B.Sc. Computer Science

(Semester)

CHOICE BASED CREDIT SYSTEM REVISED SYLLABUS

(With effect from 2023-24)

Programme Outcomes (PO), Programme Specific Outcomes (PSO), Course Learning Outcomes (CLO)

Programme Outcomes (PO)

- Scientific aptitude will be developed in Students
- Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the Computer Science & humanities stream.
- Students will become employable; Students will be eligible for career opportunities in education field, Industry, or will be able to opt for entrepreneurship.
- Students will possess basic subject knowledge required for higher studies, professional and applied courses.
- Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.
- Ability to acquire in-depth knowledge of several branches of Computer Science and aligned areas. This Programme helps learners in building a solid foundation for higher studies in Computer Science and applications.
- The skills and knowledge gained leads to proficiency in analytical reasoning, which can be utilized in modelling and solving real life problems.
- Utilize computer programming skills to solve theoretical and applied problems by critical understanding, analysis and synthesis.
- To recognize patterns and to identify essential and relevant aspects of problems.
- Ability to share ideas and insights while seeking and benefitting from knowledge and insight of others.
- Mould the students into responsible citizens in a rapidly changing interdependent society.

The above expectations generally can be pooled into 6 broad categories and can be modified according to institutional requirements:

PO1: Knowledge

PO2: Problem Analysis

PO3: Design / Development of Solutions

PO4: Conduct investigations of complex problems PO5:

Modern tool usage

PO6: Applying to society

2. Programme Specific Outcomes of B.Sc. Degree Programme in Computer Science

PSO1: Think in a critical and logical based manner

PSO2: Familiarize the students with suitable software tools of computer science and industrial applications to handle issues and solve problems in mathematics or statistics and realtime application related sciences.

PSO3: Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.

PSO4: Understand, formulate, develop programming model with logical approaches to a Address issues arising in social science, business and other contexts.

PSO5: Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer science and Industrial statistics.

PSO6: Provide students/learners sufficient knowledge and skills enabling them to undertake further studies in Computer Science or Applications or Information Technology and its allied areas on multiple disciplines linked with Computer Science.

PSO7: Equip with Computer science technical ability, problem solving skills, creative talent and power of communication necessary for various forms of employment.

PSO8: Develop a range of generic skills helpful in employment, internships& societal activities.

PSO9: Get adequate exposure to global and local concerns that provides platform for further exploration into multi-dimensional aspects of computing sciences.

3. Highlights of the Revamped Curriculum

- Student-centric, meeting the demands of industry & society, incorporating industrial components, hands-on training, skill enhancement modules, industrial project, project with viva-voce, exposure to entrepreneurial skills, training for competitive examinations, sustaining the quality of the core components and incorporating application oriented content wherever required.
- The Core subjects include latest developments in the education and scientific front, advanced programming packages allied with the discipline topics, practical training, devising mathematical

models and algorithms for providing solutions to industry / real life situations. The curriculum also facilitates peer learning with advanced mathematical topics in the final semester, catering to the needs of stakeholders with research aptitude.

- The General Studies and Computer Science based problem solving skills are included as mandatory components in the 'Training for Competitive Examinations' course at the final semester, a first of its kind.
- The curriculum is designed so as to strengthen the Industry-Academia interface and provide more job opportunities for the students.
- The Industrial Statistics course is newly introduced in the fourth semester, to expose the students to real life problems and train the students on designing a mathematical model to provide solutions to the industrial problems.
- The Internship during the second year vacation will help the students gain valuable work experience that connects classroom knowledge to real world experience and to narrow down and focus on the career path.
- Project with viva-voce component in the fifth semester enables the student, application of conceptual knowledge to practical situations. The state of art technologies in conducting a Explain in a scientific and systematic way and arriving at a precise solution is ensured. Such innovative provisions of the industrial training, project and internships will give students an edge over the counterparts in the job market.
- State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature are incorporated as Elective courses, covering conventional topics to the latest – Statistics with R Programming, Data Science, Machine learing. Internet of Things and Artificial Intelligence etc..

Illustration for B.Sc. Computer Science Curriculum Design

First Year

Semester-I

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language – Tamil	3	6
Part-II	English	3	6
Part-III	CC1 - Programming in C	5	5
	CC2 - Practical : Programming in C Lab	5	5
	Elective Course 1 -Discrete Mathematics – I – EC1(Annexure I) (Generic / Discipline Specific)	3	4
Part-IV	1. Skill Enhancement Course- SEC-1 - Fundamentals of Information Technology (Annexure II) -(Non Major Elective)	2	2
	Foundation Course FC - Problem Solving Techniques	2	2
		23	**30**

