KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
B.Sc (CS)

For the students admitted In the
Academic Year 2018-2019

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledge relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of softwares developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
B.Sc (CS)

For the students admitted In the
Academic Year 2019-2020

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledge relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of softwares developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
B.Sc (CS)

For the students admitted In the
Academic Year 2020-2021

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledge relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of softwares developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

B.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2020-2021.

SEMESTER I

Programme Code :	**B.Sc**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U1CSCT01**	**Title:** **Core1: C Programming**	**Batch**	**2020-2023**
			Semester	**I**
Hrs/week	**4 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

To enable the Students

- To know about problem solving techniques and algorithm fundamentals and basics of C Programming.
- To clearly understand decision making and branching concepts with various statements.
- To know about the concept of arrays, strings and functions with its various operations.
- To learn about the concept of structure, pointers
- To acquire the knowledge of file management.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the basic concepts of Problem solving and algorithms
CO2	Explain the loops and decision making statements to solve the problem
CO3	Apply different operations on arrays
CO4	Use functions to solve the given problem
CO5	Discuss about file system and operations on files

SEMESTER I

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U1CSCT02**	**Title :Core 2: Digital Fundamentals and Architecture**	**Batch**	**2020-2023**
			Semester	**I**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

- To provide a knowledge about the concepts of Computer Fundamentals and enable the students to understand Digital Logic Circuits and Gates.
- To know about number system and binary codes.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input -output and memory organizations.

COURSE OUTCOMES (CO):

On the successful completion of the course, students should be able to achieve the following outcomes

CO Number	CO Statement
CO1	Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions
CO2	Acquire knowledge about various logic gates and logic families and analyze basic circuits of these families
CO3	Develop K-maps to minimize and optimize logic functions up to 5 variables
CO4	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
CO5	Evaluate various design alternatives in processor organization

SEMESTER I

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Science ((Computer Science))**	
Course Code	**20U1CSCP03**	**Title : Core 3: C Programming - Practical**	**Batch**	**2020-2023**
			Semester	**I**
Hrs/week	**3**		**Credits**	**3**

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- To develop the applications using C Programming language.To apply the concepts like looping, functions, pointers and file types.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	**CO Statement**
CO1	Write programs using various data types in C.
CO2	Use various operators and expressions.
CO3	Apply the concept of Arrays, Pointers and strings
CO4	Apply the concept of loops and functional programming
CO5	Use the file handling concepts for maintaining record.

SEMESTER I

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U1CSAT01**	**Title : Numerical Methods and Statistics**	**Batch**	**2020-2023**
			Semester	**I**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES:

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations .
- To find derivatives using various formulae using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	**CO Statement**
CO1	Find Numerical Solution of Algebaric and Transcental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integeration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

SEMESTER II

Programme Code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	**20U2CSCT04**	**Title :Core 4 : C++ PROGRAMMING**	**Batch**	**2020-2023**
			Semester	**II**
Hrs/week	**5 Hours**		**Credits**	**4**

COURSE OBJECTIVES:

- To provide knowledge on object oriented programming concepts using C++.
- To enable the students to provide an in-depth knowledge about the concepts of language structure, program divisions of C++ programming language.
- To enhance the knowledge about dynamic memory management.
- To gain the knowledge about polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.

COURSE OUTCOMES (CO):

On successful completion of the course, students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	Describe the object oriented paradigm with concepts of streams, classes, functions, data and objects
CO2	Summarize relative merits of object oriented programming language & concepts.
CO3	Apply pointers, constructors, destructors in dynamic memory management.
CO4	Describe the concept of function overloading, operator overloading and virtual functions
CO5	Explain about exception handling and class templates.

SEMESTER II

Programme Code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	**20U2CSCT05**	**Title : Core 5 : Data Structures**	**Batch**	**2020-2023**
			Semester	**II**
Hrs/week	**4 Hours**		**Credits**	**4**

COURSE OBJECTIVES

- To study about the design and implementation of the data structure and how the data are manipulated in order to develop an application and also helps the students in understanding the use of data structure in the real world.
- To make the students to understand the basic concepts of Data Structures and Algorithms.
- To understand the abstract data types stack, queue, deque, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Recalls information for writing algorithms in solving problems.
CO2	Choose appropriate data structure as applied to specified problem definition.
CO3	Apply problem solving skills and provide a foundation for advanced programming courses using an object-oriented programming methodology.
CO4	Use linear and non-linear data structures like stacks, queues, linked list etc., and show operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
CO5	Illustrate to store and retrieve data stored in both main memory and in secondary memory.

SEMESTER II

Programme Code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	**20U2CSCP06**	**Title : Core 6 : C++ Programming - Practical**	**Batch**	**2020-2023**
			Semester	**II**
Hrs/week	**4 Hours**		**Credits**	**3**

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C++ Programs for certain specified problems.
- To develop the applications using C++ Programming language.
- To apply the concepts like looping, control statements arrays, function overloading and file concepts.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	**CO Statement**
CO1	Write programs in C++ to demonstrate Classes and objects
CO2	Use various types of arrays and constructors
CO3	Apply the concepts of virtual functions and function overloading
CO4	Write programs in C++ using special functions, constructor and destructor.
CO5	Use the file handling concepts

SEMESTER II

Programme Code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U2CSAT02**	**Title : Allied 2 : Discrete Mathematics**	**Batch**	**2020-2023**
			Semester	**II**
Hrs/week	**5 Hours**		**Credits**	**4**

COURSE OBJECTIVES

- To enable the Students to understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	**20U3CSCT07**	**Title: CORE 7: OPERATING SYSTEMS**	**Batch:**	**2020-2023**
			Semester:	**III**
Hrs/Week:	**5 Hrs**		**Credits:**	**4**

COURSE OBJECTIVES:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the different types of operating systems concepts like shell, Multi-Tasking / Time-sharing and Distributed Operating System.
- To understand the basic structure of OS, process and threads.
- To understand the deadlock & Memory management concepts.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the basics of operating systems like kernel,shell, types and views of operating Systems
CO2	Implement operating system functions.
CO3	Describe the various CPU scheduling algorithms and remove deadlocks
CO4	Explain various memory management techniques and concept of thrashing
CO5	Recognize file system interface, protection and security mechanisms.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	**20U3CSCT08**	**Title: Core 8: JAVA PROGRAMMING**	**Batch**	**2020-2023**
			Semester	**III**
Hrs/Week:	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CONumber	CO Statement
CO1	Explain the fundamental structure of java program and to develop different programs in java language.
CO2	Understand in detail about branching ,looping and arrays in java program using the development environment.
CO3	Solve problems using methods and interface
CO4	Identify the errors and develop the Applet program
CO5	Evaluate the file management in java language.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	**20U3CSCT09**	**Title: Core 9: Data Communications And Networks**	**Batch**	**2020-2023**
			Semester	**III**
Hrs/Week:	**6 Hrs**		**Credits**	**3**

Course Objectives

- At the end of the course, the students will be able to:
- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Independently understand basic computer network technology. And Understand and explain Data Communications System and its components.
CO2	To Apply the different types of network topologies and protocols.
CO3	Analyse the layers of the OSI model, TCP/IP and the function(s) of each layer.
CO4	To Evaluate and building the skills of subnetting and routing mechanisms.
CO5	To Create the basic protocols of computer networks and how they can be used to assist in network design and implementation.

SEMESTER – III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	**20U3CSCP10**	**Title:Core 10: Java Programming Practical**	**Batch**	**2020-2023**
			Semester	**III**
Hrs/Week:	**6 Hrs**		**Credits**	**3**

COURSE OBJECTIVES:

- To develop the applications using Java Programming language.
- To apply the concepts like looping, methods, interface, applets and file concepts.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Observe Java to demonstrate practical experience in developing solutions
CO2	Evaluating different methods, interface, applets and file concepts.
CO3	Distinguish about Compile and debug programs in Java language
CO4	Evaluating different controls in java
CO5	Evaluating the file handling functions

SEMESTER III

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U3CSAT03**	**Title: Allied 3: Operations Research**	**Batch**	**2020-2023**
			Semester	**III**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of queueing theory, PERT and CPM

COURSE OUTCOME

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain thE methods of solving Solution of LPP using Graphical Method simplex method and Big M method
CO2	Solve Transportation and Assignment problems
CO3	Explain the concepts of Game Theory
CO4	Study the concepts of Queueing theory and solving simple problems
CO5	Know distinction between PERT & CPM

SEMESTER – IV

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U4CSCT11**	**Core 11 :Relational Database Management System**	**Batch**	**2020-2023**
			Semester	**IV**
Hrs/week	**5 Hours**		**Credits**	**3**

Course Objectives

On Completion of this Course

- To understand the concepts of RDBMS.
- To have knowledge on DBMS & RDBMS.
- To enhance their on SQL, DDL, DML, DCL Statements, Select, group by and having clause String and set operations, Aggregate Functions, Nested Sub Queries.
- To develop the skills of Embedded and Dynamic SQL.

Course Outcomes (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the concept of Database and Database Design
CO2	Use the Commands and understand table
CO3	Use SQL query structure and modify the table
CO4	Describe about function, grouping and PL/SQL
CO5	Define the concept of Embedded SQL and PL/SQL

SEMESTER-IV

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	**20U4CSCT12**	**Title: CORE 12: Network Security and Cryptography**	**Batch**	**2020-2023**
			Semester	**IV**
Hrs/Week:	**5 Hrs**		**Credits**	**3**

Course Objectives

- At the end of the course, the students will be able to:
- Build an understanding of the fundamental concepts of Network Security
- Familiarize the student with the basic network security technology.
- Introduce the student to advanced cryptography concepts, preparing the student for entry Advanced courses in network security.
- Allow the student to gain expertise in some specific areas of cryptography and network security.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Independently understand basic computer security technologies and the model.
CO2	To study the different types of Symmetric ciphers.
CO3	Analyse the Public-Key Encryption And Hash Functions.
CO4	To Evaluate and building the skills in Network Security Applications
CO5	To assist in System Security network design and implementation malicious software.

SEMESTER - IV

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**
Course Code:	**20U4CSCT13**	**Title: Core 13:Software Engineering**	**Batch:2020-2023**
			Semester: IV
Hrs/Week:	**5 Hrs**		**Credits: 3**

COURSE OBJECTIVES

- To learn the basics Concepts of Software Engineering .
- To Understand the Phases of Software Engineering Life Cycle.
- To learn about various types of Testing.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Explain a planning for a software project Development.
CO2	Prepare the SR analysis and Analysis Modelling Approaches. Apply Project Requirement analysis , Verification and validation
CO3	Generate designing Models
CO4	Developing Component based Software
CO5	Generate test cases using various testing techniques.

SEMESTER – IV

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U4CSCP14**	**CORE 14: Relational Database Management System -Practical**	**Batch**	**2020-2023**
			Semester	**IV**
Hrs/week	**6 Hours**		**Credits**	**4**

COURSE OBJECTIVES

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- Understand the basics of computer graphics, different graphics systems and applications of computer graphics
- Understand the concepts of different type of geometric transformation of objects in 2D and 3D

Course Outcomes (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Understand the concept of Database and Database Design
CO2	Understand the Commands and tables
CO3	Demonstrate SQL query structure and modify the table
CO4	Demonstrate about function, grouping and PL/SQL
CO5	Demonstrate the concept of Embedded SQL and PL/SQL

SEMESTER-IV

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U4CSAT04**	**Title: ALLIED 4: BUSINESS ACCOUNTING**	**Batch**	**2020-2023**
			Semester	**IV**
Hrs/week	**6 Hours**		**Credits**	**4**

COURSE OBJECTIVE

1. To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
2. To enable the students to prepare the final accounts.
3. To enlighten the students of various methods of costing.
4. To make the students to calculate the stock level and differtiate between cost, management and financial accounting.
5. To provide knowledge on various types of budjets.

