Maratha Vidya Prasarak Samaj's

COMMERCE MANAGEMENT & COMPUTER SCIENCE (CMCS) COLLEGE,

Gangapur Road, Nashik-13

Programme Outcome, Programme Specific Outcome and Course Outcome

CBCS 2019 Pattern

B.Sc. (Computer Science)

Sr No	Programme Outcomes
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 train students in professional skills related to Software Industry.
PO4	To prepare necessary knowledge base for research and development in Computer Science.
PO5	To help students build-up a successful career in Computer Science and to produce entrepreneurs who can innovate and develop software products.

Sr No	Programme Specific Outcomes
PSO1	Apply the basic principles and methods of computer science to a wide range of applications.
PSO2	Understand Analyze and Develop computer programs for efficient design of computer-based systems of varying complexity.
PSO3	The ability to interpret the fundamental concepts and methodology of computer systems. Students can understand the functionality of hardware and software aspects of computer systems.
PSO4	Students will show that they have learned different programming languages to enhance and increase the power of computers and

	internet
PSO5	Design, correctly implement and document solutions to significant computational problems.

Subject	Course Outcomes (F.Y.B.Sc(CS))
Problem Solving using Computer and 'C' Programming	CO1 Explore algorithmic approaches to problem solving. CO2 Develop modular programs using control structures and arrays in 'C'.
Database Management Systems	CO1Solve real world problems using appropriate set, function, and relational models. CO2 Design E-R Model for given requirements and convert the same into database tables. CO3 Use SQL
Practical course on Problem Solving using Computer and 'C' programming and Database Management Systems	CO1 Devise pseudo codes and flowchart for computational problems. CO2 Write, debug and execute simple programs in 'C' CO3 Create database tables in postgreSQL. CO4 Write and execute simple, nested queries
Advanced 'C' Programming	CO1 Develop modular programs using control structures, pointers, arrays, strings and structures CO2 Design and develop solutions to real world problems using C.
Relational Database Management Systems	CO1 Design E-R Model for given requirements and convert the same into database tables. CO2 Use database techniques such as SQL & PL/SQL. CO3 Explain transaction Management in relational database System. Use advanced database Programming concept

Practical Course on Advanced ‘C’ Programming and Relational Database Management Systems	CO1 Write, debug and execute programs using advanced features in ‘C’ CO2 To use SQL & PL/SQL. CO3 To perform advanced database operations
Mathematics	CO1 Students should be able to work with graphs and identify certain parameters and properties of the given graphs. CO2 Students should be able to perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms. CO3 Students should be able to solve basic exercises of the type: given a graph with properties X, prove that the graph also has property Y. CO4 Students should develop an appreciation for the literature on the subject and be able to read and present results from the literature. CO5 Students should be able to write cohesive and comprehensive solutions to exercises and be able to defend their arguments.
Statistics	CO1 To tabulate and make frequency distribution of the given data. CO2 To use various graphical and diagrammatic techniques and interpret. CO3 To compute various measures of central tendency, dispersion, Skewness and kurtosis CO4 To fit the Binomial and Poisson distributions. CO5. To compute the measures of attributes. CO6. The process of collection of data, its condensation and representation for real life data. CO7. To study free statistical software’s and use them for data analysis in project.

Electronics	CO1 To study various types of semiconductor devices CO2 To study elementary electronic circuits and systems CO3 To get familiar with concepts of digital electronics CO4 To learn number systems and their representation CO5 To understand basic logic gates, Boolean algebra and K-maps CO6 To study arithmetic circuits, combinational circuits and sequential circuits CO7 To study Instrumentation System CO8 To study various blocks of Instrumentation System CO9 To study Smart Instrumentation System CO10 To get familiar digital sequential circuits CO11 To study Basic computer Organization CO12 To study Memory architecture

Subject	**Course Outcomes (S.Y.B.Sc(CS))**
Data Structures and Algorithms – I	CO1 To use well-organized data structures in solving various problems. CO2 To differentiate the usage of various structures in problem solution. CO3 Implementing algorithms to solve problems using appropriate data structures

Software Engineering	CO1 Compare and chose a process model for a software project development. CO2 Identify requirements analyse and prepare models. CO3 Prepare the SRS, Design document, Project plan of a given software system.
Data Structures and Algorithms-II	CO1 Implementation of different data structures efficiently CO2 Usage of well-organized data structures to handle large amount of data CO3 Usage of appropriate data structures for problem solving
Computer Networks-I	CO1 Have a good understanding of the OSI and TCP/IP Reference Models and in particular have a good knowledge of Layers. CO2 Understand the working of various protocols. CO3 Analyse the requirements for a given organizational structure and select the most appropriate networking architecture and technologies
Mathematics	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.

Electronics	CO1 To write programs for 8051 microcontroller CO2 To interface I/O peripherals to 8051 microcontroller CO3 To design small microcontroller based projects CO4 Define and explain terminologies of data communication. CO5 Understand the impact and limitations of various digital modulation techniques CO6 To acknowledge the need of spread spectrum schemes. CO7 Identify functions of data link layer and network layer while accessing communication link CO8 To choose appropriate and advanced techniques to build the computer network CO9 To acquire skills of Embedded C programming CO10 To know multiplexing and modulation techniques useful in developing wireless application CO11 Do build and test own network and do settings. CO12 To understand the difference between general computing and the Embedded systems. CO13 To know the fundamentals of embedded systems. CO14 Understand the use of Single board Computer (Such as Raspberry Pi) for an embedded system application. CO15 Familiar with the programming environment to develop embedded systems and their interfaces with peripheral devices. CO16 To develop familiarity with tools used to develop in an embedded environment. CO17. Know working of wireless technologies such as Mobile communication, GSM, GPRS CO18 Become familiar with 3G and 4G Cellular Network Technologies for Data Connections. CO19 Understand working principles of short range communication application CO20 Get introduce to upcoming technology of Internet of Things CO21 Explore themselves and develop new IoT based applications.

Subject	Course Outcomes (T.Y.B.Sc(CS))
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 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 behaviour 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 Modelling Language CO3 Understand techniques and diagrams related to

	structural modelling CO4 Understand techniques and diagrams related to behavioural modelling 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