MVP Samaj's Commerce, Management and Computer Science(CMCS)College, Nashik-13 Course Outcomes - BSc(Computer Science)	
	Problem Solving Using Computers and 'C' Programming
CO1	To develop Problem Solving abilities using computers
CO2	To teach basic principles of programming
CO3	To develop skills for writing programs using 'C'
	File Organization and Fundamental of Databases
CO1	To understand data processing using computers
CO2	To teach basic organization of data using files
CO3	To understand creations, manipulation and querying of data in databases
	Basic 'C' Programming and Database Handling practical's
CO1	Design and implement a 'C' programs for simple problems
CO2	Understand appropriate use of data types and array structures
CO3	Understand use of appropriate control structures
	HTML5 programming and Advanced 'C' Programming practical's
CO1	Understanding basic HTML designing
CO2	Writing C programs using complex data structures such as pointers, structures etc.
	Discrete Mathematics ,Algebra and Calculus ,Practical
CO1	A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
CO2	A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
CO3	A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
CO4	A student be able to apply their skills and knowledge ,that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion
CO5	A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture
	Statistical Methods I ,Statistical Methods II ,Practical
CO1	To acquaint students with some basic concepts in Statistics
CO2	To compute various measures of central tendency, dispersion, skewness and kurtosis. .
CO3	To analyze data pertaining to attributes and to interpret the results.
CO4	To compute the correlation coefficient for bivariate data and interpret it

CO5	To fit linear, quadratic and exponential curves to the bivariate data to investigate relation between two variables.
CO6	To fit linear, quadratic and exponential curves to the bivariate data to investigate relation between two variables.
CO7	To compute and interpret various index numbers.
	Principles of Analog Electronics ,Principles of Digital Electronics ,Practical
CO1	To provide in-depth knowledge of scientific and technological aspects of electronics
CO2	To train students in skills related to electronics industry and market.
CO3	To create foundation for research and development in Electronics
CO4	To familiarize with current and recent technological developments
CO5	To enrich knowledge through programs such as industrial visits, hobby projects, market survey, projects etc.
CO6	To develop analytical abilities towards real world problems
CO7	To help students build-up a progressive and successful career in Electronics
	DATA STRUCTURES USING 'C'
CO1	To learn the systematic way of solving problem
CO2	To understand the different methods of organizing large amount of data
CO3	To efficiently implement the different data structures
CO4	To efficiently implement solutions for specific problems Prerequisites: Knowledge of C Programming Language
	Relational Database Management System
CO1	To teach fundamental concepts of RDBMS (PL/PgSQL)
CO2	To teach principles of databases
CO3	To teach database management operations
CO4	To teach data security and its importance
CO5	To teach client server architecture
	Data structures Practical's and C++ Practical's
CO1	Design and implement Data structures and related algorithms
CO2	Understand several ways of solving the same problem.
	Database Practical's & Mini Project using Software Engineering techniques
CO1	Understanding the use of cursors, triggers, views and stored procedures
CO2	Understanding the steps of system analysis and design
CO3	Understanding Data requirements for a specific problem domain
CO4	Designing Data base as per the Data requirements
CO5	Designing queries as per the functional requirements
	Object Oriented Concepts using C++

CO1	Acquire an understanding of basic object oriented concepts and the issues involved in effective class design
CO2	Write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc.
	Software Engineering
CO1	To teach basics of System Analysis and Design.
CO2	To know about the system engineering and requirement engineering
CO3	To teach various process models used in practice
CO4	To teach principles of Software Engineering
CO5	To build analysis model
	Applied Algebra ,Numerical Techniques, Operations Research ,Computational Geometry
CO1	A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
CO2	A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
CO3	A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
CO4	A student be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
CO5	A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture.
	Digital System Hardware
CO1	To study the applications of logic gates.
CO2	To study and understand basics of microprocessors
CO3	To understand fundamentals of multicore technology
CO4	To use K-maps for digital circuit design
	Analog Systems
CO1	To understand basics of analog electronics
CO2	To study different types of sensors
CO3	To understand different types of signal conditioning circuits
CO4	To learn data conversion techniques
CO5	To apply knowledge of analog systems in different applications
	Architecture, Interfacing & Programming
CO1	To study the basics of 8051 microcontroller
CO2	To study the Programming and interfacing techniques of 8051
CO3	To apply knowledge of 8051 to design different application circuits

