B.Sc Computer Science

(Semester with Choice Based Credit System)

Subjects in B.Sc Computer Science

I Year

I semester

S.No	SUBJECTS
1	Language -I
2	Communicative English-I
3	Major- Python Programming
4	Major- Python Programming Practical
5	Allied - Mathematics-I
6	Skill Enhancement Course I : Office Automation
7	Foundation Course – Fundamentals of Computers

II Semester

S.No	SUBJECTS
1	Language-II
2	Communicative English-II
3	Major- Introduction to Architecture & Microprocessor
4	Major- Introduction to Architecture & Microprocessor Practical
5	Allied - Mathematics-II
6	Skill Enhancement Course II : Quantitative Aptitude
7	Skill Enhancement Course III : Problem Solving Techniques

III Semester

S.No	SUBJECTS
1	Language -III
2	English Paper - III
3	Major – Programming in Java
4	Major- Programming in Java Practical
5	Allied – Statistics -I
6	Skill Enhancement Course - IV: (Entrepreneurial Based): Web Page Design Practical
7	Skill Enhancement Course- V: Desktop Publishing Practical
8	Environmental Science

IV Semester

S.No	SUBJECTS
1	Language -IV
2	English Paper - IV
3	Major – Data Structures and Algorithms
4	Major- Data Structures and Algorithms Practical
5	Allied – Statistics -II
6	Skill Enhancement Course - VI: Emotional Intelligence / Naan Mudhalvan
7	Value Education
8	Environmental Science

V Semester

S.No	SUBJECTS
1	CC- IX -Operating Systems
2	CC-X – Operating System Practical
3	CC-XI – Relational Database Management System
4	CC-XII – RDBMS Practical / Project with Viva Voce
5	Elective V-Mobile Adhoc Network
6	Elective VI-Software Engineering
7	SEC-VII –Naan Mudhalvan

VI semester

S.No	SUBJECTS
1	CC- XII - Programming in ASP.NET
2	CC-XIV – Programming in ASP.NET Practical
3	CC-XV– Project with Viva voce
5	Elective VII
6	Elective VIII

SEMESTER-I

CORE:PAPERI-PYTHONPROGRAMMING(125C1A)	
This course covers the principles of Python and acquires skills in programming. It develops the emerging applications of relevant field using Python. It interprets basic Python syntax and semantics and control flow statements. It helps the students to develop simple turtle graphics programs using Python.	
CO 1	Develop and execute simple Python programs
CO 2	Write simple Python programs using conditionals and looping for solving problems
CO 3	Decompose a Python program into functions
CO 4	Represent compound data using Python lists, tuples, dictionaries etc.
CO 5	Read and write data from/to files in Python programs

CORE:PAPERII-PYTHONPROGRAMMINGPRACTICAL(125C11)	
This course implements the python programming features in practical applications. Train students to write, test and debug simple Python programs using conditional and looping structures. It helps students to structure programs using functions and make use of Lists, Dictionaries, Tuples, Turtles, Files and Modules.	
CO 1	To understand the problem solving approaches
CO 2	To learn the basic programming constructs in Python
CO 3	To practice various computing strategies for Python-based solutions to real world problems
CO 4	To use Python data structures-lists, tuples, dictionaries.
CO 5	To do input/output with files in Python.

ALLIED MATHEMATICS-1(125E1A)	
Students understand the importance of mathematics in various fields and apply theformulationsinhiscorestudy.Theyfamiliarizeincorrelatethemathematicswithhis	
studyofcourseandhenceapplythesameandtoapplytheknowledgeofMathematics in relation to his modeling and implementation.	
CO1	To make the student to understand the different methods of adding the series and hence find approximate solution and apply different method of interpolations.
CO2	To understand the importance of matrices in solving the arithmetic and algebraic equations
CO3	To understand the importance of matrices in solving the arithmetic and algebraic equations and hence making the calculations simple and easy.
CO4	To understand the importance of Trigonometry and its applications in expansions and hence learning the hyperbolic conversions. Importance of Log Expansions is given importance
CO5	To understand the calculus branch of differentiation and hence the find differenceinsolvingofdifferentialequationsandpartialdifferentialequations. To understand the knowledge of radius of curvature

