MJT & CS- 252-MJ-T	- Implement basic operations on binary trees (insertion, traversal, etc.). - Demonstrate various tree traversal techniques: in-order, preorder, post-order. - Work with graph data structures, including representing graphs and performing traversals like BFS and DFS.

			• Manage dynamic memory in their programs using pointers (allocate, deallocate) effectively. • Analyse and understand time complexity (Big-O) of algorithms when implementing them.
	CS-281-FP	MINI PROJECT	• Identify real-world problems. • Design and develop working solutions. • Apply tools and technologies learned so far. • Work effectively in teams. • Demonstrate and document project outcomes.
	CS-291-MN-T	MATHEMATICS-II	• solve problems involving probability and statistics. • Apply linear algebra in computing. • Use differential equations for modelling. • Use discrete mathematics in algorithm development. • Apply mathematical tools for data analysis.
	CS-292-MN-P	MATHEMATICS PRACTICAL-II	• Perform practical experiments related to the minor subject (Mathematics or Electronics) effectively in a laboratory environment. • Translate theoretical concepts from the minor syllabus into concrete computational or electronic tasks — e.g., implementing algorithms (if Mathematics) or circuit simulations (if Electronics). • Develop skills in measurement, data recording, and error analysis in

			laboratory setups (especially for Electronics). • Use relevant software tools, calculators, or instruments appropriate to the minor discipline (e.g., mathematical software for mathematical labs, or multi-meters, function generators for electronics labs). • Analyse and interpret results of experiments, draw conclusions, and relate these results to the underlying theory taught in the minor course. • Document experiments professionally, prepare lab reports with clarity, and present findings.
	CS-271-VSC-P	SOFTWARE ENGINEERING	• Explain SDLC models and software process frameworks. • Prepare SRS and design documentation. • Use UML for system modelling. • Apply testing strategies. • Manage small software projects.

Head of Department

Principle