Semester-II

Part	List of Courses	Credit	Hours per week(L/T/P)
Part-I	Language –Tamil	3	6
Part-II	English	3	6
Part-III	CC3 - Data Structures and Algorithms	5	5
	CC4 - Practical: Data Structures and Algorithms Lab(C++)	5	5
	Elective Course 2 - Numerical Methods – EC2(Annexure I) (Generic / Discipline Specific)	3	4
Part-IV	1. Skill Enhancement Course- SEC-2 - Office Automation (Annexure II) -(Non Major Elective)	2	2
	1. Skill Enhancement Course – SEC-3 - Advanced Excel (Annexure II) - (Discipline Specific / Generic)	2	2
		23	**30**

Second Year

Semester-III

Part	List of Courses	Credit	Hours per week(L/T/P)
Part-I	Language – Tamil	3	6
Part-II	English	3	6
Part-III	CC5- Python Programming	5	5
	CC6 - Practical : Python Programming Lab	5	5
	Elective Course 3 - Statistical Methods and its Application-I- EC3 (Annexure I) (Generic / Discipline Specific)	3	4

Part-IV	1. Skill Enhancement Course -SEC-4 - Multimedia Systems (Annexure II) (Entrepreneurial Based)	1	1

	1. Skill Enhancement Course -SEC-5 - PHP Programming (Annexure II) (Discipline Specific/ Generic)	2	2
	Environmental Studies	-	1
		22	**30**

Semester-IV

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language – Tamil	3	6
Part-II	English	3	6
Part-III	CC7 - Java Programming	5	5
	CC8 - Practical: Java Programming Lab	5	5
	Elective Course - EC4 - Resource Management Techniques/ Digital Logic Fundamentals (Annexure I) - (Generic / Discipline Specific)	3	3
Part-IV	Skill Enhancement Course – SEC-6 - Web Designing-(Annexure II)	2	2
	Skill Enhancement Course - SEC-7 – Software Testing-(Annexure II)	2	2
	Environmental Studies	2	1
		25	**30**

Third Year

Semester-V

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-III	CC9 - Software Engineering	4	5
	CC10 - Database Management System	4	5
	CC11 - Practical: Database Management System Lab	4	5
	Elective Course – EC5-Operating Systems – (Annexure I) (Generic / Discipline Specific)	3	4
	Elective Course – EC6- Big Data Analytics – (Annexure I) (Generic / Discipline Specific)	3	4
	CC12 - Core /Project with Viva voce	4	5
Part-IV	Value Education	2	2
	Internship / Industrial Training (Summer vacation at the end of IV semester activity)	2	
		26	**30**

Semester-VI

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-III	CC13 - Computer Networks	4	6

	CC14 - .NET Programming	4	6
	CC15 - Practical: .NET Programming Lab	4	6

	Elective Course – EC7- Image Processing – (Annexure I) (Generic / Discipline Specific)	3	5
	Elective Course – EC8- Artificial Intelligence – (Annexure I) (Generic / Discipline Specific)	3	5
Part-IV	1. Professional Competency Skill Enhancement Course SEC8- Data Analytics using R Lab – (Annexure I)	2	2
Part -V	Extension Activity	1	
		21	**30**

Total Credits: 140

FIRST SEMESTER

CORE PAPER

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC	**PROGRAMMING IN C**	Core	5	-	-	-	4	5	25	75	100
Learning Objective											
LO1	To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.										
LO2	To understand the concept using if statements and loops										
LO3	This unit covers the concept of Arrays and Functions										
LO4	This unit covers the concept of Structurs and unions and Preprocessors										
LO5	To understand the concept of implementing pointers.										

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
CO1	Remember the program structure of C with its syntax and semantics	PO1,PO3,PO5
CO2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2,PO3,PO6
CO3	Apply the programming principles learnt in real-time problems	PO3,PO4,PO5

CO4	Analyze the various methods of solving a problem and choose the best method	PO4,PO5,PO6
CO5	Code, debug and test the programs with appropriate test cases	PO5,PO6

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	2	3	3
CO 3	2	3	2	3	3	2
CO 4	3	3	3	3	3	3

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC	**PROGRAMMING IN C LAB**	Core	-	-	4	-	4	4	25	75	100
Course Objective											
LO1	To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.										
LO2	To understand the concept using if statements and loops										
LO3	This unit covers the concept of Arrays and Functions										
LO4	This unit covers the concept of Structurs and unions and Preprocessors										
LO5	To understand the concept of implementing pointers and files										

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
1	Remember the program structure of C with its syntax and semantics	PO1,PO3,PO5

2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2,PO3,PO6
3	Apply the programming principles learnt in real-time problems	PO3,PO4
4	Analyze the various methods of solving a problem and choose the best method	PO4,PO5,PO6
5	Code, debug and test the programs with appropriate test cases	PO4,PO6

Mapping with Programme Outcomes:

CO/PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO 1	3	3	3	3	3	3
CO 2	2	3	3	3	3	3
CO 3	3	3	2	3	3	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3
Weight age of course contributed to each PSO	14	15	14	15	15	14