Skill Enhancement Course I: Office Automation(125S1A)	
The major objective in introducing the Computer Skills course is to impart training for students in Microsoft Office which has different components like MS Word, MS Excel and Powerpoint.Thecourseishighlypracticeorientedratherthanregularclassroomteaching. To acquire knowledge on editor, spread sheet and presentation software.	
CO 1	Understand the basics of computer systems and its components.
CO 2	Understand and apply the basic concepts of a word processing package.
CO 3	Understand and apply the basic concepts of electronic spread sheet software.
CO 4	Understand and apply the basic concepts of database management system.
CO5	Understand and create a presentation using PowerPoint tool.
Foundation Course: Fundamentals of Computers (125B1A)	
• To understand fundamentally the general scope of the computer system • To interact effectively with the computer • To know the uses of the basic components of the computer • to manage the system to some extent before involving an expert to know some basic things about the computer and the world	
CO 1	Fundamental concepts of computer
CO 2	Fundamental mathematical techniques and how they relate to computer
CO 3	The architecture of processing and file storage in a computer system
CO 4	Basic operations of operating systems
CO5	A variety of software packages applicable to an academic, software development and business environment

SEMESTER-II

CORE:PAPERIII-INTRODUCTION TO COMPUTER ARCHITECTURE AND MICROPROCESSOR (125C2A)	
The objective of this paper is to understand the basic organization of computers and the working of each component and the CPU. It brings out the programming features of 8085 Microprocessor and knows the features of latest Microprocessors. It makes students understand the principles of interfacing I/O Devices and Direct Memory Access (DMA).	
CO 1	Remember the Basic binary codes and their conversions. Binary concepts are usedinMicroprocessorprogrammingandprovideagoodunderstandingofthe architecture of 8085
CO 2	Understandingthe8085instructionsetandtheirclassifications,enablesthe students to write the programs easily on their own using different logic.
CO 3	Applyingdifferenttypesofinstructionstoconvertbinarycodesandanalysingthe outcome. The instruction set is applied to develop programs on multibyte arithmetic operations.
CO 4	Analysehowperipheraldevicesareconnectedto8085usingInterruptsandDMA controller.
CORE:PAPERIV-INTRODUCTION TO COMPUTER ARCHITECTUREAND MICROPROCESSOR PRACTICAL (125C21)	
Theobjectiveofthispaperistounderstandtheprogrammingfeaturesandoperationsof assembly language programs using 8085 Microprocessor kit / Simulator.	
CO 1	Remember the Basic binary codes and their conversions. Binary concepts are used in Microprocessor programming and provide a good understanding of the architecture of 8085
CO 2	Understanding the 8085-instruction set and their classifications, enables the students to write the programs easily on their own using different logic.
CO 3	Applying different types of instructions to convert binary codes and analyzing the outcome. The instruction set is applied to develop programs on multi byte arithmetic operations.
CO 4	Analyse how peripheral devices are connected to8085usinginterruptsand DMA Controller.

ALLIED MATHEMATICS-II(125E2A)
C.O.Studentwillunderstandtheimportanceofmathematicsinvariousfieldsandapply the formulations in his core study and course work. To enhance the knowledge of the Mathematics in relation to computer studies and have a strong application module development skill.
COI: To make the student to understand the different methods of finding the integral values using reduction formula and hence derive solution
CO II: To understand the different methods of solving the second order ODE depending on the functions given. To understand the difference in solving the ODE and PDE's.
CO III: To understand the importance of Laplace in the development and solving of complex problems and hence applying it on ordinary differential equations.
CO IV: To understand the importance of vector analysis and the application of differentials using del operator and hence understanding the physical interpretation in science.
COV: To understand the calculus branch of Integration and hence applying the same in finding the line, area, volume of the different planes.

