I B.Sc (CS)	PROGRAMMING IN C	CS101S
SEMESTER – I		HRS/WK-4
CORE – I		CREDIT – 3

Objective:
To understand the basic concepts of a C Language and its Programming skills.

COURSE OUTCOMES:

CO1: To make use of various data types in C Programming.
CO2: To know the flow of various control structures.
CO3: To have familiarity with function calling mechanism.
CO4: To transform a problem into programming constructs.
CO5: To write C programs using Structures, Strings, Arrays, Pointers and File Handling Programs.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: CS101S					COURSE TITLE: PROGRAMMING IN C					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	4	3	4	4	3	4	4	3.6	
CO2	4	4	4	4	4	3	4	3	3	4	3.7	
CO3	4	4	3	3	4	4	4	3	4	4	3.7	
CO4	4	4	3	3	4	4	3	3	4	3	3.5	
CO5	4	3	4	3	3	4	4	4	4	4	3.7	
Mean Overall Score											3.6	

Result: The Score of this Course is 3.6(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT –I **[10hrs]**

Basics of C: C fundamentals Character set – Identifier and keywords – data types – constants– Variables – Declarations – Expressions – Statements – operators – Library functions.

UNIT–II **[10hrs]**

I/O and Control Statements: Data input output functions - Simple C programs - Flow of control – if, if- else, while, do-while, for loop, nested control structures – switch, break and continue, go to statements.

UNIT–III **[15hrs]**

Function and Storage classes: Function – Definition – Prototypes – Passing arguments – Recursion - Storage classes.

UNIT–IV **[15hrs]**

Arrays, Structures and Unions: Arrays – Defining and Processing – Passing arrays to functions – Arrays and string - Structures and Unions.

UNIT–V **[10hrs]**

Pointers and Files: Pointers – Declarations – Passing pointers to function – Operation onPointers
– Pointer and Arrays – Files and operation on files.

Text Books:

1. Programming in ANSI C by E.Balagurusamy 6thEdition, McGraw Hill Education-2012**.**
2. Programming with ANSI and Turbo C Ashok N.Kamthane, 6thEdition, Pearson Education. 2009.

Reference Books:

1. The C programming Language B.W. Kernighan and D.M. Ritchie,. 2nd Edtion Prentice Hall;- 1998
2. C-The Complete Reference H. Schildt, 4thEdition , Tata McGraw Hillpublication-2010.
3. Let us C Kanetkar Y., BPB Pub., NewDelhi-2004.

I B.Sc (CS)	**PROGRAMMING IN C++**	**CS203S**
SEMESTER - II		**HRS/WK-4**
CORE – 3		**CREDIT - 3**

Objective:

To Learn the basic concepts of Object-Oriented Programming and C++ Programming skills.

COURSE OUTCOMES

CO1: To learn the basic concepts& principles of Object-Orientedprogramming

CO2: To understand the C++ Fundamentals and Functions

CO3: To build logic using C++ with class and objects and Constructor

CO4: To learn and implement Inheritance and its types

CO5: To Understand the concept of streams and file management in C++

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE: CS203S					TITLE OF THE PAPER: PROGRAMMING IN C++					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	4	4	4	4	4	4	3	3.5	
CO2	3	4	3	4	3	4	4	3	3	4	3.5	
CO3	3	4	3	3	4	4	4	3	4	4	3.6	
CO4	3	3	3	3	4	4	4	3	4	4	3.5	
CO5	4	4	3	3	3	4	4	3	4	4	3.6	
									Mean Overall Score		3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT –I **[10 hrs]**

OOP'S: Principles of Object Oriented Programming [OOP]: Evolution of C++ - Programming paradigms – Key concept of OOP – Advantages of OOP- Usage of OOP and C++ - Input and Output in C++ - Streams.

UNIT-II **[10 hrs]**

C++ Fundamentals and Functions: Stream classes-Unformatted console I/O Operations – Introduction to C++ - Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control structures in C++ pointers and arrays –Function in C++ - Main function– function prototyping –Parameters passing in Functions – Values Return by functions –Inline Functions – Function overloading.

UNIT-III **[15 hrs]**

Object Manipulation and Polymorphism: Classes and objects; Constructors and Destructors; and Operator Overloading and type Conversion –Friend and Virtual functions.

UNIT-IV **[15 hrs]**

Inheritance: Single Inheritance – Multilevel inheritance – Multiple inheritances –Hierarchical – Hybrid Inheritance - Virtual Base class-Virtual Functions and Polymorphism

UNIT-V **[10 hrs]**

Working with Files: Classes for File Stream Operation – Opening and Closing a File – End –of – File Detection – File Pointers-Updating a File – Error Handling during File Operation – Command-line Arguments.