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Marks**		
								CIA	**External**	**Total**
EC-GS	Discrete Mathematics – I	**Elect**	4	-	-		3	25	75	100
Learning Objectives										

LO1	To understand the mathematical concepts like set theory, logics, number theory, combinatory and relations.
LO2	To Explain the Relations concepts and their properties
LO3	To know the Applications of recurrence relations
LO4	To understand the Graphs and Graphs models
LO5	To explain the Matrices concepts

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	To understand the mathematical concepts like set theory, logics, number theory, combinatory and relations.	PO1, PO2, PO3, PO4, PO5, PO6
CO2	To understand different mathematical logics and functions	PO1, PO2, PO3, PO4, PO5, PO6
CO3	To Understanding the different form of number theory	PO1, PO2, PO3, PO4, PO5, PO6
CO4	To gain knowledge on set theory	PO1, PO2, PO3, PO4, PO5, PO6
CO5	Able to understand Relations and its applications	PO1, PO2, PO3, PO4, PO5, PO6

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Inst. hours**	**Credits**	**Marks**		
									CIA	**External**	**Total**
SEC	**Fundamentals of Information Technology**	Skill Enha. Course (SEC)	2	-	-	-	2	2	25	75	100
Learning Objectives											
LO1		Understand basic concepts and terminology of information technology.									

LO2		Have a basic understanding of personal computers and their operation
LO3		Be able to identify data storage and its usage
LO4		Get great knowledge of software and its functionalities
LO5		Understand about operating system and their uses

Course Outcomes	**Programme Outcomes**
On completion of this course, students will	
Learn the basics of computer, Construct the structure of the required things in computer, learn how to use it.	PO1, PO2, PO3, PO4, PO5, PO6
Develop organizational structure using for the devices present currently under input or output unit.	PO1, PO2, PO3, PO4, PO5, PO6
Concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis.	PO1, PO2, PO3, PO4, PO5, PO6
Work with different software, Write program in the software and applications of software.	PO1, PO2, PO3, PO4, PO5, PO6
Usage of Operating system in information technology which really acts as a interpreter between software and hardware.	PO1, PO2, PO3, PO4, PO5, PO6

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Inst. Hours**	**Marks**		
									CIA	**External**	**Total**
FC	**Problem Solving Techniques**	FC	2	-	-	-	2	2	25	75	100

Learning Objectives	
LO1	Familiarize with writing of algorithms, fundamentals of C and philosophy of problem solving.
LO2	Implement different programming constructs and decomposition of problems into functions.
LO3	Use data flow diagram, Pseudo code to implement solutions.
LO4	Define and use of arrays with simple applications
LO5	Understand about operating system and their uses

Course Outcomes	Programme Outcomes
On completion of this course, students will	
Study the basic knowledge of Computers. Analyze the programming languages.	PO1, PO2, PO3, PO4, PO5, PO6
Study the data types and arithmetic operations. Know about the algorithms. Develop program using flow chart and pseudocode.	PO1, PO2, PO3, PO4, PO5, PO6
Determine the various operators. Explain about the structures. Illustrate the concept of Loops	PO1, PO2, PO3, PO4, PO5, PO6
Study about Numeric data and character-based data. Analyze about Arrays.	PO1, PO2, PO3, PO4, PO5, PO6
Explain about DFD Illustrate program modules. Creating and reading Files	PO1, PO2, PO3, PO4, PO5, PO6

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	2	3	3	3	3
CO 4	3	3	2	3	3	3
CO 5	3	3	3	3	3	2

Weightage of course contributed to each PSO	15	14	14	15	15	14

S-Strong-3 M-Medium-2 L-Low-1

II Semester

Title of the Course/ Paper	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC3	**DATA STRUCTURES AND ALGORITHMS**	Core	5	-	-	-	5	5	25	75	100

Learning Objectives	
LO1	To understand the concepts of ADTs
LO2	To learn linear data structures-lists, stacks, queues
LO3	To learn Tree structures and application of trees
LO4	To learn graph strutures and and application of graphs
LO5	To understand various sorting and searching

Course Outcomes		**Programmeme Outcome**
CO	On completion of this course, students will	
CO1	Understand the concept of Dynamic memory management, data types, algorithms, Big O notation	PO1,PO6
CO2	Understand basic data structures such as arrays, linked lists, stacks and queues	PO2
CO3	Describe the hash function and concepts of collision and its resolution methods	PO2,PO4
CO4	Solve problem involving graphs, trees and heaps	PO4,PO6
CO5	Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data	PO5,PO6

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	1	3	3	3
CO 3	3	3	3	2	3	2
CO 4	3	2	3	2	3	3
CO 5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	14	13	13	15	14

S-Strong-3 M-Medium-2 L-Low-1

Title of the Course/ Paper	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC4	**DATA STRUCTURES AND ALGORITHMS LAB** [Note: Practicals may be offered through C / C++ / Python]	Core	-	-	5	-	5	5	25	75	100
Learning Objectives											
LO1	To understand the concepts of ADTs										
LO2	To learn linear data structures-lists, stacks, queues										
LO3	To learn Tree structures and application of trees										
LO4	To learn graph strutures and and application of graphs										
LO5	To understand various sorting and searching										