COURSE OUTCOMES(CO)

On successful completion of the course, students should be able to achieve the following outcomes

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

SEMESTER – V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U5CSCT15**	**Core 15. ASP.Net and C#**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**5 Hours**		**Credits**	**4**

COURSE OBJECTIVES

To enable the students

- To learn about the basic concepts of ASP .NET.
- To learn about the ASP .NET object model and its architecture.
- To learn about the C# and its functions.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Understand about ASP.Net environment and its applications.
CO2	Know about the various forms in Visual Basic and Session controls.
CO3	Write various applications using C# Language in the .NET Framework.
CO4	Develop distributed applications using .NET Framework.
CO5	Create various applications using C#.Net framework

SEMESTER V

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	**20U5CSCT16**	**Core 16: PHP & MySQL**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**5 Hours**		**Credits**	**4**

COURSE OBJECTIVES

- Develops skills to create server-side scripts using PHP.
- Introduces server-side programming concepts and terminology.
- Explores a variety of server-side techniques and MySQL database manipulation.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	**CO Statement**
CO1	Describe and use the features and syntax of programming language PHP
CO2	Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
CO3	Apply PHP code to produce outcomes and solve problems.
CO4	Display and insert data using PHP and MySQL. Retrieve, insert, update, and delete data from the relational database MySQL
CO5	Test, debug, and deploy web pages containing PHP and MySQL.

SEMESTER -V

Programme Code :	**B.SC CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U5CSCP17**	**Core 17 : ASP .NET AND C# - PRACTICAL**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**6 Hours**		**Credits**	**4**

COURSE OBJECTIVES

To enable the students to gain knowledge about the teaching methodologies useful for the implementation and console based application and web based application.

COURSE OUTCOMES (CO)

At the end of the practical session, students would be well-versed in

CO Number	**CO Statement**
CO1	Design, create, build, and debug arithmetic operations for displaying numeric output using .NET applications.
CO2	Developing a console application in ASP .NET.
CO3	Compute different operations using looping statements.
CO4	Developing applications using C#

SEMESTER -V

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	**20U5CSCP18**	**CORE 18: PHP AND MY SQL - PRACTICAL**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**6 Hours**		**Credits**	**3**

COURSE OBJECTIVE

To enable the students to gain knowledge in developing PHP and MySQL Programs for certain specified problems.

COURSE OUTCOMES (CO)

At the end of the practical session, students would be well-versed in

CO Number	CO Statement
CO1	Write PHP code to produce outcomes and solve problems.
CO2	Display and insert data using PHP and MySQL.
CO3	Test, debug, and deploy web pages containing PHP and MySQL.

SEMESTER –VI

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U6CSCT19**	**Core 19: Fundamentals of Python Programming**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**5 Hours**		**Credits**	**3**

COURSE OBJECTIVES

- ✓ To understand the fundamentals of Python Programming.
- ✓ To understand and practice embedded dynamic scripting on client side Internet Programming.
- ✓ To understand and practice web development techniques on client-side.
- ✓ Learning Outcomes: To enable the students to gain knowledge in Python Programming with OOPs Concepts.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Exposed to Python syntax and semantics and be fluent in the use Python flow control and functions.
CO2	Create and run Python Programs using Lists, Dictionaries and handle File Systems.
CO3	Explain the concepts of Regular Expressions and Object-Oriented programming as used in Python.
CO4	Build Data Structures using Python.
CO5	Create programming projects from scratch using in-demand skill and technologies

SEMESTER VI

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U6CSCT20**	**Core 20: SOFTWARE TESTING**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**4**

Course Objectives

- To make the students to understand Software Testing principles.
- To discuss the distinctions between types of testing.
- To understand the essential characteristic of tool used for test automation.

Course Outcomes (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	List a range of different software testing techniques and strategies and be able to apply specific (automated) unit testing method to the projects.
CO2	Distinguish characteristics of structural testing methods
CO3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible
CO4	Discuss about the functional and system testing methods.
CO5	Demonstrate various issues for object oriented testing with planning, Management, Execution and Reporting.

SEMESTER – VI

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U6CSCP21**	**Core 21: Python Programming –Practical**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**6 Hours**		**Credits**	**3**

COURSE OBJECTIVES

- To acquire basic knowledge of python programming.
- Understand decision making and functions in python.
- Learn object oriented programming using python.
- Write and debug iles handling in python.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	**CO Statement**
CO1	Review the concepts of python functions.
CO2	Develop python program using decision making statement
CO3	Interpret object oriented programming in python.
CO4	Design and develop GUI applications
CO5	Find the error using Exception Handling.

SEMESTER-V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U5CSET1A**	**ELECTIVE 1: DATA MINING AND WAREHOUSING**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**4 Hours**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	To present survey on different learning, classification and data miningfoundations.
CO2	To and methods for data Mining application.
CO3	To solve problems for multi-core or distributed, concurrent/Parallel environments.
CO4	To survey and use latest trends and advances in data mining and warehousing.

SEMESTER – V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U5CSET1B**	**TLE: ELECTIVE : 1 MOBILE COMPUTING**	**Batch:**	**2020-2023**
			Semester:	**V**
Hrs/Week:	**4 Hrs**		**Credits:**	**3**

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Mobile Computing.
- To introduce the mobile communication fundamentals.
- To enable the students to know about GSM and GPRS Technologies.
- To make the students learn and understand 3G, 4G and 5G Technologies.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Explain the fundamentals of mobile computing.
CO2	Describe Mobile Computing through Telephony.
CO3	Enumerate the Emerging Technologies with GSM.
CO4	Elucidate on GPRS and WAP Technologies.
CO5	Determine CDMA and 3G Concepts and Implementation.

SEMESTER:V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U5CSET1C**	**ELECTIVE 1 : EMBEDDED SYSTEMS**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To make the students to have basic Knowledge and understanding of fundamental embedded systems design paradigms, architectures, possibilities and challenges, both with respect to software and hardware
- Ability to analyze a system both as a whole and in parts and their interaction in the functionality and properties of the system.
- To make the students to have a clear understanding on industrial embedded systems and intelligent embedded system development.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Understand what is a microcontroller, microcomputer, embedded system
CO2	Understand different components of a micro-controller and their interactions
CO3	Become familiar with programming environment used to develop embedded systems
CO4	Understand key concepts of embedded systems like IO ,timers, interrupts, interaction with peripheral devices
CO5	Learn debugging techniques for an embedded system

SEMESTER:V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U5CSET2A**	**ELECTIVE 2 : E-COMMERCE**	**Batch** **Semester**	**2020-2023** **V**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

To enable students

- To have knowledge on concepts of e-Commerce.
- To enhance the knowledge in business strategy and inter organisational transactions.
- To understand the concepts of E-Markets, Electronic Data Interchange and E-Business.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Understand the basic concepts and technologies used in the field of management information systems;
CO2	Have the knowledge of the different types of management information systems
CO3	Understand the processes of developing and implementing information systems
CO4	Be aware of the ethical, social, and security issues of information systems
CO5	Understand the E-Wallet operation

SEMESTER – V

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U5CSET2B**	**ELECTIVE 2 :CLIENT SERVER TECHNOLOGY**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/ Week	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To understand the concepts of client/server
- To learn the components of client and server application-Client & Server
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CONumber	CO Statement
CO1	Use Human/Computer Interaction design principles and best practices for graphical user interface design and development.
CO2	Design and implement advanced graphical user interfaces using basic and advanced Swing components such as JTable and JTree.
CO3	Manage components using advanced layout techniques of Group Layout and Grid Bag Layout.
CO4	Use I/O Object serialization.
CO5	Use the Components of Client/Server Applications–Hardware

SEMESTER – V

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**20U5CSET2C**	**ELECTIVE 2: Software Project Management**	**Batch**	**2020-2023**
			Semester	**V**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CONumber	CO Statement
CO1	Apply project management concepts and techniques to an IT project.
CO2	Identify issues that could lead to IT project success or failure.
CO3	Explain project management in terms of the software development process.
CO4	Describe the responsibilities of IT project managers.
CO5	Apply project management concepts through working in a group as team leader or active team member on an IT project

SEMESTER-VI

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U6CSET3A**	**Elective 3 : Artificial Intelligence and Expert System**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**4 Hours**		**Credits**	**3**

Course Objectives

To enable the students

- To Understand different planning problems and have the basic knowledge how to design and implement AI planning systems
- Understand the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem.

Course Outcomes (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem
CO2	Learn the basics of the theory and practice of Artificial Intelligence as a discipline about intelligent agents capable of decision making.
CO3	Apply knowledge representation techniques and problem solving strategies to common AI applications
CO4	Design simple software to experiment with various AI concepts and analyze Results
CO5	Build self-learning and research skills to be able to tackle a topic of interest on his/her own or as part of a team

Programme Code	**B.SC CS**	**Programme Title**	**Bachelor of Science Computer science**	
Course Code	**20U6CSET3B**	**Elective 3: Big Data Analytics**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**4 Hours**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To study the basic technologies that forms the foundations of Big Data.
- To understand the specialized aspects of big data including big data application, and big data analytics
- To study different types case studies on the current research and applications of the Hadoop and big data in industry

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the building blocks of Big Data
CO2	Differentiate and identify right database models for real time applications
CO3	Analyze recent research trends related to Hadoop File System, MapReduce and Google File System etc
CO4	Analyze the analytical aspects of Big Data
CO5	Explain the detailed architecture, database properties and storage requirements

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**20U6CSET3C**	**Elective 3 : Enterprise Resource Planning**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

- To develop the capability to streamline the different organizational processes and work flows in ERP and to understand the ways of Improving efficiency, performance, and productivity levels of ERP Projects.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Understanding the challenges associated with managing extant ERP systems.
CO2	Learn the forces and organizational conditions leading to the acquisition of such enterprise wide systems.
CO3	The opportunity to identify extant and missing organizational competencies that may be drawn upon to create an appropriate ERP implementation method.
CO4	Understanding of issues and decisions that must be made when embarking upon a ERP selection and implementation journey.
CO5	Understand and implement the ERP tools for integrated system

SEMESTER – VI

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U6CSET4A**	**ELECTIVE 4: COMPILER DESIGN**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Specify and analyse the lexical, syntactic and semantic structures of advanced language features
CO2	Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
CO3	Write a scanner, parser, and semantic analyser without the aid of automatic generators
CO4	Describe techniques for intermediate code and machine code optimisation
CO5	Design the structures and support required for compiling advanced language features.

SEMESTER – VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**20U6CSET4B**	**ELECTIVE 4: Mobile Operating System**	**Batch**	**2020-2023**
			Semester	**VI**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To understand the process of developing software for the mobile and create mobile applications on the Android Platform

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	**CO Statement**
CO1	Understand the limitations and challenges of working in a mobile and wireless environment.
CO2	Describe and apply the different types of application models/architectures used to develop mobile software applications.
CO3	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools
CO4	To learn how and when to apply the different components to develop a working system
CO5	Design, implement and deploy mobile applications using an appropriate software development environment.

SEMESTER-VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course code:	**20U6CSET4C**	**Elective 4 : Cloud Computing**	**Batch**	**2020-2023**
Hrs/Week	**4 Hrs**		**Semester**	**5**
			Credits	**3**

COURSE OBJECTIVES

To enable the students

- To Understand the Cloud computing architectures, applications and challenges and learn about various cloud storages

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Understand History and Benifits in cloud computing
CO2	Analyse the Cloud Computing Architecture and Models
CO3	Identify the cloud data center and visualization technologies.
CO4	Analyse the visualization technology and security issues of cloud Computing
CO5	Evaluate various advanced cloud computing platforms

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

B.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2019-2020.