Skill Enhancement Course II: Quantitative Aptitude(125S2A)	
To improve the quantitative skills of the students To prepare the students for various competitive exams	
CO 1	To gain knowledge on LCM and HCF and its related problems
CO 2	To get an idea of age, profit and loss related problem solving.
CO 3	Able to understand time series simple and compound interests
CO 4	Understanding the problem related to probability, and series
CO5	Able to understand graphs, charts

Skill Enhancement Course III: Problem Solving Techniques(125S2B)	
To understand the importance of algorithms and programs, and to know of the basic problem-solvingstrategies.Tolearnefficientstrategiesandalgorithmstosolvestandard problems, thus laying a firm foundation for designing algorithmic solutions to problems.	
CO 1	Understand the systematic approach to problem solving.
CO 2	Know the approach and algorithms to solve specific fundamental problems.
CO 3	Understandtheefficientapproachtosolvespecificfactoring-relatedproblems.
CO 4	Understand the efficient array-related techniques to solve specific problems.
CO5	Understand the efficient methods to solve specific problems related to text processing. Understand how recursion works.

SEMESTER-III

225C3A- Programming in Java

CO1: Understand the basic Object-oriented concepts. Implement the basic constructs of Core Java
CO2: Implement inheritance, packages, interfaces and exception handling of Core Java.
CO3: Implement multi-threading and I/O Streams of Core Java
CO4: Implement AWT and Event handling
CO5: Use Swing to create GUI.

225C31- Programming in Java Practical

CO1: Code, debug and execute Java programs to solve the given problems
CO2: Implement multi-threading and exception-handling
CO3: Implement functionality using String and String Buffer classes
CO4: Demonstrate Event Handling.
CO5: Create applications using Swing and AWT

ALLIED STATISTICS-I (225E1A)

C.O. To assists the students to solve the real life problems and obtaining the right solution requires understanding and modeling the problem correctly and applying appropriate optimization tools and skills to solve the model.

CO1	The students can know about the types data and learns how to classify the data. Also they learn to present the data through various graphs and TO prepare the Table
CO2	Knowing how to draw the various diagrams. They learn to construct the
	Various type of chart, histogram, frequency polygon and ogives.
CO3	Thestudentscanbeabletocalculatevariousmeasuresofaveragesinstatistics and its advantages
CO4	Knowingtofindthevariousmeasureofdispersioninstatisticsanditsuses
CO5	Knowing the construction of bivariate frequency table. They learn about the bivariate techniques correlation. They also learn the Association of attributes.

Skill Enhancement Course III: Web Page Design Practical(225S2A)	
To develop the skill & knowledge of Web page design. Students will understand how can they function either as an entrepreneur or can take up jobs in the multimedia and Web site development studio and other information technology sectors.	
CO 1	Understand the basics of HTML
CO 2	Understand all the advanced elements in HTML
CO 3	Understand the efficient use of Cascading style sheets
CO 4	Understand the advanced tags in CSS
CO5	Understand the efficient usage of Web graphics

SEMESTER IV

225C41- Data Structures and Algorithms Practical

CO1: Implement data structures using Java
CO2: Implement various types of linked lists and their applications
CO3: Implement Tree Traversals
CO4: Implement various graph algorithms in Java
CO5: Implement different sorting and searching algorithms

225C4A- Data Structures and Algorithms

CO1: To introduce the concepts of Data structures and to understand simple linear data structures.
CO2: Learn the basics of stack data structure, its implementation and application
CO3: Use the appropriate data structure in context of solution of given problem and demonstrate a familiarity with major data structures.
CO4: To introduce the basic concepts of algorithms
CO5: To give clear idea on algorithmic design paradigms like Divide and conquer and Backtracking,

ALLIED STATISTICS-II (225E2A)	
CO: Familiarizes the students with the basic knowledge of Statistics, and their tools used for applying appropriate optimization tools and skills to solve the model.	
CO1	The students studies the basic concepts of probability and they can able to Solve the simple problems. They learn the basic theorems in probability.
CO2	Thestudentslearnthebasicconceptsofprobabilityfunction.Knowingabout Standard discrete distributions and they can able to solve the simple problems on binomial, poisson distribution.
CO3	The students learn continuous distributions(Normal and Exponential distribution).And they learn to estimate its properties
CO4	The students can learn about the sampling distribution. Also the students Know the difference between the small and large sample theory
CO5	The students learn to analyse the data using statistical tests liket,Fand chi-square Also the students able to describe and discuss anova techniques. They can able to analyse the data using anova techniques