Course Outcomes		Programmem Outcome
CO	On completion of this course, students will	
1	Understand the concept of Dynamic memory management, data types, algorithms, Big O notation	PO1,PO4,PO5
2	Understand basic data structures such as arrays, linked lists, stacks and queues	PO1, PO4,PO6
3	Describe the hash function and concepts of collision and its resolution methods	PO1,PO3,PO6
4	Solve problem involving graphs, trees and heaps	PO3,PO4
5	Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data	PO1,PO5,PO6

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	1	3	2	3
CO 3	3	3	3	3	2	3
CO 4	3	3	3	3	2	3
CO 5	3	2	3	3	3	3
Weightage of course contributed to each PSO	15	15	13	15	13	15

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
EC-GS	Numerical Methods	**Elect**	4	-	-		3	25	75	100

Learning Objectives										
LO1	To introduce the various topics in Numerical methods.									
LO2	To make understand the fundamentals of algebraic equations.									
LO3	To apply interpolation and approximation on examples.									
LO4	To solve problems using numerical differentiation and integration									
LO5	To solve linear systems, numerical solution of ordinary differential equations.									

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Know how to solve various problems on numerical methods	PO1, PO2, PO3, PO4, PO5, PO6
CO2	Use approximation to solve problems	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Differentiation and integration concept are applied	PO1, PO2, PO3, PO4, PO5, PO6
CO4	Apply , direct methods for solving linear systems	PO1, PO2, PO3, PO4, PO5, PO6

CO5	Numerical solution of ordinary differential equations	PO1, PO2, PO3, PO4, PO5, PO6

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
SEC	**OFFICE AUTOMATION**	Skill Enha. Course (SEC)	**2**	-	-	-	2	2	25	75	100
Learning Objectives											
LO1	Understand the basics of computer systems and its components.										
LO2	Understand and apply the basic concepts of a word processing package.										
LO3	Understand and apply the basic concepts of electronic spreadsheet software.										
LO4	Understand and apply the basic concepts of database management system.										
LO5	Understand and create a presentation using PowerPoint tool.										

Course Outcomes		Programme Outcomes
CO	On completion of this course, students will	
CO1	Possess the knowledge on the basics of computers and its components	PO1,PO2,PO3,PO6,PO8
CO2	Gain knowledge on Creating Documents, spreadsheet and presentation.	PO1,PO2,PO3,PO6
CO3	Learn the concepts of Database and implement the Query in Database.	PO3,PO5,PO7
CO4	Demonstrate the understanding of different automation tools.	PO3,PO4,PO5,PO7
CO5	Utilize the automation tools for documentation, calculation and presentation purpose.	PO4,PO6,PO7,PO8

Mapping with Programme Outcomes:

MAPPING TABLE

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	2	3	3	3
CO2	3	3	3	3	3	3
CO3	3	3	3	3	3	3
CO4	3	3	3	3	3	3
CO5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	14	14	15	15	15

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
SEC	Advanced Excel	Skill Enha. Course (SEC)	-	-	2	-	2	2	25	75	100
Learning Objectives											

LO1	Handle large amounts of data

LO2	Aggregate numeric data and summarize into categories and subcategories
LO3	Filtering, sorting, and grouping data or subsets of data
LO4	Create pivot tables to consolidate data from multiple files
LO5	Presenting data in the form of charts and graphs

Course Outcomes		Programme Outcomes
CO	On completion of this course, students will	
CO1	Work with big data tools and its analysis techniques.	PO1
CO2	Analyze data by utilizing clustering and classification algorithms.	PO1, PO2
CO3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	PO4, PO6
CO4	Perform analytics on data streams.	PO4, PO5, PO6
CO5	Learn No-SQL databases and management.	PO3, PO8

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	**2**	**3**	**3**	**3**
CO2	**3**	**2**	**2**	**3**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**3**
CO4	**3**	**2**	**2**	**3**	**3**	**3**
CO5	**3**	**2**	**2**	**3**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**12**	**10**	**15**	**15**	**15**

Strong-3 M-Medium-2 L-Low-1

III Semester

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC1	Python programming	**Core**	5	-	-	-	5	25	75	100

Learning Objectives	
LO1	To make students understand the concepts of Python programming.
LO2	To apply the OOPs concept in PYTHON programming.
LO3	To impart knowledge on demand and supply concepts
LO4	To make the students learn best practices in PYTHON programming
LO5	To know the costs and profit maximization

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	PO1, PO2, PO3, PO4, PO5, PO6
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.	PO1, PO2, PO3, PO4, PO5, PO6
CO4	Work with List, tuples and dictionary, Write program using list, tuples and dictionary.	PO1, PO2, PO3, PO4, PO5, PO6
CO5	Usage of File handlings in python, Concept of reading and writing files, Do programs using files.	PO1, PO2, PO3, PO4, PO5, PO6

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	2	3
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	2	3
CO 5	3	2	3	3	3	3
Weightage of course contributed to each PSO	15	14	15	15	13	14

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC2	**Python Programming Lab**	**Core**	-	-	5	-	5	25	75	100

Learning Objectives	
LO1	Be able to design and program Python applications.
LO2	Be able to create loops and decision statements in Python.
LO3	Be able to work with functions and pass arguments in Python.
LO4	Be able to build and package Python modules for reusability.
LO5	Be able to read and write files in Python.