SEMESTER-I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCT01**	**Title:Core 1:C PROGRAMMING**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**4 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To learn the fundamental programming concepts and methodologies.
- Able to develop logics which will help them to create programs, applications in C.
- To help students to develop the logic and ability to solve the problems efficiently using C programming.
- To learn various concepts and techniques for problem solving and to implement those ideas using C programs.
- To able to take up Systems programming or Advanced C programming course.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental structure of C program and to develop different programs in C language.
CO2	Give in detail about branching,looping and arrays in C program using the development environment.
CO3	Solve problems using Functions and Arguments
CO4	Analyze the Structures and pointers concepts by developing programs.
CO5	Evaluate the file management in C language.

SEMESTER – I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCT02**	**Title:Core 2: Digital Fundamentals and Computer Architecture**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**4 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To provide a knowledge about the concepts of Computer Fundamentals and enable the students to understand Digital Logic Circuits and Gates.
- To know about number system and binary codes.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input -output and memory organizations.

COURSE OUTCOMES (CO):

CO Number	CO Statement
CO1	Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions
CO2	Acquire knowledge about various logic gates and logic families and analyze basic circuits of these families
CO3	Develop K-maps to minimize and optimize logic functions up to 5 variables
CO4	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
CO5	Evaluate various design alternatives in processor organization

SEMESTER – I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCP03**	**Title:Core 3: C Programming Practical**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**3 Hrs**		**Credits**	**3**

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- To develop the applications using C Programming language.To apply the concepts like looping, functions, pointers and file types.

COURSE OUTCOMES (CO)

CONumber	**CO Statement**
CO1	Write programs using various data types in C.
CO2	Use various operators and expressions.
CO3	Apply the concept of Arrays, Pointers and strings
CO4	Apply the concept of loops and functional programming
CO5	Use the file handling concepts for maintaining record.

SEMESTER -I

Programme Code :	**B.Sc. CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U1CSAT01**	**Title :Allied 1 : Numerical Methods and Statitics**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES:

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations .
- To find derivatives using various formulae using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Find Numerical Solution of Algebaric and Transcental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integeration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2C SCT04**	**Title: Core 4: C++ Programming**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To provide knowledge on object oriented programming concepts using C++.
- To learn about the concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.
- To understand how C++ improves C with object-oriented features.
- To learn how to write inline functions for efficiency and performance.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Observe the fundamental concepts of oops languages and control structure
CO2	Interpret about classes , functions and constructor
CO3	Solve real world problems by using inheritance concepts
CO4	Classify the Arrays and pointers concepts by developing programs.
CO5	Evaluate about the Concept Exception handling mechanism

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2CSCT05**	**Title:Core 5:Data Structures**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To understand the abstract data types stack, queue, deque, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.
- To use stacks to evaluate postfix expressions.
- To use stacks to convert expressions from infix to postfix.

COURSE OUTCOMES

CO Number	Statement
CO1	Define the algorithms with basic techniques and recursive methods and familiar in the space and time complexity of the algorithms.
CO2	Intrepret the operations of Stack,Queue and Linked list
CO3	Demonstrate specific search, sort , Tree and Graph algorithms using data structures given specific user requirements.
CO4	Identify suitable algorithms with appropriate data structures for real time software requirements .
CO5	Illustrate to store and retrieve data stored in both main memory and in secondary memory.

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2CSCP06**	**Title:Core 6:C++ Programming - Practical**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**3 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To develop the applications using C++ Programming language.
- To apply the concepts like looping, control statements arrays, function overloading and file concepts.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Choose the loops and decision making statements to solve the problems in C++
CO2	Examine C++ code to demonstrate practical experience in developing solutions for real time applications.
CO3	Manipulate about Compilation and debug programs in C++ language
CO4	Write programs in C++ using special functions, constructor and destructor.
CO5	Use the file handling concepts

SEMESTER-II

Programme Code :	**B.Sc. CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U2CSAT02**	**Title : Allied 2:Discrete Mathematics**	**Batch** **Semester**	**2019-2022** **II**
Hrs/week	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To enable the Students to understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**
Course Code:	**19U3CSCT07**	**Title: CORE 7: OPERATING SYSTEMS**	**Batch:2019-2022**
			Semester: III
Hrs/Week:	**5 Hrs**		**Credits: 4**

COURSE OBJECTIVES:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the different types of operating systems concepts like shell, Multi-Tasking / Time-sharing and Distributed Operating System.
- To understand the basic structure of OS, process and threads.
- To understand the deadlock & Memory management concepts.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Explain the basics of operating systems like kernel,shell, types and views of operating systems
CO2	Implement operating system functions.
CO3	Describe the various CPU scheduling algorithms and remove deadlocks
CO4	Explain various memory management techniques and concept of thrashing
CO5	Recognize file system interface, protection and security mechanisms.

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U3CSCT08	Title: Core 8: JAVA PROGRAMMING	Batch	2019-2022
			Semester	III
Hrs/Week:	5 Hrs		Credits	3

COURSE OBJECTIVES

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

COURSE OUTCOMES

CONumber	CO Statement
CO1	Explain the fundamental structure of java program and to develop different programs in java language.
CO2	Understand in detail about branching ,looping and arrays in java program using the development environment.
CO3	Solve problems using methods and interface
CO4	Identify the errors and develop the Applet program
CO5	Evaluate the file management in java language.

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U3CSCT09	Title: Core 9: Data Communicatons And Networks	Batch	2019-2022
			Semester	III
Hrs/Week:	6 Hrs		Credits	3

Course Objectives

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes

CO Number	CO Statement
CO1	Independently understand basic computer network technology. And Understand and explain Data Communications System and its components.
CO2	To Apply the different types of network topologies and protocols.
CO3	Analyse the layers of the OSI model, TCP/IP and the function(s) of each layer.
CO4	To Evaluate and building the skills of subnetting and routing mechanisms.
CO5	To Create the basic protocols of computer networks and how they can be used to assist in network design and implementation.

SEMESTER – III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U3CSCP 10**	**Title:Core 10: Java Programming Practical**	**Batch**	**2019-2022**
			Semester	**III**
Hrs/Week:	**6 Hrs**		**Credits**	**3**

COURSE OBJECTIVES:

- To develop the applications using Java Programming language.
- To apply the concepts like looping, methods, interface, applets and file concepts.

COURSE OUTCOMES:

CO Number	CO Statement
CO1	Observe Java to demonstrate practical experience in developing solutions
CO2	Evaluating different methods, interface, applets and file concepts.
CO3	Distinguish about Compile and debug programs in Java language
CO4	Evaluating different controls in java
CO5	Evaluating the file handling functions

SEMESTER III

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U3CSAT03**	**Title: Allied 3: Operations Research**	**Batch**	**2019-2022**
			Semester	**III**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of queueing theory, PERT and CPM

COURSE OUTCOME

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain thE methods of solving Solution of LPP using Graphical Method simplex method and Big M method
CO2	Solve Transportation and Assignment problems
CO3	Explain the concepts of Game Theory
CO4	Study the concepts of Queueing theory and solving simple problems
CO5	Know distinction between PERT & CPM

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCT11	Title:Core 11:WEB ESIGNING	Batch	2019-2022
			Semester	IV
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To get practiced with creating the schemas, HTML and XML Document.
- To acquire knowledge on creating web page to deploy the web applications.
- To understand scripting language in java script

COURSE OUTCOMES

CO Number	CO Statement
CO1	Observe the fundamental concepts of network and internet
CO2	Develop the web page by using HTML elements
CO3	Develop the web page by using HTML with Style sheet
CO4	Classify the XML and DTD concepts by developing webpages.
CO5	Assess about the Concept object oriented mechanism

SEMESTER-IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCT12	Title: CORE 12: Network Security and Cryptography	Batch	2019-2022
			Semester	IV
Hrs/Week:	6 Hrs		Credits	4

Course Objectives

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of Network Security
- Familiarize the student with the basic network security technology.
- Introduce the student to advanced cryptography concepts, preparing the student for entry Advanced courses in network security.
- Allow the student to gain expertise in some specific areas of cryptography and network security.

Course Outcomes

CO Number	CO Statement
CO1	Independently understand basic computer security technologies and the model.
CO2	To study the different types of Symmetric ciphers.
CO3	Analyse the Public-Key Encryption And Hash Functions.
CO4	To Evaluate and building the skills in Network Security Applications.
CO5	To assist in System Security network design and implementation malicious software.

SEMESTER - IV

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**
Course Code:	**19U4CSCT13**	**Title: Core 13:Software Engineering**	**Batch:2019-2022** **Semester: IV**
Hrs/Week:	**5 Hrs**		**Credits: 3**

COURSE OBJECTIVES

- To learn the basics Concepts of Software Engineering .
- To Understand the Phases of Software Engineering Life Cycle.
- To learn about various types of Testing.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain a planning for a software project Development.
CO2	Prepare the SR analysis and Analysis Modelling Approaches. Apply Project Requirement analysis , Verification and validation
CO3	Generate designing Models
CO4	Developing Component based Software
CO5	Generate test cases using various testing techniques.

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCP14	Title:Core 14:WEB DESIGNING PRACTICAL	Batch	2019-2022
			Semester	IV
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES

- To develop the webpage using HTML,CSS ,XML with DTD and Java Script
- To apply the concepts like looping, control statements and document object

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose HTMl elements to develop the static webpage
CO2	Estimate HTML, CSS, Xml with DTD to demonstrate practical experience in web developing solutions
CO3	Manipulate about dynamic webpage in javascript language
CO4	Estimate HTML controls using web developing applications
CO5	Manipulate about XLINK in DTD

SEMESTER – IV

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U4CSAT04**	**Title: ALLIED 4: BUSINESS ACCOUNTING**	**Batch**	**2019-2022**
			Semester	**IV**
Hrs/week	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVE

- To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
- To enable the students to prepare the final accounts.
- To enlighten the students of various methods of costing.
- To make the students to calculate the stock level and differtiate between cost, management and financial accounting.
- To provide knowledge on various types of budgets.

COURSE OUTCOMES(CO)

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

SEMESTER – V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5CSC T15	Core 15. ASP.Net and C# Programming	Batch	2019-2022
			Semester	V
Hrs/week	5		Credits	4

COURSE OBJECTIVES

To enable the students

- To learn about the basic concepts of ASP .NET.
- To learn about the ASP .NET object model and its architecture.
- To learn about the C# and its functions.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understand about ASP.Net environment and its applications.
CO2	Know about the various forms in Visual Basic and Session controls.
CO3	Write various applications using C# Language in the .NET Framework.
CO4	Develop distributed applications using .NET Framework.
CO5	Create various applications using C#.Net framework

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U5CS CT16**	**Title : Core 16: PHP & MYSQL**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**5 hrs**		**Credits**	**4**

COURSE OBJECTIVES

- Develops skills to create server-side scripts using PHP.
- Introduces server-side programming concepts and terminology.
- Explores a variety of server-side techniques and MySQL database manipulation.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Describe and use the features and syntax of programming language PHP
CO2	Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
CO3	Apply PHP code to produce outcomes and solve problems.
CO4	Display and insert data using PHP and MySQL. Retrieve, insert, update, and delete data from the relational database MySQL
CO5	Test, debug, and deploy web pages containing PHP and MySQL.