Text Books:

1. E.Balagurusamy, Object Oriented Programming with C++.
2. The C++ Programming Language: Special Edition by Bjarne Stroustrup
3. C++ Primer by Stanley B. Lippman, Josie Lajoie, and Barbara E. Moo

Reference Books:

1. Ashok N. Kamthane, Object Oriented Programming with ANSI & Turbo C + +, Pearson Education, Practical C++ Programming, by Steve Oualline
2. C++ Without Fear: A Beginner's Guide That Makes You Feel Smart by Brian R. Overland

YEAR – II	JAVA PROGRAMMING For the students admitted from the year 2019	19CS305
SEMESTER - III		HRS/WK-4
CORE – V		CREDIT –3

Objective:
To understand the basic concepts of JAVA language in internet programming.

COURSE OUTCOMES:

CO1: Understanding the principles and practice of object-oriented concepts and basic Java programs.
CO2: Knowledge of creating and using of Packages, Multithreading, Exception Handling
CO3: Design and implement Applet programming and AWT
CO4: Acquire knowledge of JDBC programming techniques in Java.
CO5: Learn to apply networking and RMI concepts through Java program.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE:19CS305					COURSE TITLE: JAVA PROGRAMMING					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	3	3	4	4	4	4	4	4	3	3.5	
CO2	3	4	3	4	3	4	4	3	3	4	3.5	
CO3	3	4	3	3	4	4	4	3	4	4	3.6	
CO4	3	4	3	3	3	4	4	3	4	4	3.5	
CO5	4	4	3	3	3	4	4	3	4	4	3.6	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT –I **[10 hrs]**

Fundamentals of Java Language: Introduction to Java – Features of Java – Data Types – Arrays - Control Statements- Classes – Objects—Overloading method.

UNIT–II **[10 hrs]**

Packages, Interfaces and Exception Handling: Packages – Importing Packages – Interfaces – Exception Handling.

UNIT–III **[10 hrs]**

Thread : Life Cycle of Thread – Multithreading

Applets : Applet life cycle – creating simple applets- Loading and displaying images on applets- working with graphics

UNIT-IV: **[15 hrs]**

AWT :AWT controls –windows Fundamentals - layout managers

JDBC: JDBC Architecture – Connecting to a Database (MS Access) – SQL commands-select, insert, delete, update.

UNIT-V: **[15 hrs]**

NETWORKING: Networking Basics-URL- Inet Address – TCP/IP Sockets .

RMI : Introduction to RMI-RMI architecture - Example using RMI.

Text Books:

1. The Complete Reference, H. Schild, Tata McGraw-Hill publication, Fifth Edition , Jul2017.
2. JAVA: How to program, Paul J. Deitel, Harvey Deitel, Prentice Hall publication, tenth edition,2014.
3. Core Java, Volume II--Advanced Features, Cray S. Horstman , Prentice Hall publication 2019.

Reference Books:

1. The Java Programme Language ,Wesley, K. Arnold and J. Gosling, Addison Wesley publications,2013
2. “Guide to Java Programming”, Peter Norton & William Stack, Techmedia Publications, New Delhi, First Edition,1997.

II B.Sc (CS)	INTERNET PROGRAMMING For the students admitted from the year 2019	19CS407
SEMESTER – IV		HRS/WK-4
CORE – VII		CREDIT – 3

Objective:
To enable the students to learn the concepts of Internet Programming.

COURSE OUTCOMES:

CO1: To attain a basic knowledge about HTML and its tags
CO2: To Design and develop web pages using HTML
CO3: To Describe the basic JavaScript syntax and structures
CO4: To Understand the Document Object Model Forms in JavaScript
CO5: To Ability to identifying the basic suitable tags and CSS styles to design web pages and also to know the benefits of using XML.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CS407					COURSE TITLE:INTERNET PROGRAMMING					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	2	3	4	4	4	3	3	3	3.4	
CO2	4	4	2	3	4	4	4	3	3	3	3.4	
CO3	4	4	2	3	4	4	4	3	3	3	3.4	
CO4	4	4	2	3	4	4	4	3	2	3	3.3	
CO5	4	3	2	3	4	4	4	3	2	3	3.2	
Mean Overall Score											3.3	

Result: The Score of this Course is 3.3(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT-I **[10 Hrs]**

HTML: Introduction to HTML – List – Creating Table – Linking Document Frames – Graphics to HTML Doc.