Course Outcomes	
On completion of this course, students will	
CO1	Demonstrate the understanding of syntax and semantics of PYTHON language

CO2	Identify the problem and solve using PYTHON programming techniques.
CO3	Identify suitable programming constructs for problem solving.
CO4	Analyze various concepts of PYTHON language to solve the problem in an efficient way.
CO5	Develop a PYTHON program for a given problem and test for its correctness.

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	1	3	2	3
CO 3	3	3	3	3	2	2
CO 4	3	3	3	3	2	3
CO 5	3	2	3	3	3	3
Weightage of course contributed to each PSO	15	15	13	15	13	14

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
EC-GS	Statistical Methods and its Application-I	**Elect**	4	-	-		3	25	75	100
Learning Objectives										
LO1	To make understand the fundamentals of Statistics.									
LO2	Define the principal concepts about probability.									
LO3	To explain the Coefficient of Variation									
LO4	To understand the concept of Conditional Probability									
LO5	Explain the concept of a random variable and the probability distributions.									

Course Outcomes		Programme Outcomes
CO	On completion of this course, students will	
CO1	Summarize the concepts of statistical methods	PO1, PO2, PO3, PO4, PO5, PO6
CO2	Analyse the different Statistical measures of data	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Derive the marginal and conditional distributions of random variables, translate realworld problems into probability models	PO1, PO2, PO3, PO4, PO5, PO6
CO4	To understanding the concepts of Probability of an event	PO1, PO2, PO3, PO4, PO5, PO6
CO5	Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables	PO1, PO2, PO3, PO4, PO5, PO6

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
SEC	**Multimedia Systems**	Skill Enha. Course (SEC)	2	-	-	-	2	2	25	75	100

Learning Objectives	
LO1	Understand the definition of Multimedia
LO2	To study about the Image File Formats, SoundsAudio File Formats
LO3	Understand the concepts of Animation and Digital Video Containers
LO4	To study about the Stage of Multimedia Project
LO5	Understand the concept of Ownership of Content Created for Project Acquiring Talent

Course Outcomes		Programme Outcomes
CO	On completion of this course, students will	

CO1	understand the concepts, importance, application and the process of developing multimedia	PO1
CO2	to have basic knowledge and understanding about image related processings	PO1, PO2
CO3	To understand the framework of frames and bit images to animations	PO4, PO6
CO4	Speaks about the multimedia projects and stages of requirement in phases of project.	PO4, PO5, PO6
CO5	Understanding the concept of cost involved in multimedia planning, designing, and producing	PO3, PO6

Mapping with Programme Outcomes:

CO/ PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**2**	**2**	**3**	**3**	**3**	**2**
CO2	**2**	**3**	**2**	**3**	**2**	**1**
CO3	**1**	**2**	**3**	**3**	**3**	**2**
CO4	**3**	**2**	**2**	**2**	**1**	**2**
CO5	**2**	**3**	**1**	**3**	**3**	**3**
Weightage of course contributed to each PSO	**10**	**12**	**11**	**14**	**12**	**10**

Strong-3 M-Medium-2 L-Low-1

IV Semester

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	Ext	Total
CC7	**Java Programming**	Core	5	-	-	-	5	5	25	75	100
Learning Objectives											
LO1	To provide fundamental knowledge of object-oriented programming										
LO2	To equip the student with programming knowledge in Core Java from the basics up.										
LO3	To enable the students to use AWT controls, Event Handling and Swing for GUI.										
LO4	To provide fundamental knowledge of object-oriented programming.										
LO5	To equip the student with programming knowledge in Core Java from the basics up.										