SEMESTER V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5CSCP 17	Core 17 : ASP .NET AND C# - PRACTICAL	Batch	2019-2022
			Semester	V
Hrs/week	6		Credits	4

Course Objectives

To enable the students to gain knowledge about the teaching methodologies useful for the implementation and console based application and web based application.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Design, create, build, and debug arithmetic operations for displaying numeric output using .NET applications.
CO2	Developing a console application in ASP .NET.
CO3	Compute different operations using looping statements.
CO4	Developing applications using C#

SEMESTER V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5C SCP18	CORE 18 : PHP& MY SQL Practical	Batch	2019 – 2022
			Semester	5
Hrs/week	6 Hours		Credits	3

COURSE OBJECTIVES

- To develop the applications using PHP and MYSQL.
- To apply the concepts like looping, control statements arrays, function overloading and Database Management concepts.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose the loops and decision making statements to solve the problem in PHP and MYSQL
CO2	Estimate PHP and MYSQL to demonstrate practical experience in developing solutions
CO3	Manipulate about viewing results by localhost in browser.
CO4	Manipulate about web server in browser
CO5	Manipulate about cookie and session

SEMESTER-VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSCT19	Title:Core 19: GRAPHICS AND MULTIMEDIA	Batch	2019-2022
			Semester	VI
Hrs/Week:	5 Hrs		Credits	3

COURSE OBJECTIVES

- To provide thorough knowledge to the students the basic concepts of Graphics & Multimedia .

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain two and three dimensional concepts and their applications
CO2	Identify all techniques related to modern graphics programming concepts
CO3	To understand 2D and 3D graphics and their transformations
CO4	To understand various clipping techniques
CO5	To understand various illumination and color models

SEMESTER VI

Programme Code :	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U6CSCT20**	**Core 20: SOFTWARE TESTING**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**3**

Course Objectives

- To make the students to understand Software Testing principles.
- To discuss the distinctions between types of testing.
- To understand the essential characteristic of tool used for test automation.

Course Outcomes (CO)

CO Number	CO Statement
CO1	List a range of different software testing techniques and strategies and be able to apply specific (automated) unit testing method to the projects.
CO2	Distinguish characteristics of structural testing methods
CO3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible
CO4	Discuss about the functional and system testing methods.
CO5	Demonstrate various issues for object oriented testing with planning, Management, Execution and Reporting.

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSCP21	Title:CORE 21 : GRAPHICS AND MULTIMEDIA PRACTICAL	Batch	2019-2022
			Semester	VI
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES:

- To implement various graphics drawing algorithms, 2D-3D transformations and clipping techniques.
- To learn the basic principles of 3-dimensional computer graphics.
- This is an introductory course on principles of computer graphics. We will consider both 2D and 3D graphics.

COURSE OUTCOMES:

CO Number	CO Statement
CO1	To create interesting scenes. In particular, you will learn how to use lighting, shading, and animation to enhance scenes
CO2	Understand the Concepts of 2D & 3D object representation
CO3	Understand the 3D transformations to create a target practice game.
CO4	Develop an animation using GIMP
CO5	Develop to create Game using C++ program.

SEMESTER-V

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**19U5CSET1A**	**ELECTIVE 1: DATA MINING AND WAREHOUSING**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	To present survey on different learning, classification and data miningfoundations.
CO2	To and methods for data Mining application.
CO3	To solve problems for multi-core or distributed, concurrent/Parallel environments.
CO4	To survey and use latest trends and advances in data mining and warehousing.

SEMESTER – V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET1B	TITLE: ELECTIVE : 1 MOBILE COMPUTING	Batch:	2019-2022
			Semester:	V
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Mobile Computing.
- To introduce the mobile communication fundamentals.
- To enable the students to know about GSM and GPRS Technologies.
- To make the students learn and understand 3G, 4G and 5G Technologies.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamentals of mobile computing.
CO2	Describe Mobile Computing through Telephony.
CO3	Enumerate the Emerging Technologies with GSM.
CO4	Elucidate on GPRS and WAP Technologies.
CO5	Determine CDMA and 3G Concepts and Implementation.

SEMESTER:V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET1C	ELECTIVE 1 : EMBEDDED SYSTEMS	Batch	2019-2022
			Semester	V
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To make the students to have basic Knowledge and understanding of fundamental embedded systems design paradigms, architectures, possibilities and challenges, both with respect to software and hardware
- Ability to analyze a system both as a whole and in parts and their interaction in the functionality and properties of the system.
- To make the students to have a clear understanding on industrial embedded systems and intelligent embedded system development.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand what is a microcontroller, microcomputer, embedded system
CO2	Understand different components of a micro-controller and their interactions
CO3	Become familiar with programming environment used to develop embedded systems
CO4	Understand key concepts of embedded systems like IO ,timers, interrupts, interaction with peripheral devices
CO5	Learn debugging techniques for an embedded system

SEMESTER:V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET2A	ELECTIVE 2 : E-COMMERCE	Batch	2019-2022
			Semester	V
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

To enable students

- To have knowledge on concepts of e-Commerce.
- To enhance the knowledge in business strategy and inter organisational transactions.
- To understand the concepts of E-Markets, Electronic Data Interchange and E-Business.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand the basic concepts and technologies used in the field of management information systems;
CO2	Have the knowledge of the different types of management information systems
CO3	Understand the processes of developing and implementing information systems
CO4	Be aware of the ethical, social, and security issues of information systems
CO5	Understand the E-Wallet operation

SEMESTER – V

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET2B	ELECTIVE 2 :CLIENT SERVER TECHNOLOGY	Batch	2019-2022
			Semester	V
Hrs/ Week	4 Hrs		Credits	3

COURSE OBJECTIVES

- To understand the concepts of client/server
- To learn the components of client and server application-Client & Server
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

COURSE OUTCOMES (CO):

CONumber	CO Statement
CO1	Use Human/Computer Interaction design principles and best practices for graphical user interface design and development.
CO2	Design and implement advanced graphical user interfaces using basic and advanced Swing components such as JTable and JTree.
CO3	Manage components using advanced layout techniques of Group Layout and Grid Bag Layout.
CO4	Use I/O Object serialization.
CO5	Use the Components of Client/Server Applications–Hardware

SEMESTER – V

Programme Code	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code	19U5CSE T2C	ELECTIVE 2: Software Project Management	Batch	2019-2022
			Semester	V
Hrs/week	4		Credits	3

COURSE OBJECTIVES

- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

COURSE OUTCOMES

CO Number	CO Statement
CO1	Apply project management concepts and techniques to an IT project.
CO2	Identify issues that could lead to IT project success or failure.
CO3	Explain project management in terms of the software development process.
CO4	Describe the responsibilities of IT project managers.
CO5	Apply project management concepts through working in a group as team leader or active team member on an IT project

SEMESTER-VI

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**19U6CSE T3A**	**Elective 3 : Artificial Intelligence and Expert System**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**4**		**Credits**	**3**

Course Objectives

To enable the students

- To Understand different planning problems and have the basic knowledge how to design and implement AI planning systems
- Understand the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Explain the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem
CO2	Learn the basics of the theory and practice of Artificial Intelligence as a discipline about intelligent agents capable of decision making.
CO3	Apply knowledge representation techniques and problem solving strategies to common AI applications
CO4	Design simple software to experiment with various AI concepts and analyze results
CO5	Build self-learning and research skills to be able to tackle a topic of interest on his/her own or as part of a team

SEMESTER – VI

Programme Code :	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U6CSET3B**	**Elective 3: Software Testing-Practical**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**3**

Course Objectives

- To understand software test automation problems and solutions.
- To learn how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Find practical solutions to the problems.
CO2	Solve specific problems alone or in teams manage a project from beginning to end
CO3	Define, formulate and analyze a problem
CO4	Developing applications and Test them
CO5	Find practical solutions to the problems.

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**19U6CSET3C**	**ELECTIVE 3 :ENTERPRISE RESOURCE PLANNING**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

- To develop the capability to streamline the different organizational processes and work flows in ERP and to understand the ways of Improving efficiency, performance, and productivity levels of ERP Projects.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understanding the challenges associated with managing extant ERP systems.
CO2	Learn the forces and organizational conditions leading to the acquisition of such enterprise wide systems.
CO3	The opportunity to identify extant and missing organizational competencies that may be drawn upon to create an appropriate ERP implementation method.
CO4	Understanding of issues and decisions that must be made when embarking upon a ERP selection and implementation journey.
CO5	Understand and implement the ERP tools for integrated system

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSET4A	ELECTIVE 4: COMPILER DESIGN	Batch Semester	2019-2022 VI
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

COURSE OUTCOMES

CO Number	CO Statement
CO1	Specify and analyse the lexical, syntactic and semantic structures of advanced language features
CO2	Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
CO3	Write a scanner, parser, and semantic analyser without the aid of automatic generators
CO4	Describe techniques for intermediate code and machine code optimisation
CO5	Design the structures and support required for compiling advanced language features.

SEMESTER – VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U6CSET4B**	**ELECTIVE 4: ANDROID OPERATING SYSTEM**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To understand the process of developing software for the mobile and create mobile applications on the Android Platform

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Understand the limitations and challenges of working in a mobile and wireless environment.
CO2	Describe and apply the different types of application models/architectures used to develop mobile software applications.
CO3	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools
CO4	To learn how and when to apply the different components to develop a working system
CO5	Design, implement and deploy mobile applications using an appropriate software development environment.

SEMESTER-VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course code:	**19U6CSET4C**	**Elective 4 : Cloud Computing**	**Batch**	**2019-2022**
Hrs/Week	**4 Hrs**		**Semester**	**5**
			Credits	**3**

COURSE OBJECTIVES

To enable the students

To Understand the Cloud computing architectures, applications and challenges and learn about various cloud storages

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understand History and Benifits in cloud computing
CO2	Analyse the Cloud Computing Architecture and Models
CO3	Identify the cloud data center and visualization technologies.
CO4	Analyse the visualization technology and security issues of cloud Computing
CO5	Evaluate various advanced cloud computing platforms

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

B.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2019-2020.

SEMESTER-I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCT01**	**Title:Core 1:C PROGRAMMING**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**4 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To learn the fundamental programming concepts and methodologies.
- Able to develop logics which will help them to create programs, applications in C.
- To help students to develop the logic and ability to solve the problems efficiently using C programming.
- To learn various concepts and techniques for problem solving and to implement those ideas using C programs.
- To able to take up Systems programming or Advanced C programming course.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental structure of C program and to develop different programs in C language.
CO2	Give in detail about branching,looping and arrays in C program using the development environment.
CO3	Solve problems using Functions and Arguments
CO4	Analyze the Structures and pointers concepts by developing programs.
CO5	Evaluate the file management in C language.

SEMESTER – I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCT02**	**Title:Core 2: Digital Fundamentals and Computer Architecture**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**4 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To provide a knowledge about the concepts of Computer Fundamentals and enable the students to understand Digital Logic Circuits and Gates.
- To know about number system and binary codes.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input -output and memory organizations.

COURSE OUTCOMES (CO):

CO Number	CO Statement
CO1	Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions
CO2	Acquire knowledge about various logic gates and logic families and analyze basic circuits of these families
CO3	Develop K-maps to minimize and optimize logic functions up to 5 variables
CO4	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
CO5	Evaluate various design alternatives in processor organization

SEMESTER – I

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U1CSCP03**	**Title:Core 3: C Programming Practical**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/Week:	**3 Hrs**		**Credits**	**3**

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- To develop the applications using C Programming language.To apply the concepts like looping, functions, pointers and file types.