CO4	To introduce the basic concepts of advanced Microcontrollers
	Communication Principles
CO1	To understand basics of communication systems.
CO2	To understand modulation, demodulation and multiplexing of signals.
CO3	To understand digital communication techniques
CO4	To introduce concepts in advanced wireless communication.
	Practical Course
CO1	To use basic concepts for building various applications in electronics.
CO2	To understand design procedures of different electronic circuits as per requirement.
CO3	To build experimental setup and test the circuits.
CO4	To develop skills of analyzing test results of given experiments.
	Systems Programming
CO1	To understand the design structure of a simple editor.
CO2	To understand the design structure of Assembler and macro processor for an hypothetical simulated computer
CO3	To understand the working of linkers and loaders and other development utilities.
CO4	To understand Complexity of Operating system as a software.
	Operating Systems
CO1	To understand design issues related to process management and various related algorithms
CO2	To understand design issues related to memory management and various related algorithms
CO3	To understand design issues related to File management and various related algorithms
	Theoretical Computer Science
CO1	To have an understanding of finite state and pushdown automata.
CO2	To have a knowledge of regular languages and context free languages.
CO3	To know the relation between regular language, context free language and corresponding recognizers.
CO4	To study the Turing machine and classes of problems.
	Compiler Construction
CO1	To understand design issues of a lexical analyzer and use of Lex tool
CO2	To understand design issues of a parser and use of Yacc tool
CO3	To understand issues related to memory allocation
CO4	To understand and design code generation schemes
	Computer Networks -I
CO1	Understand different types of networks, various topologies and application of networks.
CO2	Understand types of addresses, data communication.

CO3	Understand the concept of networking models, protocols, functionality of each layer.
CO4	Learn basic networking hardware and tools.
	Computer Networks -II
CO1	Basic networking concepts
CO2	Understand wired and wireless networks, its types, functionality of layer.
CO3	Understand importance of network security and cryptography.
	Internet Programming I
CO1	Learn Core-PHP, Server Side Scripting Language
CO2	Learn PHP-Database handling.
	Internet Programming II
CO1	Learn different technologies used at client Side Scripting Language
CO2	Learn different technologies used at client Side Scripting Language
CO3	One PHP framework for effective design of web application.
CO4	Learn JavaScript to program the behavior of web pages.
CO5	Learn AJAX to make our application more dynamic.
	Programming in Java-I
CO1	To learn Object Oriented Programming language
CO2	To handle abnormal termination of a program using exception handling
CO3	To create flat files
CO4	To design User Interface using Swing and AWT
	Programming in Java-II
CO1	To learn database programming using Java
CO2	To study web development concept using Servlet and JSP
CO3	To develop a game application using multithreading
CO4	To learn socket programming concept
	Object Oriented Software Engineering
CO1	Understanding importance of Object Orientation in Software engineering
CO2	Understand the components of Unified Modeling Language
CO3	Understand techniques and diagrams related to structural modeling
CO4	Understand techniques and diagrams related to behavioral modeling
CO5	Understand techniques of Object Oriented analysis, design and testing
	Computer Graphics
CO1	To study how graphics objects are represented in Computer
CO2	To study how graphics system in a computer supports presentation of graphics information

CO3	To study how interaction is handled in a graphics system
CO4	To study how to manipulate graphics object by applying different transformations
CO5	To provide the programmer's perspective of working of computer graphics
	System Programming & Operating System
CO1	Design and implement System programs with minimal features to understand their complexity.
CO2	Design and implement simulations of operating system level procedures.
	Lab Course II – Programming in Java
CO1	Implement core Java programs to solve simple problems
CO2	Implement Client and Server end Java programs
	Lab Course III – Programming in PHP & Project
CO1	Implement Simple PHP programs to solve simple problems