UNIT-II **[10 Hrs]**

JavaScript: Introduction – Advantage of JAVA Script - JAVA Script Syntax – Data type – Variable – Array – Operator and Expressions – Looping Constructor – Function – Dialog Box.

UNIT-III **[15Hrs]**

JavaScript DOM Forms:

JSSS DOM-understanding objects in HTML-Browser objects-JavaScript forms: -Form objects- Built-in objects (String, Math, Date)-User defined objects.

UNIT-IV **[10 Hrs]**

DHTML

Cascading Style Sheets-Class-Using Span Tag-External style sheets-Using div tag-Layers

UNITV **[15Hrs]**

XML

XML: Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation

Text Books:

1. "Internet : The Complete Reference" by Margaret Levine Young- McGraw Hill Education - Millennium Edition – 1999.

2. "The Internet For Dummies" by John R. Levine , Carol Baroudi, and Margaret Levine Young, Wiley Publishing , Inc- 9th Edition-2003.

3. "How the Internet Works" by Michael Troller, Preston Gralla– Que Publisher - 8th Edition- 2006.

4." Internet – Complete Reference" by Margaret Levine Young - Tata McGraw-Hill Education Pvt. Ltd., - Second Edition – TMHEducation-2002.

5." Web Enable Commercial Application Development Using HTML, DHTML, Java Script, Pen CGI" by Ivan Bayross- BPB Publications,2000.

Reference Books

1." Internet – Complete Reference" by Margaret Levine Young - Tata McGraw-Hill Education Pvt. Ltd., - Second Edition – TMHEducation-2002.

2. "The Everyday Internet All-in-One Desk Reference For Dummies" by Peter Weverka- Wiley Publishing , Inc. - 3rd Edition –2005.

3. "HTML- The Complete Reference" by Thomas A.Powell -Third Edition, TMH,2002.

III B.Sc (CS)	DOT NET TECHNOLOGIES	CS510S
SEMESTER – V		HRS/WK-5
CORE –X		CREDIT –5

Objective:
To make the student get exposed with the latest programming concept DOTNET and to equip them with skills related to C# and ASP.NET programming.

COURSE OUTCOMES:

CO1: Understand the basic concepts of DOT NET framework and its components.
CO2: Acquire the basic programming knowledge using .NET framework.
CO3: Identify and differentiate the ASP and ASP.NET and its architecture.
CO4: Understand the fundamental controls and web controls in C#.
CO5: Understand about ADO.NET and have an effective database as a backend.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSECODE: CS510S					COURSE TITLE: DOT NET TECHNOLOGIES					HOURS: 5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	4	4	4	4	3	4	4	3.6	
CO2	3	4	3	4	4	4	4	3	3	4	3.6	
CO3	4	3	4	4	3	3	4	3	3	4	3.5	
CO4	3	4	3	4	3	4	4	3	4	4	3.6	
CO5	3	4	3	4	3	3	3	4	3	4	3.4	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I
[10hrs]

Introduction to Dot Net:- Dot Net Framework –CLR-MSIL-JIT-Managed Code-Benefits of Dot Net.

UNIT-II:
[15hrs]
C#.Net: Data types-Variables-Arrays-Properties-Namespace-Methods-Interface-Delegation.

UNIT-III:
[20hrs]
Asp.net: Difference between Asp and Asp.net-Architecture of Asp.net-Execution model-Difference between Code Behind and aspx file-Implementation of simple web application.

UNIT-IV:
[10hrs]
Controls inC#:Button-Textbox-Timer-Picture Box-Radio Button-Menu. Web Controls: Ad Rotator-Validation-Calendar .

UNIT –V:
[20hrs]
ADO.NET: ADO.Net Objects Model – Architecture of ADO.NET-Working with Grid control- Working with Crystal Report Viewer control.

Text Books:

1. C# Programmers Harvey M. Deitel& Paul J.Deitel - Second Edition-Pearson Edition - 2011.
2. C#.Net YashavantKanetkar, Motilal Books of India 1- Edition2004.
3. C# in an nutshell. O'Reilley Publication Peter Drayton , Ben Albahari, Ted Neward Edition -2002
4. Programming with C# E.Balaguruswamy. -. Tata McGraw – Hill Publication. 1- Edition 5th Reprint, Tata McGraw Hill,2004.