COURSE OUTCOMES (CO)

CONumber	**CO Statement**
CO1	Write programs using various data types in C.
CO2	Use various operators and expressions.
CO3	Apply the concept of Arrays, Pointers and strings
CO4	Apply the concept of loops and functional programming
CO5	Use the file handling concepts for maintaining record.

SEMESTER -I

Programme Code :	**B.Sc. CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U1CSAT01**	**Title :Allied 1 : Numerical Methods and Statitics**	**Batch**	**2019-2022**
			Semester	**I**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES:

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations .
- To find derivatives using various formulae using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Find Numerical Solution of Algebaric and Transcental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integeration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2C SCT04**	**Title: Core 4: C++ Programming**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To provide knowledge on object oriented programming concepts using C++.
- To learn about the concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.
- To understand how C++ improves C with object-oriented features.
- To learn how to write inline functions for efficiency and performance.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Observe the fundamental concepts of oops languages and control structure
CO2	Interpret about classes , functions and constructor
CO3	Solve real world problems by using inheritance concepts
CO4	Classify the Arrays and pointers concepts by developing programs.
CO5	Evaluate about the Concept Exception handling mechanism

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2CSCT05**	**Title:Core 5:Data Structures**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To understand the abstract data types stack, queue, deque, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.
- To use stacks to evaluate postfix expressions.
- To use stacks to convert expressions from infix to postfix.

COURSE OUTCOMES

CO Number	Statement
CO1	Define the algorithms with basic techniques and recursive methods and familiar in the space and time complexity of the algorithms.
CO2	Intrepret the operations of Stack,Queue and Linked list
CO3	Demonstrate specific search, sort , Tree and Graph algorithms using data structures given specific user requirements.
CO4	Identify suitable algorithms with appropriate data structures for real time software requirements .
CO5	Illustrate to store and retrieve data stored in both main memory and in secondary memory.

SEMESTER – II

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U2CSCP06**	**Title:Core 6:C++ Programming - Practical**	**Batch**	**2019-2022**
			Semester	**II**
Hrs/Week:	**3 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

- To develop the applications using C++ Programming language.
- To apply the concepts like looping, control statements arrays, function overloading and file concepts.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Choose the loops and decision making statements to solve the problems in C++
CO2	Examine C++ code to demonstrate practical experience in developing solutions for real time applications.
CO3	Manipulate about Compilation and debug programs in C++ language
CO4	Write programs in C++ using special functions, constructor and destructor.
CO5	Use the file handling concepts

SEMESTER-II

Programme Code :	**B.Sc. CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U2CSAT02**	**Title : Allied 2:Discrete Mathematics**	**Batch** **Semester**	**2019-2022** **II**
Hrs/week	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

- To enable the Students to understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**
Course Code:	**19U3CSCT07**	**Title: CORE 7: OPERATING SYSTEMS**	**Batch:2019-2022**
			Semester: III
Hrs/Week:	**5 Hrs**		**Credits: 4**

COURSE OBJECTIVES:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the different types of operating systems concepts like shell, Multi-Tasking / Time-sharing and Distributed Operating System.
- To understand the basic structure of OS, process and threads.
- To understand the deadlock & Memory management concepts.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Explain the basics of operating systems like kernel,shell, types and views of operating systems
CO2	Implement operating system functions.
CO3	Describe the various CPU scheduling algorithms and remove deadlocks
CO4	Explain various memory management techniques and concept of thrashing
CO5	Recognize file system interface, protection and security mechanisms.

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U3CSCT08	Title: Core 8: JAVA PROGRAMMING	Batch	2019-2022
			Semester	III
Hrs/Week:	5 Hrs		Credits	3

COURSE OBJECTIVES

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

COURSE OUTCOMES

CONumber	CO Statement
CO1	Explain the fundamental structure of java program and to develop different programs in java language.
CO2	Understand in detail about branching ,looping and arrays in java program using the development environment.
CO3	Solve problems using methods and interface
CO4	Identify the errors and develop the Applet program
CO5	Evaluate the file management in java language.

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U3CSCT09	Title: Core 9: Data Communicatons And Networks	Batch	2019-2022
			Semester	III
Hrs/Week:	6 Hrs		Credits	3

Course Objectives

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes

CO Number	CO Statement
CO1	Independently understand basic computer network technology. And Understand and explain Data Communications System and its components.
CO2	To Apply the different types of network topologies and protocols.
CO3	Analyse the layers of the OSI model, TCP/IP and the function(s) of each layer.
CO4	To Evaluate and building the skills of subnetting and routing mechanisms.
CO5	To Create the basic protocols of computer networks and how they can be used to assist in network design and implementation.

SEMESTER – III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U3CSCP 10**	**Title:Core 10: Java Programming Practical**	**Batch**	**2019-2022**
			Semester	**III**
Hrs/Week:	**6 Hrs**		**Credits**	**3**

COURSE OBJECTIVES:

- To develop the applications using Java Programming language.
- To apply the concepts like looping, methods, interface, applets and file concepts.

COURSE OUTCOMES:

CO Number	CO Statement
CO1	Observe Java to demonstrate practical experience in developing solutions
CO2	Evaluating different methods, interface, applets and file concepts.
CO3	Distinguish about Compile and debug programs in Java language
CO4	Evaluating different controls in java
CO5	Evaluating the file handling functions

SEMESTER III

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U3CSAT03**	**Title: Allied 3: Operations Research**	**Batch**	**2019-2022**
			Semester	**III**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of queueing theory, PERT and CPM

COURSE OUTCOME

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain thE methods of solving Solution of LPP using Graphical Method simplex method and Big M method
CO2	Solve Transportation and Assignment problems
CO3	Explain the concepts of Game Theory
CO4	Study the concepts of Queueing theory and solving simple problems
CO5	Know distinction between PERT & CPM

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCT11	Title:Core 11:WEB ESIGNING	Batch	2019-2022
			Semester	IV
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To get practiced with creating the schemas, HTML and XML Document.
- To acquire knowledge on creating web page to deploy the web applications.
- To understand scripting language in java script

COURSE OUTCOMES

CO Number	CO Statement
CO1	Observe the fundamental concepts of network and internet
CO2	Develop the web page by using HTML elements
CO3	Develop the web page by using HTML with Style sheet
CO4	Classify the XML and DTD concepts by developing webpages.
CO5	Assess about the Concept object oriented mechanism

SEMESTER-IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCT12	Title: CORE 12: Network Security and Cryptography	Batch	2019-2022
			Semester	IV
Hrs/Week:	6 Hrs		Credits	4

Course Objectives

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of Network Security
- Familiarize the student with the basic network security technology.
- Introduce the student to advanced cryptography concepts, preparing the student for entry Advanced courses in network security.
- Allow the student to gain expertise in some specific areas of cryptography and network security.

Course Outcomes

CO Number	CO Statement
CO1	Independently understand basic computer security technologies and the model.
CO2	To study the different types of Symmetric ciphers.
CO3	Analyse the Public-Key Encryption And Hash Functions.
CO4	To Evaluate and building the skills in Network Security Applications.
CO5	To assist in System Security network design and implementation malicious software.

SEMESTER - IV

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**
Course Code:	**19U4CSCT13**	**Title: Core 13:Software Engineering**	**Batch:2019-2022** **Semester: IV**
Hrs/Week:	**5 Hrs**		**Credits: 3**

COURSE OBJECTIVES

- To learn the basics Concepts of Software Engineering .
- To Understand the Phases of Software Engineering Life Cycle.
- To learn about various types of Testing.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain a planning for a software project Development.
CO2	Prepare the SR analysis and Analysis Modelling Approaches. Apply Project Requirement analysis , Verification and validation
CO3	Generate designing Models
CO4	Developing Component based Software
CO5	Generate test cases using various testing techniques.

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U4CSCP14	Title:Core 14:WEB DESIGNING PRACTICAL	Batch	2019-2022
			Semester	IV
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES

- To develop the webpage using HTML,CSS ,XML with DTD and Java Script
- To apply the concepts like looping, control statements and document object

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose HTMl elements to develop the static webpage
CO2	Estimate HTML, CSS, Xml with DTD to demonstrate practical experience in web developing solutions
CO3	Manipulate about dynamic webpage in javascript language
CO4	Estimate HTML controls using web developing applications
CO5	Manipulate about XLINK in DTD

SEMESTER – IV

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U4CSAT04**	**Title: ALLIED 4: BUSINESS ACCOUNTING**	**Batch**	**2019-2022**
			Semester	**IV**
Hrs/week	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVE

- To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
- To enable the students to prepare the final accounts.
- To enlighten the students of various methods of costing.
- To make the students to calculate the stock level and differtiate between cost, management and financial accounting.
- To provide knowledge on various types of budgets.

COURSE OUTCOMES(CO)

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

SEMESTER – V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5CSC T15	Core 15. ASP.Net and C# Programming	Batch	2019-2022
			Semester	V
Hrs/week	5		Credits	4

COURSE OBJECTIVES

To enable the students

- To learn about the basic concepts of ASP .NET.
- To learn about the ASP .NET object model and its architecture.
- To learn about the C# and its functions.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understand about ASP.Net environment and its applications.
CO2	Know about the various forms in Visual Basic and Session controls.
CO3	Write various applications using C# Language in the .NET Framework.
CO4	Develop distributed applications using .NET Framework.
CO5	Create various applications using C#.Net framework

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U5CS CT16**	**Title : Core 16: PHP & MYSQL**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**5 hrs**		**Credits**	**4**

COURSE OBJECTIVES

- Develops skills to create server-side scripts using PHP.
- Introduces server-side programming concepts and terminology.
- Explores a variety of server-side techniques and MySQL database manipulation.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Describe and use the features and syntax of programming language PHP
CO2	Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
CO3	Apply PHP code to produce outcomes and solve problems.
CO4	Display and insert data using PHP and MySQL. Retrieve, insert, update, and delete data from the relational database MySQL
CO5	Test, debug, and deploy web pages containing PHP and MySQL.

SEMESTER V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5CSCP 17	Core 17 : ASP .NET AND C# - PRACTICAL	Batch	2019-2022
			Semester	V
Hrs/week	6		Credits	4

Course Objectives

To enable the students to gain knowledge about the teaching methodologies useful for the implementation and console based application and web based application.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Design, create, build, and debug arithmetic operations for displaying numeric output using .NET applications.
CO2	Developing a console application in ASP .NET.
CO3	Compute different operations using looping statements.
CO4	Developing applications using C#

SEMESTER V

Programme Code :	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code :	19U5C SCP18	CORE 18 : PHP& MY SQL Practical	Batch	2019 – 2022
			Semester	5
Hrs/week	6 Hours		Credits	3

COURSE OBJECTIVES

- To develop the applications using PHP and MYSQL.
- To apply the concepts like looping, control statements arrays, function overloading and Database Management concepts.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose the loops and decision making statements to solve the problem in PHP and MYSQL
CO2	Estimate PHP and MYSQL to demonstrate practical experience in developing solutions
CO3	Manipulate about viewing results by localhost in browser.
CO4	Manipulate about web server in browser
CO5	Manipulate about cookie and session

SEMESTER-VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSCT19	Title:Core 19: GRAPHICS AND MULTIMEDIA	Batch	2019-2022
			Semester	VI
Hrs/Week:	5 Hrs		Credits	3

COURSE OBJECTIVES

- To provide thorough knowledge to the students the basic concepts of Graphics & Multimedia .

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain two and three dimensional concepts and their applications
CO2	Identify all techniques related to modern graphics programming concepts
CO3	To understand 2D and 3D graphics and their transformations
CO4	To understand various clipping techniques
CO5	To understand various illumination and color models

SEMESTER VI

Programme Code :	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U6CSCT20**	**Core 20: SOFTWARE TESTING**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**3**

Course Objectives

- To make the students to understand Software Testing principles.
- To discuss the distinctions between types of testing.
- To understand the essential characteristic of tool used for test automation.