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Understand the basic Object-oriented concepts.Implement the basic constructs of Core Java.	PO1, PO2, PO6
CO2	Implement inheritance, packages, interfaces and exception handling of Core Java.	PO2, PO3, PO8
CO3	Implement multi-threading and I/O Streams of Core Java	PO1, PO3, PO5

CO4	Implement AWT and Event handling.	PO2, PO6
CO5	Use Swing to create GUI.	PO1, PO3, PO6

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	**3**	**3**	**3**	**2**

CO2	**3**	**3**	**3**	**2**	**2**	**3**
CO3	**2**	**2**	**1**	**3**	**3**	**3**
CO4	**3**	**3**	**3**	**3**	**3**	**2**
CO5	**3**	**3**	**3**	**3**	**3**	**1**
Weightage of course contributed to each PSO	**14**	**14**	**13**	**14**	**14**	**11**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Inst. Hours**	**Marks**		
									CIA	**External**	**Total**
CC8	**Java Programming Lab**	Core	-	-	5	-	5	5	25	75	100

Learning Objectives	
LO1	To provide fundamental knowledge of object-oriented programming.
LO2	To equip the student with programming knowledge in Core Java from the basics up.
LO3	To enable the students to know about Event Handling .
LO4	To enable the students to use String Concepts.
LO5	To equip the student with programming knowledge in to creat GUI using AWT controls.

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	Understand the basic Object-oriented concepts.Implement the basic constructs of Core Java.	PO1

2	Implement inheritance, packages, interfaces and exception handling of Core Java.	PO1, PO2
3	Implement multi-threading and I/O Streams of Core Java	PO4, PO6
4	Implement AWT and Event handling.	PO4, PO5, PO6
5	Use Swing to create GUI.	PO3, PO6

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	**3**	**3**	**3**	**2**
CO2	**3**	**3**	**3**	**2**	**2**	**3**
CO3	**2**	**2**	**1**	**3**	**3**	**3**
CO4	**3**	**3**	**3**	**3**	**3**	**2**
CO5	**3**	**3**	**3**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**14**	**14**	**13**	**14**	**14**	**12**

S-Strong M-Medium L-Low

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
EC-GS	Resource Management Techniques	**Elect**	4	-	-		3	25	75	100
Learning Objectives										

LO1	To introduce the concepts of OR
LO2	To explain the Linear Programming Problem
LO3	To illustrate the Simplex Method
LO4	To know the Duality Theorems
LO5	To understanding the Methods for finding IBFS for the Transportation Problems

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	To understanding the concepts of Development of OR	PO1, PO2, PO3, PO4, PO5, PO6
CO2	develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transshipment problems	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Solve the problems of Simplex Method	PO1, PO2, PO3, PO4, PO5, PO6
CO4	To study the Duality Theorems	PO1, PO2, PO3, PO4,
		PO5, PO6
CO5	Finding initial basic feasible and optimal solution of the Transportation problems	PO1, PO2, PO3, PO4, PO5, PO6

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst.	Marks		
									CIA	External	Total
SEC	**WEB DESIGNING**	Skill Enha. Course (SEC)	-	-	2	-	2	2	25	75	100

Learning Objectives	
LO1	Understand the basics of HTML and its components
LO2	To study about the Graphics in HTML
LO3	Understand and apply the concepts of XML and DHTML
LO4	Understand the concept of JavaScript
LO5	To identify and understand the goals and objectives of the Ajax

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
CO1	Develop working knowledge of HTML	PO1, PO3, PO6, PO8
CO2	Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).	PO1,PO2,PO3,PO6
CO3	Ability to optimize page styles and layout with Cascading Style Sheets (CSS).	PO3, PO5
CO4	Ability to develop a java script	PO1, PO2, PO3, PO7
CO5	An ability to develop web application using Ajax.	P02, PO6, PO7

Mapping with Programme Outcomes:

MAPPING TABLE						
CO/ PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**1**	**2**	**1**	**2**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**2**	**3**	**2**	**2**	**3**
CO5	**3**	**2**	**2**	**2**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**12**	**10**	**11**	**12**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Inst. Hours**	**Marks**		
									CIA	**External**	**Total**
SEC	**SoftwareTesting**	Skill Enha. Course (SEC)	2	-	-	-	2	2	25	75	100
Learning Objectives											
LO1	To study fundamental concepts in software testing										
LO2	To discuss various software testing issues and solutions in software unit test, integration and system testing.										
LO3	To study the basic concept of Data flow testing and Domain testing.										
LO4	To Acquire knowledge on path products and path expressions.										
LO5	To learn about Logic based testing and decision tables										

Course Outcomes		**Program Outcomes**
CO	On completion of this course, students will	
CO1	Students learn to apply software testing knowledge and engineering methods	PO1

CO2	Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.	PO1, PO2
CO3	Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.	PO4, PO6
CO4	Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems	PO4, PO5, PO6
CO5	Have an ability to use software testing methods and modern software testing tools for their testing projects.	PO3, PO8

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**2**	**1**	**2**	**1**	**2**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**2**	**3**	**2**	**2**	**3**
CO5	**3**	**2**	**2**	**2**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**12**	**10**	**11**	**12**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Environmental Studies

V Semester

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC10	**Database Management System**	Core	5	-	-	-	4	5	25	75	100

Learning Objectives	
LO1	To enable the students to learn the designing of data base systems, foundation on the relational model of data and normal forms.
LO2	To understood the concepts of data base management system, design simple Database models
LO3	To learn and understand to write queries using SQL, PL/SQL.
LO4	To enable the students to learn the designing of data base systems, foundation on the relational model of data and normal forms.
LO5	To understood the concepts of data base management system, design simple Database models