SEMESTER V

CORE : Paper IX: Operating Systems

The objective of this paper is to understand the fundamental concepts and role of Opearating System, to learn Process Management and Scheduling algorithms, Memory Management policies, I/o and File Management Techniques

CO1	This unit covers types of system, OS structure, Process Management process communication, CPU schedules and Scheduling algorithms
CO2	This unit covers various Process synchronization tools and Deadlocks
CO3	This unit covers various Memory Management Techniques, Contiguous and Non Contiguous Memory allocation, Segmentation and Page table.
CO4	This unit covers Virtual Memory, Demand Paging Technique, File System concepts, Protection, Allocation Methods and Free Space Management
CO5	This unit covers I/O Systems Interface, System Protection and Security

CORE : Paper X: Relational Database Management Systems

This objective of this paper is to gain a good understanding of the architecture and functioning of database Management Systems and also understand the use of Structured Query Language (SQL) and its syntax and apply Normalization techniques to normalize a database

CO1	This unit covers describe basic concepts of database system and design data model and schemas in RDBMS
CO2	This unit deals with relational data model,relational calculus and domain relational calculus
CO3	This unit covers various Normalization methods, Transaction processing and database security
CO4	This unit covers SQL commands, Datatypes, Join and Set operations, Constraints and subquery
CO5	This unit covers PL/SQ, Procedure, Function, Packages, Exception Handling and Triggers

Core : Operating Systems Lab

CO1	Implement basic I/O programming and Scheduling Algorithms
CO2	Implement Reader /Writer problem using semaphores and IPC
CO3	Implement Banker's Algorithm for Deadlock Avoidance
CO4	Implement FIFO and LRU Page replacement algorithms
CO5	Implement First Fit, Best Fit, and Worst Fit algorithms for Memory Management

Core : PL/SQL Lab

CO1	Implement basic DDL, DML commandswith constrainsts
CO2	Implement SQL Queries : Queries, sub queries, Aggregate function
CO3	Implement PL/SQL : Exceptional Handling and PL/SQL : cursor
CO4	Implement PL/SQL : Trigger and PL/SQL : packages
CO5	Design and develop database applications using front and back end tools

ELECTIVE V : MOBILE ADHOC NETWORK (325E5B)	
The objective of this paper is to develop the skills to gain a basic understanding of Adhoc netwoks. To introduce the concepts of various MAC protocols, Routing algorithms and transport layer protocols from a theoretical perspective	
CO1	To understand the basic concepts ad-hoc networks and ad-hoc mobility models.
CO2	To acquire knowledge about Medium access protocols and standards like IEEE 802.11a and HIPERLAN.
CO3	This unit Identifies the significance of Routing protocols and analyzes routing Algorithm.
CO4	To understand the applications of end-end delivery and security issues in ad-hoc networks.
CO5	To Analyze and understand the concept of cross-layer design and parameter optimization techniques.
ELECTIVE VI : SOFTWARE ENGINEERING(325E5D)	
The objective of this paper is to introduce various Software Development Cycles, Structured and Object Oriented Analysis & Design concepts, UML and Software Testing Techniques.	
CO1	This unit covers evolution of Software Engineering, Various Projects, and Software Life Cycle Models like Water Fall Model, RAD Model, Spiral Model and Agile Model.
CO2	This unit covers Requirement Analysis & Specification, SRS and Formal System Specification.
CO3	This unit covers concepts of Software Design, Coupling & Cohesion, Function Oriented Design, Structured Analysis & Design, DFD and Detailed design.
CO4	This unit covers concepts of UML and UML diagrams like Use Case diagram, Class diagram, Interaction diagram, Activity diagram and State Chart diagram.
CO5	This unit covers Coding, Reviews, and Documentation, Testing types like Black Box, White Box, Integration Testing, OO Testing and Smoke Testing.