Course Outcomes (CO)

CO Number	CO Statement
CO1	List a range of different software testing techniques and strategies and be able to apply specific (automated) unit testing method to the projects.
CO2	Distinguish characteristics of structural testing methods
CO3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible
CO4	Discuss about the functional and system testing methods.
CO5	Demonstrate various issues for object oriented testing with planning, Management, Execution and Reporting.

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSCP21	Title:CORE 21 : GRAPHICS AND MULTIMEDIA PRACTICAL	Batch	2019-2022
			Semester	VI
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES:

- To implement various graphics drawing algorithms, 2D-3D transformations and clipping techniques.
- To learn the basic principles of 3-dimensional computer graphics.
- This is an introductory course on principles of computer graphics. We will consider both 2D and 3D graphics.

COURSE OUTCOMES:

CO Number	CO Statement
CO1	To create interesting scenes. In particular, you will learn how to use lighting, shading, and animation to enhance scenes
CO2	Understand the Concepts of 2D & 3D object representation
CO3	Understand the 3D transformations to create a target practice game.
CO4	Develop an animation using GIMP
CO5	Develop to create Game using C++ program.

SEMESTER-V

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**19U5CSET1A**	**ELECTIVE 1: DATA MINING AND WAREHOUSING**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	To present survey on different learning, classification and data miningfoundations.
CO2	To and methods for data Mining application.
CO3	To solve problems for multi-core or distributed, concurrent/Parallel environments.
CO4	To survey and use latest trends and advances in data mining and warehousing.

SEMESTER – V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET1B	TITLE: ELECTIVE : 1 MOBILE COMPUTING	Batch:	2019-2022
			Semester:	V
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Mobile Computing.
- To introduce the mobile communication fundamentals.
- To enable the students to know about GSM and GPRS Technologies.
- To make the students learn and understand 3G, 4G and 5G Technologies.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamentals of mobile computing.
CO2	Describe Mobile Computing through Telephony.
CO3	Enumerate the Emerging Technologies with GSM.
CO4	Elucidate on GPRS and WAP Technologies.
CO5	Determine CDMA and 3G Concepts and Implementation.

SEMESTER:V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET1C	ELECTIVE 1 : EMBEDDED SYSTEMS	Batch	2019-2022
			Semester	V
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To make the students to have basic Knowledge and understanding of fundamental embedded systems design paradigms, architectures, possibilities and challenges, both with respect to software and hardware
- Ability to analyze a system both as a whole and in parts and their interaction in the functionality and properties of the system.
- To make the students to have a clear understanding on industrial embedded systems and intelligent embedded system development.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand what is a microcontroller, microcomputer, embedded system
CO2	Understand different components of a micro-controller and their interactions
CO3	Become familiar with programming environment used to develop embedded systems
CO4	Understand key concepts of embedded systems like IO ,timers, interrupts, interaction with peripheral devices
CO5	Learn debugging techniques for an embedded system

SEMESTER:V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET2A	ELECTIVE 2 : E-COMMERCE	Batch	2019-2022
			Semester	V
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

To enable students

- To have knowledge on concepts of e-Commerce.
- To enhance the knowledge in business strategy and inter organisational transactions.
- To understand the concepts of E-Markets, Electronic Data Interchange and E-Business.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand the basic concepts and technologies used in the field of management information systems;
CO2	Have the knowledge of the different types of management information systems
CO3	Understand the processes of developing and implementing information systems
CO4	Be aware of the ethical, social, and security issues of information systems
CO5	Understand the E-Wallet operation

SEMESTER – V

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U5CSET2B	ELECTIVE 2 :CLIENT SERVER TECHNOLOGY	Batch	2019-2022
			Semester	V
Hrs/ Week	4 Hrs		Credits	3

COURSE OBJECTIVES

- To understand the concepts of client/server
- To learn the components of client and server application-Client & Server
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

COURSE OUTCOMES (CO):

CONumber	CO Statement
CO1	Use Human/Computer Interaction design principles and best practices for graphical user interface design and development.
CO2	Design and implement advanced graphical user interfaces using basic and advanced Swing components such as JTable and JTree.
CO3	Manage components using advanced layout techniques of Group Layout and Grid Bag Layout.
CO4	Use I/O Object serialization.
CO5	Use the Components of Client/Server Applications–Hardware

SEMESTER – V

Programme Code	B.Sc	Programme Title	Bachelor of Computer Science	
Course Code	19U5CSE T2C	ELECTIVE 2: Software Project Management	Batch	2019-2022
			Semester	V
Hrs/week	4		Credits	3

COURSE OBJECTIVES

- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

COURSE OUTCOMES

CO Number	CO Statement
CO1	Apply project management concepts and techniques to an IT project.
CO2	Identify issues that could lead to IT project success or failure.
CO3	Explain project management in terms of the software development process.
CO4	Describe the responsibilities of IT project managers.
CO5	Apply project management concepts through working in a group as team leader or active team member on an IT project

SEMESTER-VI

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**19U6CSE T3A**	**Elective 3 : Artificial Intelligence and Expert System**	**Batch**	**2019-2022**
			Semester	**V**
Hrs/week	**4**		**Credits**	**3**

Course Objectives

To enable the students

- To Understand different planning problems and have the basic knowledge how to design and implement AI planning systems
- Understand the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Explain the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem
CO2	Learn the basics of the theory and practice of Artificial Intelligence as a discipline about intelligent agents capable of decision making.
CO3	Apply knowledge representation techniques and problem solving strategies to common AI applications
CO4	Design simple software to experiment with various AI concepts and analyze results
CO5	Build self-learning and research skills to be able to tackle a topic of interest on his/her own or as part of a team

SEMESTER – VI

Programme Code :	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	**19U6CSET3B**	**Elective 3: Software Testing-Practical**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**3**

Course Objectives

- To understand software test automation problems and solutions.
- To learn how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

Course Outcomes (CO)

CO Number	CO Statement
CO1	Find practical solutions to the problems.
CO2	Solve specific problems alone or in teams manage a project from beginning to end
CO3	Define, formulate and analyze a problem
CO4	Developing applications and Test them
CO5	Find practical solutions to the problems.

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**19U6CSET3C**	**ELECTIVE 3 :ENTERPRISE RESOURCE PLANNING**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/week	**4**		**Credits**	**3**

COURSE OBJECTIVES

- To develop the capability to streamline the different organizational processes and work flows in ERP and to understand the ways of Improving efficiency, performance, and productivity levels of ERP Projects.

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understanding the challenges associated with managing extant ERP systems.
CO2	Learn the forces and organizational conditions leading to the acquisition of such enterprise wide systems.
CO3	The opportunity to identify extant and missing organizational competencies that may be drawn upon to create an appropriate ERP implementation method.
CO4	Understanding of issues and decisions that must be made when embarking upon a ERP selection and implementation journey.
CO5	Understand and implement the ERP tools for integrated system

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19U6CSET4A	ELECTIVE 4: COMPILER DESIGN	Batch Semester	2019-2022 VI
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

COURSE OUTCOMES

CO Number	CO Statement
CO1	Specify and analyse the lexical, syntactic and semantic structures of advanced language features
CO2	Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
CO3	Write a scanner, parser, and semantic analyser without the aid of automatic generators
CO4	Describe techniques for intermediate code and machine code optimisation
CO5	Design the structures and support required for compiling advanced language features.

SEMESTER – VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**19U6CSET4B**	**ELECTIVE 4: ANDROID OPERATING SYSTEM**	**Batch**	**2019-2022**
			Semester	**VI**
Hrs/Week:	**4 Hrs**		**Credits**	**3**

COURSE OBJECTIVES

To enable the students

- To understand the process of developing software for the mobile and create mobile applications on the Android Platform

COURSE OUTCOMES (CO)

CO Number	**CO Statement**
CO1	Understand the limitations and challenges of working in a mobile and wireless environment.
CO2	Describe and apply the different types of application models/architectures used to develop mobile software applications.
CO3	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools
CO4	To learn how and when to apply the different components to develop a working system
CO5	Design, implement and deploy mobile applications using an appropriate software development environment.

SEMESTER-VI

Programme code:	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course code:	**19U6CSET4C**	**Elective 4 : Cloud Computing**	**Batch**	**2019-2022**
Hrs/Week	**4 Hrs**		**Semester**	**5**
			Credits	**3**

COURSE OBJECTIVES

To enable the students

To Understand the Cloud computing architectures, applications and challenges and learn about various cloud storages

COURSE OUTCOMES (CO)

CO Number	CO Statement
CO1	Understand History and Benifits in cloud computing
CO2	Analyse the Cloud Computing Architecture and Models
CO3	Identify the cloud data center and visualization technologies.
CO4	Analyse the visualization technology and security issues of cloud Computing
CO5	Evaluate various advanced cloud computing platforms

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

B.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2018-2019.

SEMESTER-I

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U1CSCT01	Title:Core 1:C PROGRAMMING	Batch	2018-2021
			Semester	I
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To learn the fundamental programming concepts and methodologies.
- Able to develop logics which will help them to create programs, applications in C.
- To help students to develop the logic and ability to solve the problems efficiently using C programming.
- To learn various concepts and techniques for problem solving and to implement those ideas using C programs.
- To able to take up Systems programming or Advanced C programming course.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Explain the fundamental structure of C program and to develop different programs in C language.
CO2	Give in detail about branching,looping and arrays in C program using the development environment.
CO3	Solve problems using Functions and Arguments
CO4	Analyze the Structures and pointers concepts by developing programs.
CO5	Evaluate the file management in C language.

SEMESTER – I

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U1CSCT02	Title:Core 2:Digital Fundamentals And Architecture	Batch	2018-2021
			Semester	I
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To know about number system and binary codes.
- To learn about various circuits and digital logics.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input – output and memory organization.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	State the hardware, number system and arithmetic circuits involved in a computer
CO2	Compare the sequential and combinational logic circuits and their functioning in CPU
CO3	Show the input – output organization, memory and their functions
CO4	Explain the Microprocessor Architecture and I/O Organization
CO5	State the Memory Organization in system

SEMESTER – I

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U1CSCP03	Title:Core 3: C Programming Practical	Batch	2018-2021
			Semester	I
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES:

- To develop the applications using C Programming language. To apply the concepts like looping, functions, pointers and file concepts.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Observe C to demonstrate practical experience in developing solutions
CO2	Apply different functions, pointers, arrays and structures.
CO3	Distinguish about Compile and debug programs in C language

SEMESTER -I

Programme Code :	B.Sc. CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	18U1CSAT01	Title :Allied 1 : Numerical Methods and Statitics	**Batch**	2018-2021
			Semester	I
Hrs/week	5		**Credits**	4

COURSE OBJECTIVES

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations .
- To find derivatives using various formulae and Integration using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Find Numerical Solution of Algebaric and Transcental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integeration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

SEMESTER – II

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U2CSCT04	Title:Core 4: C++ Programming	Batch	2018-2021
			Semester	II
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To provide knowledge on object oriented programming concepts using C++.
- To learn about the concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the ollowingOutcomes

CO Number	CO Statement
CO1	Observe the fundamental concepts of oops languages and control structure
CO2	Interpret about classes , functions and constructor
CO3	Solve real world problems by using inheritance concepts
CO4	Classify the Arrays and pointers concepts by developing programs.
CO5	Assess about the Concept Exception handling mechanism

SEMESTER – II

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U2CSCT05	Title:Core 5:Data Structures	Batch	2018-2021
			Semester	II
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- TTo make the students to understand the basic concepts of Data Structures and Algorithms.
- To understand the concepts of stack, Queue and Linked List.
- To enhance the students knowledge in developing Algorithms using stack , queues, lists, matrices , searching and sorting.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the followingOutcomes

CO Number	Statement
CO1	Recall the algorithms with basic techniques and recursive methods and familiar in the space and time complexity of the algorithms.
CO2	Intrepret the operations of Stack,Queue and Linked list
CO3	Demonstrate specific search, sort , Tree and Graph algorithms using data structures given specific user requirements.
CO4	Identify suitable algorithms with appropriate data structures for real time software requirements .
CO5	Demonstrate file concepts using data structures programming.