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.	PO1
CO2	Define the integrity constraints. Understand the basic concepts of Relational Data Model, Entity-Relationship Model.	PO1, PO2
CO3	Design database schema considering normalization and relationships within database. Understand and construct database using Structured Query Language. Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)	PO4, PO6
CO4	Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.	PO4, PO5, PO6
CO5	Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions	PO3, PO5

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**2**	**1**	**2**	**1**	**2**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**2**

CO4	**3**	**2**	**3**	**2**	**2**	**3**
CO5	**3**	**2**	**2**	**2**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**12**	**10**	**11**	**12**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Inst. Hours**	**Marks**		
									CIA	**External**	**Total**
CC11	**Database Management System lab**	Core	-	-	5	-	4	5	25	75	100

Learning Objectives	
LO1	To enable the students to learn the designing of data base systems, foundation on the relational model of data and normal forms.
LO2	To understood the concepts of data base management system, design simple Database models
LO3	To learn and understand to write queries using SQL, PL/SQL.
LO4	To enable the students to learn the designing of data base systems, foundation on the relational model of data and normal forms.
LO5	To understood the concepts of data base management system, design simple Database models
	Total		**75**

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.	PO1
CO2	Define the integrity constraints. Understand the basic concepts of Relational Data Model, Entity-Relationship Model.	PO1, PO2
CO3	Design database schema considering normalization and relationships within database. Understand and construct database using Structured Query Language. Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)	PO4, PO6
CO4	Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.	PO4, PO5, PO6
CO5	Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions	PO3, PO4

Mapping with Programme Outcomes:

CO/ PSO	PSO 1		PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3		2	3	3	3	2
CO2	3		3	1	2	2	2
CO3	2		2	3	3	3	3
CO4	2		2	3	3	3	1
CO5	2		3	3	3	3	3
Weightage of course contributedto each PSO	12		12	13	14	14	11

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	Big Data Analytics	Elective	4	-	-	-	3	4	25	75	100

Course Objective	
C1	Understand the Big Data Platform and its Use cases, Map Reduce Jobs
C2	To identify and understand the basics of cluster and decision tree
C3	To study about the Association Rules,Recommendation System
C4	To learn about the concept of stream
C5	Understand the concepts of NoSQL Databases

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
1	Work with big data tools and its analysis techniques.	PO1
2	Analyze data by utilizing clustering and classification algorithms.	PO1, PO2
3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	PO4, PO5
4	Perform analytics on data streams.	PO3, PO5, PO6
5	Learn NoSQL databases and management.	PO3, PO4

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**2**	**2**	**3**	**3**	**3**
CO2	**3**	**3**	**2**	**3**	**3**	**3**
CO3	**3**	**3**	**3**	**3**	**3**	**2**
CO4	**3**	**3**	**2**	**3**	**3**	**3**
CO5	**3**	**3**	**2**	**3**	**3**	**2**
Weightage ofcoursecontributedtoeachPSO	**15**	**14**	**11**	**15**	**15**	**13**

S-Strong-3 M-Medium-2 L-Low-1

VI Semester

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC13	**Computer Networks**	Core	5	-	-	-	4	5	25	75	100

Course Objective	
LO1	To learn the basic concepts of Data communication and Computer network
LO2	To learn about wireless Transmission
LO3	To learn about networking and data link layer.
LO4	To study about Network communication.
LO5	To learn the concept of Transport layer

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
CO1	To Understand the basics of Computer Network architecture, OSI and TCP/IP reference models	PO1
CO2	To gain knowledge on Telephone systems using wireless network	PO1, PO2
CO3	To understand the concept of MAC	PO4, PO6
CO4	To analyze the characteristics of Routing and Congestion control algorithms	PO4, PO5, PO6
CO5	To understand network security and define various protocols such as FTP, HTTP, Telnet, DNS	PO3, PO4

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	**3**	**3**	**2**	**3**	**2**	**3**
CO2	**3**	**2**	**2**	**2**	**2**	**2**
CO3	**3**	**2**	**3**	**3**	**2**	**3**
CO4	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**3**	**2**	**2**	**2**	**2**	**3**
Weightage of course contributed to each PSO	**15**	**11**	**11**	**12**	**10**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
CC14	**.Net Programming**	Core	6	-	-	-	4	6	25	75	100
Course Objective											
C1	To identify and understand the goals and objectives of the .NET framework and ASP.NET with C# language.										
C2	To develop ASP.NET Web application using standardcontrols.										
C3	To implement file handling operations.										
C4	To handles SQL Server Database using ADO.NET.										
C5	Understand the Grid view control and XML classes.										
Course Outcomes								**Programme Outcome**			
CO	On completion of this course, students will										
1	Develop working knowledge of C# programming constructs and the .NET Framework							PO1, PO2, PO6			
2	To develop a software to solve real-world problems using ASP.NET							PO2, PO3, PO5			
3	To Work On Various Controls Files							PO1, PO3, PO6			
4	To create a web application using MicrosoftADO.NET.							PO2, PO6			
5	To develop web applications using XML							PO1, PO3, PO6			