Reference Books:

1. C# - A Beginner's Guide Herbert Schlitz Osborne/ McGraw – Hill Publication- 1 Editon 2002
2. C# Programming with the Public Bata Burton Harvey, Simon Robinson, Julian Templeman and Karli Waston, , Shroff Publishers & Distributors Pvt. Ltd(SPD) Mumbai, 3rd Edition -2001.
3. Ben Albahart, Peter Drayton and Brad Merrill, 'c# Essentials', SPD, Mumbai March - 1 Editon2001.
4. ThamariSelvei, A text Book on C#: A Systematic Approach to OOP, Pearson Ed. 1st Edition:2013

III B.Sc (CS)	OPERATING SYSTEM	19CS613
SEMESTER - VI		HRS/WK- 6
CORE - XI		CREDIT – 5

Objective:

To make the students aware of all basic concepts related to operating system and illustrate with UNIX Case Study.

COURSE OUTCOMES:

After learning this course, the students should be able to expose

CO1: Ability to understand the services provided by the OS and also to understand the history of the OS.
CO2: Ability to understand about process and how the processes are Communicated and scheduled.
CO3: Ability to understand the different techniques of memory management.
CO4: Ability to know the basic knowledge of protection and security mechanisms.
CO5: Ability to learn the basic concept of operating system using UNIX operating System.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: 19CS613					COURSE TITLE:OPERATING SYSTEM					HOURS : 6	CREDITS : 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	3	5	4	4	4	3	5	4.0	
CO2	4	4	4	4	4	4	4	3	4	5	4.0	
CO3	3	3	3	3	3	4	4	4	3	4	3.4	
CO4	4	3	4	4	4	4	4	4	3	4	3.8	
CO5	3	4	4	4	5	4	4	4	4	5	4.1	
Mean Overall Score											3.8	

Result: The Score of this Course is 3.8(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[20 hrs]**

Introduction to Operating System: Definition of Operating System- Booting: Before Booting and after Booting, Types of Booting – Kernel- History of Operating System - Operating system functions: Information Management, Process Management, and Memory Management.

UNIT-II **[20 hrs]**

Process Management and Deadlock: Process Management: Context Switching, Different States of Process, Process Sate Transition Diagram, Process Control Block (PCB), Operation on Process – Levels of Scheduling – Short term Scheduling Policies: Round robin method - Scheduling based on priority (or priority method) - Priority class method - Heuristic scheduling. - Inter-process communication - Dead Lock - Dead Lock prerequisites - Dead Lock Strategies.

UNIT-III **[20hrs]**

Memory Management: Memory Management: Real Memory Management, Virtual Memory Management – Real Memory Management: Contiguous Real Memory Management, Single Contiguous , Fixed Partitioned, Variable Partitions, Non- Contiguous Real Memory Management–Paging , Segmentation - Virtual Memory Management Systems.

UNIT-IV **[20hrs]**

GUI and Security: GUI – Components of GUI – Requirements of Windows based GUI – Security: Threats – Attacks – Worms – Virus - Design principles – Encryption: Methods of Encryption – Authentication: Authentication in Centralized Environment, Authentication in Distributed Environment.

UNIT-V **[10hrs]**

UNIX: Unix - Architecture of Unix: Various Modules and relationship of Unix and their relationship – Unix File System: Different Types of Files, Important Unix Directories and Files – Basic commands in UNIX.

Text Books:

1. A.S.Godbole-OperatingSystems-TMH-1999.
2. A.Silberschatz and P.B.Galvin- Operating system concepts-Addision-Wesley Publishing company, Fifth Edition,1998.

Reference Books:

1. Andrew S.Tannenbaum, “Operating Systems: Design and Implementation”, 3/e,PHI,2006.
2. Charles Crowley,”Opearting Systems-A design Oriented Approcah”,TataMCGraw Hill ,1998.
3. William Stallings, “Operating Systems”,5/e PHI/Pearson Education ,1997.

III B.Sc (CS)	SOFTWARE ENGINEERING	19ECS51A
SEMESTER – V		HRS/WK-6
Elective – II Option(I)		CREDIT – 4

Objective:

To introduce the concepts of software Engineering and the various phases in Software development in order to equip the students in developing project.