SEMESTER – II

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U2CSCP06	Title:Core 6:C++ Programming - Practical	Batch	2018-2021
			Semester	II
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To develop the applications using C++ Programming language.
- To apply the concepts like looping, control statements arrays, function overloading and file concepts.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Choose the loops and decision making statements to solve the problem in C++
CO2	Estimate C++ to demonstrate practical experience in developing solutions
CO3	Manipulate about Compilation and debug programs in C++ language

SEMESTER-II

Programme Code :	B.Sc. CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code :	18U2CSAT02	Title : Allied 2:Discrete Mathematics	**Batch**	2018-2021
			Semester	II
Hrs/week	5 Hrs		**Credits**	4

COURSE OBJECTIVES

- To enable the Students
- To understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

SEMESTER-III

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**
Course Code:	**18U3CSCT07**	Title: **CORE 7: OPERATING SYSTEMS**	Batch:2018-2021
			Semester: III
Hrs/Week:	5 Hrs		Credits: 4

COURSE OBJECTIVES :

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the structure of OS , process and Interprocess Communications
- To understand the deadlock & Memory management concepts

COURSE OUTCOMES

On the successful completion of the course, students will be able

CO Number	**CO Statement**
CO1	To learn the fundamentals of Operating Systems.
CO2	To learn the mechanisms of OS to handle processes and threads and their communication
CO3	To learn the mechanisms involved in memory management in contemporary OS
CO4	To gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols
CO5	Explain the file system in operating system

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U3CSCT08**	Title:Core 8:JAVA PROGRAMMING	Batch	2018-2021
			Semester	III
Hrs/Week:	6 Hrs		Credits	4

COURSE OBJECTIVES

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Explain the fundamental structure of java program and to develop different programs in java language.
CO2	Understand in detail about branching,looping and arrays in java program using the development environment.
CO3	Solve problems using methods and interface
CO4	Identify the errors and develop the Applet program
CO5	Evaluate the file management in java language.

SEMESTER-III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U3CSCT09**	Title:CORE 9: DATA COMMUNICATONS AND NETWORKS	Batch	2018-2021
			Semester	III
Hrs/Week:	5 Hrs		Credits	4

Course Objectives

At the end of the course, the students will be able to:

- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Independently understand basic computer network technology. And Understand and explain Data Communications System and its components.
CO2	To Apply the different types of network topologies and protocols.
CO3	Analyse the layers of the OSI model, TCP/IP and the function(s) of each layer.
CO4	To Evaluate and building the skills of subnetting and routing mechanisms.
CO5	To Create the basic protocols of computer networks and how they can be used to assist in network design and implementation.

SEMESTER – III

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U3CSCP10**	Title:Core 10: Java Programming Practical	Batch	2018-2021
			Semester	III
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES:

- To develop the applications using Java Programming language.
- To apply the concepts like looping, methods, interface, applets and file concepts.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Observe Java to demonstrate practical experience in developing solutions
CO2	Evaluating different methods, interface, applets and file concepts.
CO3	Distinguish about Compile and debug programs in Java language
CO4	Evaluating different controls in java
CO5	Evaluating the file handling functions

SEMESTER III

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U3CAAT03	Title : Operations Research	Batch	2018-2021
			Semester	III
Hrs/week	5		Credits	4

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of queueing theory, PERT and CPM

COURSE OUTCOME

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain the methods of solving Solution of LPP using Graphical Method simplex method and Big M method
CO2	Solve Transportation and Assignment problems
CO3	Explain the concepts of Game Theory
CO4	Study the concepts of Queueing theory and solving simple problems
CO5	Know distinction between PERT & CPM

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U4CSCT11	Title:Core 11:WEB DESIGNING	Batch	2018-2021
			Semester	IV
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To get practiced with creating the schemas, HTML and XML Document.
- To acquire knowledge on creating web page to deploy the web applications.
- To understand scripting language in java script

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the followingOutcomes

CO Number	CO Statement
CO1	Observe the fundamental concepts of network and internet
CO2	Develop the web page by using HTML elements
CO3	Develop the web page by using HTML with Style sheet
CO4	Classify the XML and DTD concepts by developing webpages.
CO5	Assess about the Concept object oriented mechanism

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U4CSCT12**	Core 12: CYBER LAWS AND SECURITY POLICIES	Batch	2018-2021
			Semester	IV
Hrs/Week:	6 Hrs		Credits	4

COURSE OBJECTIVES

- Understand the Basics of Cyber Law and Cyber Security.
- Identify how intruders escalate privileges and what steps can be taken to secure a system.
- Introduce and demonstrate hacking tools for penetration testing purposes only.

COURSE OUTCOMES

Upon the completion of this course, the students will be able to

CO Number	CO Statement
CO1	Predict the basic concepts of Cyber Law & Ethics of Cyber Law
CO2	Indicate the various Data Encryption Methodologies
CO3	Enumerate about the Cyber Crime factors & Preventive Measures
CO4	Demonstrate the Digital Signatures & Certificates in Human life
CO5	Recognize and Detection of Cyber Attacks.

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science
Course Code:	18U4CSCT13	Title: Core 13:Software Engineering	Batch:2018-2021 Semester: IV
Hrs/Week:	5 Hrs		Credits: 3

COURSE OBJECTIVES

- To learn the basics Concepts of Software Engineering .
- To Understand the SCM process.
- To learn about various Software Engineering concepts.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Explain a planning for a software project Development.
CO2	Prepare the SR analysis,Software estimation and analysis method
CO3	Apply Project Management and Requirement analysis, Verification and validation
CO4	Analyze the cost estimate and problem complexity using various estimation techniques.
CO5	Generate test cases using the techniques involved in selecting SCM and testing methods

SEMESTER – IV

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U4CSCP14	Title:Core 14:WEB DESIGNING PRACTICAL	Batch	2018-2021
			Semester	IV
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES

- To develop the webpage using HTML,CSS ,XML with DTD and Java Script
- To apply the concepts like looping, control statements and document object

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Choose HTMl elements to develop the static webpage
CO2	Estimate HTML, CSS, Xml with DTD to demonstrate practical experience in web developing solutions
CO3	Manipulate about dynamic webpage in javascript language
CO4	Estimate HTML controls using web developing applications
CO5	Manipulate about XLINK in DTD

SEMESTER – IV

Programme Code :	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U4ITAT04	Title: ALLIED 4: BUSINESS ACCOUNTING	Batch	2018-2021
			Semester	IV
Hrs/week	6 Hrs		Credits	4

COURSE OBJECTIVE

- To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
- To enable the students to prepare the final accounts.
- To enlighten the students of various methods of costing.
- To make the students to calculate the stock level and differtiate between cost, management and financial accounting.
- To provide knowledge on various types of budjets.

COURSE OUTCOMES(CO)

On successful completion of the course, students should be able to achieve the following outcomes

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

SEMESTER V

Programme Code :	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U5CSCT15	Title :Core15: ASP .NET and C#	Batch	2018-2021
			Semester	V
Hrs/week	5 hrs		Credits	4

COURSE OBJECTIVES

To enable the students

- To understand .NET framework and C#.
- To understand Object oriented concepts of C#.
- To understand and design Application using C#
- To understand Web based application development.
- To understand in depth concepts of .NET framework

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Understand the .NET workflow in detail
CO2	Demonstrate .Net framework and web based Design
CO3	Demonstrate the Model and Data base applications using C#
CO4	Understand Object oriented concepts of C#
CO5	Understand the C# programming with control structures

SEMESTER V

Programme Code :	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U5CSCT16	Title : Core 16: PHP & MYSQL	Batch	2018-2021
			Semester	V
Hrs/week	5 hrs		Credits	4

COURSE OBJECTIVES

- Develops skills to create server-side scripts using PHP.
- Introduces server-side programming concepts and terminology.
- Explores a variety of server-side techniques and MySQL database manipulation.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Describe and use the features and syntax of programming language PHP
CO2	Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
CO3	Apply PHP code to produce outcomes and solve problems.
CO4	Display and insert data using PHP and MySQL. Retrieve, insert, update, and delete data from the relational database MySQL
CO5	Test, debug, and deploy web pages containing PHP and MySQL.

SEMESTER V

Programme Code :	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U5CSCP17	Title :Core 17: ASP .NET and C# - PRACTICAL	Batch	2018-2021
			Semester	V
Hrs/week	6 hrs		Credits	4

COURSE OBJECTIVES

- To enable the students to gain knowledge about the teaching methodologies useful for the implementation and console based application and web based application.

COURSE OUTCOMES (CO)

At the end of the practical session, students would be well-versed in

CO Number	CO Statement
CO1	Design, create, build, and debug arithmetic operations for displaying numeric output using .NET applications.
CO2	Developing a console application in ASP .NET.
CO3	Compute different operations using looping statements.
CO4	Developing simple programs using C#
CO5	Developing applications using C#

Programme Code :	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code :	18U5CSCP18	Title :CORE 18: PHP & MYSQL PRACTICAL	Batch	2018-2021
			Semester	V
Hrs/week	6 hrs		Credits	3

COURSE OBJECTIVES

- To develop the applications using PHP and MYSQL.
- To apply the concepts like looping, control statements arrays, function overloading and Database Management concepts.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Choose the loops and decision making statements to solve the problem in PHP and MYSQL
CO2	Estimate PHP and MYSQL to demonstrate practical experience in developing solutions
CO3	Manipulate about viewing results by localhost in browser.
CO4	Manipulate about web server in browser
CO5	Manipulate about cookie and session

SEMESTER-VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U6CSCT19**	Title:Core 19: GRAPHICS AND MULTIMEDIA	Batch	2018-2021
			Semester	VI
Hrs/Week:	5 Hrs		Credits	4

COURSE OBJECTIVES

- To provide thorough knowledge to the students the basic concepts of Graphics & Multimedia .

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Explain two and three dimensional concepts and their applications
CO2	Identify all techniques related to modern graphics programming concepts
CO3	To understand 2D and 3D graphics and their transformations
CO4	To understand various clipping techniques
CO5	To understand various illumination and color models

SEMESTER – VI

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U6CSCP20	Title:Core 20: SOFTWARE TESTING PRACTICAL	Batch	2018-2021
			Semester	VI
Hrs/ Week	5 Hrs		Credits	3

COURSE OBJECTIVES

- Develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software
- at low cost and with a small cycle time
- Student learn systematic approach to the development, operation, maintenance, and retirement of software
- Student learn how to use available resources to develop software.

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
CO2	Implement various test processes for quality improvement
CO3	Design test planning.
CO4	Manage the test process
CO5	Manipulate Exception Handling

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U6CSCP21**	Title:CORE 21 : GRAPHICS AND MULTIMEDIA PRACTICAL	Batch	2018-2021
			Semester	VI
Hrs/Week:	6 Hrs		Credits	3

COURSE OBJECTIVES:

- To implement various graphics drawing algorithms, 2D-3D transformations and clipping techniques.
- To learn the basic principles of 3-dimensional computer graphics.
- This is an introductory course on principles of computer graphics. We will consider both 2D and 3D graphics.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	To create interesting scenes. In particular, you will learn how to use lighting, shading, and animation to enhance scenes
CO2	Understand the Concepts of 2D & 3D object representation
CO3	Understand the 3D transformations to create a target practice game.
CO4	Develop an animation using GIMP
CO5	Develop to create Game using C++ program.