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	**3**	**3**	**2**	**3**
CO2	**3**	**2**	**2**	**3**	**3**	**3**
CO3	**3**	**3**	**3**	**2**	**3**	**3**
CO4	**2**	**2**	**1**	**3**	**3**	**2**
CO5	**3**	**3**	**3**	**3**	**3**	**3**

Weightage of course contributed to each PSO	**14**	**13**	**12**	**14**	**14**	**14**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	**Subject Name**	**Category**	**L**	**T**	**P**	**S**	**Credits**	**Inst. Hours**	**Marks**		
									CIA	**External**	**Total**
CC15	**.Net Programming LAB**	Core	-	-	5	-	4	5	25	75	100

Course Objective	
LO1	To develop ASP.NET Web application using standardcontrols.
LO2	To create rich database applications usingADO.NET.
LO3	To implement file handling operations.
LO4	To implement XML classes.
LO5	To utilize ASP.NET security features for authenticating the website

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
CO 1	To create web applications and implement various controls	PO1, PO2, PO4
CO2	Create web pages in Rich control.	PO3, PO5
CO3	Develop knowledge about file handling operations	PO1, PO4, PO5
CO4	An ability to design XML classes	PO2, PO4, PO6
CO5	To develop a software to solve real-world problems using ASP.NET	PO1,PO3, PO5, PO6

Mapping with Programme Outcomes:

CO/ PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**1**	**2**	**1**	**2**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**2**	**3**	**2**	**2**	**3**
CO5	**3**	**2**	**2**	**2**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**12**	**10**	**11**	**12**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	Image Processing	Elective	4	-	-	-	3	4	25	75	100

Learning Objective	
LO1	To learn fundamentals of digital image processing.
LO2	To learn about various 2D Image transformations
LO3	To learn about various image enhancement processing methods and filters
LO4	To learn about various classification of Image segmentation techniques
LO5	To learn about various image compression techniques

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	Understand the fundamental concepts of digital image processing.	PO1
2	Understand various 2D Image transformations	PO1, PO2
3	Understand image enhancement processing techniques and filters	PO4, PO6
4	Understand the classification of Image segmentation techniques	PO4, PO5, PO6
5	Understand various image compression techniques	PO3, PO5

Mapping with Programme Outcomes:

CO/PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**2**	**3**	**2**	**2**
CO2	**3**	**3**	**2**	**3**	**2**	**2**
CO3	**3**	**3**	**3**	**3**	**2**	**2**
CO4	**3**	**3**	**2**	**3**	**2**	**2**
CO5	**3**	**3**	**2**	**3**	**2**	**2**
Weightage ofcoursecontributedtoeachPSO	**15**	**14**	**11**	**15**	**10**	**10**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	Artificial Intelligence	Elective	4	-	-	-	3	4	25	75	100

Course Objective	
C1	To learn various concepts of AI Techniques.
C2	To learn various Search Algorithm in AI.
C3	To learn probabilistic reasoning and models in AI.
C4	To learn about Markov Decision Process.
C5	To learn various type of Reinforcement learning.

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	Understand the various concepts of AI Techniques.	PO1
2	Understand various Search Algorithm in AI.	PO1, PO2
3	Understand probabilistic reasoning and models in AI.	PO4, PO6
4	Understand Markov Decision Process.	PO4, PO5, PO6
5	Understand various type of Reinforcement learning Techniques.	PO3, PO4

Mapping with Programme Outcomes:

CO/PSO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	**3**	**2**	**1**	**2**	**1**	**2**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**2**	**3**	**2**	**2**	**3**
CO5	**3**	**2**	**2**	**2**	**3**	**3**
Weightage ofcoursecontributedto eachPSO	**15**	**12**	**10**	**11**	**12**	**13**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
	Data analytics using R Lab	Core	-	-	4	-	4	4	25	75	100

Course Objective	
C1	To understand the problem solving approaches

C2	To learn the basic programming constructs in R Programming
C3	To practice various computing strategies for R Programming -based solutions to real world problems
C4	To use R Programming data structures - lists, tuples, and dictionaries.
C5	To do input/output with files in R Programming.

Course Outcomes		**Programe Outcome**
CO	On completion of this course, students will	
1	Acquire programming skills in core R Programming	PO1,PO4,PO5
2	Acquire Object-oriented programming skills in R Programming.	PO1, PO4,PO6
3	Develop the skill of designing graphical-user interfaces (GUI) in R Programming	PO1,PO3,PO6
4	Acquire R Programming skills to move into specific branches	PO3,PO4
5		PO1,PO5,PO6