COURSE OUTCOMES:

After learning this course, the students should be able to expose

CO1: Ability to understand the Software Engineering and Models

CO2: Ability to understand Requirement Engineering and Requirement Engineering Tasks

CO3: Ability to understand Building Analysis Model

CO4: Ability to know the Testing strategies

CO5: Ability to learn the basic concept of the Management Spectrum

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS51A					COURSE TITLE: Software Engineering					HOURS: 6	CREDITS : 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	3	4	3	3	3	4	4	3.6	
CO2	4	4	3	3	4	4	4	4	4	3	3.7	
CO3	4	4	3	4	4	4	4	3	3	3	3.6	
CO4	4	4	3	4	4	4	4	3	4	4	3.8	
CO5	4	4	3	4	4	4	4	3	3	4	3.7	
Mean Overall Score											3.7	

Result: The Score of this Course is 3.7(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

Unit-I: **[20hrs]**

Software Engineering and Models: Introduction -Characteristics of Software-Software Myths- **Process Models**: The Waterfall Model- Incremental Process Models: The Incremental Model, The RAD Model - **Evolutionary Process Models:** Prototyping, The Spiral Model, The Concurrent Development Model.

Unit-II: **[15hrs]**

Requirement Engineering: Requirement Engineering Tasks: Inception, Elicitation, Elaboration, Negotiation, Specification, Validation, Requirement management - Initiating the Requirements Engineering Process: Identifying the stake-holder, Recognizing the multiple view point, Working towards collaboration, Asking the first question- Eliciting Requirements: Collaborative requirement gathering- Quality function deployment (QFD)- Users scenarios- Elicitations work product.

UNIT-III:
[20hrs]

Building Analysis Model: Requirement Analysis: Overall objectives and Philosophy, Analysis Rule of thumbs, Domain Analysis - Data Modeling: Data Objects, Data Attributes, Relationships, Cardinality and Modality – Flow Oriented Modeling – Class Based Modeling – Creating a Behavioral Model.

Unit-IV: **[20hrs]**

Testing: Introduction about testing: Testing ,Generic characteristics of testing, Verification and Validation - Test Strategies for Conventional Software: Unit Testing, Integration Testing: Top-down Integration, Bottom-up Integration - Validation Testing – System Testing –White Box Testing – Basic Path testing : Flow Graph Notation, Independent paths, Cyclomatic Complexity, Graph matrices method - Control Structure – Black Box Testing: Graph-Based Testing Methods , Equivalence Partitioning, Boundary Value Analysis, Orthogonal Array Testing

Unit-V: **[15hrs]**

Project Management: The Management Spectrum- The People: The Players, Team Leaders, The Software Team- Coordination and Communication Issues-The Product: Software Scope, Problem Decomposition - The Process: Melding the Product and the Process, Process Decomposition – The Project: Signs of Project Failure, Five-part commonsense approach to software projects - Formal Technical Reviews(FTR).

Text Book:

1. R.S.Pressman – Software Engineering –Sixth Edition McGraw Hill International edition-2007.

Reference Books:

1. Richard Fairley – Software Engineering – (Design, Reliability and Management) – Tata McGraw Hill edition–1983.
2. Software Engineering: (Update), 8th Edition. Ian Sommerville, PearsonEdition-2006.

III B.Sc(CS)	**PYTHON PROGRAMMING**	**19SCS51**
SEMESTER – V	**(Skill Enhancement Course)**	**HRS/WK-2**
IV - SEC – PRACTICAL		**CREDIT - 2**

Objective:

This course introduces students to learn fundamentals of Python Programming and to get employed in various MNC.

COURSE OUTCOME:

CO1: To write, test, and debug simple Python programs.

CO2: To implement Python programs with conditionals and loops

CO3: Represent compound data using Python lists, tuples, dictionaries.

CO4: To learn database connectivity in python.

CO5: Students can understand Python and apply to get Employability skills.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:19SCS51					COURSE TITLE: Practical- Python Programming					HOURS: 2	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

1. Introduction and installation of python.
2. Write a program to demonstrate different data types in Python.
3. Write a program to perform different Arithmetic Operations in Python.
4. Write a simple program to perform Looping in Python.
5. Write a program to demonstrate working with arrays (numpy)
6. Write a program to demonstrate working with lists in python.
7. Write a program to demonstrate working with tuples in python.
8. Write a program to demonstrate working with dictionaries in python.
9. Write a program using split operator
10. Create a database for student mark sheet preparation.

Text Books:

1. Jeeva Jose and P. SojanLal, "Introduction to Computing and Problem Solving with PYTHON", Khanna

Book Publishing Co. (P) Ltd., 2016.

Reference Books:

1. Wesley J. Chun, "Core Python Programming", Second Edition, Prentice Hall Publication, 2006.

2. Micheal Dawson, "Python Programming for Absolute Beginners", Third Edition, Course Technology, 2010.