SEMESTER – VI
CORE 22 : PROJECT VIVA VOCE

Subject Code : 18U6CACV22 **Total Hrs : 75** **No of Credits : 4**

GUIDELINES FOR PROJECT WORK

1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.
2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.
3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

FINAL VIVA

1. Project work carries 100 marks with 4 credits
2. Internal Assessment: 80 marks (60 marks for 3 reviews and 20 marks for record) and External Assessment : 20 marks (Viva Voce)
3. For awarding a pass, a candidate should have obtained 40% of the total 100 Marks.(Viva - Voce)
4. The evaluation would be done jointly by both the examiners(Internal and External). Students who fail in the project work and viva-voce examination or who are absent for the project viva-voce who fail to submit the project report before the due date will have to re-submit the project work and appear for the viva-voce examination during the subsequent year.

SEMESTER – V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**18U5CSET1A**	**TITLE: ELECTIVE 1: DATA MINING AND WAREHOUSING**	Batch: Semester:	2018-202**1** V
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Data Mining Concepts.
- To know the basics of data mining and warehousing.
- To understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Explain the Basics of data mining and warehousing.
CO2	Describe Data Mining Pre processing.
CO3	Enumerate the Association Rule Mining with Classification
CO4	Elucidate on Cluster Analysis and various methods.
CO5	Determine Applications and Trends in Data Mining.

SEMESTER – V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U5CSET1B**	**TITLE: ELECTIVE : 1 MOBILE COMPUTING**	Batch:	2018-2021
			Semester:	V
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Mobile Computing.
- To introduce the mobile communication fundamentals.
- To enable the students to know about GSM and GPRS Technologies.
- To make the students learn and understand 3G, 4G and 5G Technologies.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Explain the fundamentals of mobile computing.
CO2	Describe Mobile Computing through Telephony.
CO3	Enumerate the Emerging Technologies with GSM.
CO4	Elucidate on GPRS and WAP Technologies.
CO5	Determine CDMA and 3G Concepts and Implementation.

SEMESTER:V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U5CSET2A**	ELECTIVE 2 : E-COMMERCE	Batch	2018-2021
			Semester	V
Hrs/Week:	4 Hrs		Credits	**3**

COURSE OBJECTIVES

To enable students

- To have knowledge on concepts of e-Commerce.
- To enhance the knowledge in business strategy and inter organisational transactions.
- To understand the concepts of E-Markets, Electronic Data Interchange and E-Business.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Understand the basic concepts and technologies used in the field of management information systems;
CO2	Have the knowledge of the different types of management information systems
CO3	Understand the processes of developing and implementing information systems
CO4	Be aware of the ethical, social, and security issues of information systems
CO5	Understand the E-Wallet operation

SEMESTER – V

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U5CSET2B	ELECTIVE 2 :CLIENT SERVER TECHNOLOGY	Batch	2018-2021
			Semester	V
Hrs/ Week	4 Hrs		Credits	3

COURSE OBJECTIVES

- To understand the concepts of client/server
- To learn the components of client and server application-Client & Server
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Use Human/Computer Interaction design principles and best practices for graphical user interface design and development.
CO2	Design and implement advanced graphical user interfaces using basic and advanced Swing components such as JTable and JTree.
CO3	Manage components using advanced layout techniques of GroupLayout and GridBagLayout.
CO4	Use I/O Object serialization.
CO5	Use the Components of Client/Server Applications–Hardware

SEMESTER – V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U5CSET2C	ELECTIVE 2 : SOFTWARE PROJECT MANAGEMENT	Batch	2018-2021
			Semester	V
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CONO	CO Statement
CO1	Apply project management concepts and techniques to an IT project.
CO2	Identify issues that could lead to IT project success or failure.
CO3	Explain project management in terms of the software development process.
CO4	Describe the responsibilities of IT project managers.
CO5	Apply project management concepts through working in a group as team leader or active team member on an IT project

SEMESTER – V

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U6CSET3A	ELECTIVE 2 : ARTIFICIAL INTELLIGENCE and EXPERT SYSTEM	Batch	2018-2021
			Semester	VI
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- This course presents the fundamentals of knowledge representation for problem solving, learning
- methods of Artificial Intelligence and the deeper concepts of Machine Learning and Algorithms. It
- Also covers various Statistical, Reinforcement, supervised and unsupervised learning algorithms used
- for classification, prediction and clustering and Case studies.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Develop solutions for problems using various Artificial Intelligence concepts.
CO2	Design applications using PROLOG for making inferences.
CO3	Demonstrate usage of planning and decision making.
CO4	Apply the concepts of learning using Tensor Flow.
CO5	To Create the applications on Machine Learning in Artificial Intelligence.

SEMESTER V

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U6CSET3B	ELECTIVE 3 :SOFTWARE TESTING	Batch	2019-2022
			Semester	VI
Hrs/ Week	4 Hrs		Credits	3

COURSE OBJECTIVES

- To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
- To discuss various software testing issues and solutions in software unit test, integration, regression, and system testing.
- To understand software test automation problems and solutions.
- To learn how to write software testing documents, and communicate with engineers in various forms.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Investigate the reason for bugs and analyse it for preventing and remove the bugs
CO2	Implement various test process for quality standard
CO3	Designing test plan for various problems
CO4	Manage test case and proces
CO5	Understanding testing techniques

SEMESTER V

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	18U6CSET3C	Title : ELECTIVE 3 :ENTERPRISE RESOURCE PLANNING	Batch	2018-2021
			Semester	VI
Hrs/week	4		Credits	3

COURSE OBJECTIVES

- To develop the capability to streamline the different organizational processes and work flows in ERP and to understand the ways of Improving efficiency, performance, and productivity levels of ERP Projects.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Understanding the challenges associated with managing extant ERP systems.
CO2	Learn the forces and organizational conditions leading to the acquisition of such enterprise wide systems.
CO3	The opportunity to identify extant and missing organizational competencies that may be drawn upon to create an appropriate ERP implementation method.
CO4	Understanding of issues and decisions that must be made when embarking upon a ERP selection and implementation journey.
CO5	Understand and implement the ERP tools for integrated system

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18U6CSET4A	ELECTIVE 4: COMPILER DESIGN	Batch	2018-2021
			Semester	VI
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

COURSE OUTCOMES

- On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Specify and analyse the lexical, syntactic and semantic structures of advanced language features
CO2	Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
CO3	Write a scanner, parser, and semantic analyser without the aid of automatic generators
CO4	Describe techniques for intermediate code and machine code optimisation
CO5	Design the structures and support required for compiling advanced language features.

SEMESTER – VI

Programme code:	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18U6CSET4B**	ELECTIVE 4: ANDROID OPERATING SYSTEM	Batch	2018-2021
			Semester	VI
Hrs/Week:	4 Hrs		Credits	**3**

COURSE OBJECTIVES

- To understand the principles, tools and patterns that underlie Android development.
- **T**o understand the Methods of developing various applications using android pratice.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Understand the basic concepts of Mobile Operating System
CO2	General knowledge of Mobile and Wireless Communication technology
CO3	Understand the processes of Communication in mobile communicatio
CO4	Understand the security design Security Design And Architecture-
CO5	Understand the network application and gaming

SEMESTER – VI

Programme Code	B.Sc CS	Programme Title	**Bachelor of Computer Science**	
Course Code:	18U6CSET4C	ELECTIVE 4: CLOUD COMPUTING	Batch	2018-2021
			Semester	VI
Hrs/ Week	4 Hrs		Credits	3

COURSE OBJECTIVES

- To learn the basics of cloud computing .
- To Understand the Cloud computing architectures, applications and challenges
- To learn about various cloud storages.

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CO Number	**CO Statement**
CO1	Analyze the Cloud computing setup with it's vulnerabilities and applications using different architectures.
CO2	Design different workflows according to requirements and apply map reduce programming model
CO3	Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds
CO4	Apply and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms.
CO5	Evaluate Cloud storage method

KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
M.Sc (CS)

For the students admitted In the
Academic Year 2018-2019

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledege relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of software s developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technologicalchange.

KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
M.Sc (CS)

For the students admitted In the
Academic Year 2019-2020

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledege relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of software s developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technologicalchange.

KOVAI KALAIMAGAL COLLEGE OF ARTS & SCIENCE
(Autonomous)
Coimbatore – 641 109

DEPARTMENT OF COMPUTER SCIENCE
PROGRAMME OUTCOMES (PO) OF
M.Sc (CS)

For the students admitted In the
Academic Year 2020-2021

PROGRAMME OUTCOMES (PO)

PO1: Communication: Demonstrate english language proficiency to an appropriate level to perform effectively in the enterprise/industry/Community such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO2: Domain knowledge: Develop domain knowledege relevant to the industry enabling to succeed in rapidly changing working environment.

PO3: Technical skills: Ability to apply the knowledge of computer system design principles in building system software and hardware.

PO4: Knowledge inter-disciplinary in nature: Acquiring adequate knowledge in interdisciplinary subjects much as Commerce, Mathematics and Statistics for enhanced applications of software s developed.

PO5: Positive attitude: Developing positive attitude by instilling confidence with minds of students by suitable programs.

PO6: Critical thinking and problem solving skills: An abilility to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: Dynamism and team building skills: An ability to function effectively and proactively and in teams ,to accomplish a common goal.

PO8: Professional ethics and social values: Ability to carry out any task with professional ethics and with out deviating from social values

PO9: Self-awareness and emotional intelligence: An ability to recognize their own Strength and weekness and balance their own emotions at the time of crisis.

PO10: Entrepreneurship qualities: An ability to acquire entrepreneurship qualities and to take efforts to became entrepreneurs.

PO11: Responsibility towards society and environment: Realizing the responsibilities towards the society and to protect the environment, use ours professional knowledge for providing better lining condition to the people.

PO12: Thirst for knowledge through lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technologicalchange.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

M.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2020-2021.

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCT01	Title:Core 1:ASP . NET	Batch:	2020-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Asp.net Concepts.
- To inculcate Knowledge tin developing database applications in ASP.Net
- Got the skill of developing Web Applications
- Maintain session and controls related information for user used in multi user web applications.
- Understand the fundamentals of developing modular application by using object oriented methodologies

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the Basics of Programming and development environment in ASP.Net
CO2	Describe about Visual basic. NET and ASP Server object technologies
CO3	Enumerate the ASP.NET Configuration and session object.
CO4	Elucidate on Active Server Components and Server Controls.
CO5	Determine the connect database in Active server web page with web services applications.

SEMESTER – I

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**	
Course Code:	20P1CSCT02	Title:Core 2: Data Mining And Warehousing	Batch:	2020-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- Identify the scope and necessity of Data Mining & Warehousing for the society
- To enable the students to learn the Data mining Tasks and data warehousing Techniques.
- To understand the Association Rules,Clustering Techniques in Data mining.
- To know about the OLAP and OLTP Concepts in Data warehousing.
- To develop ability to design various algorithms based on data mining tools.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental concepts of Data Mining
CO2	Describe Classification and **N**eural Network Based Algorithms
CO3	Illustrating the Clustering and Association rule with suitable algorithm
C04	Explain the fundamental concepts of OLAP
C05	Choose case study about Data warehousing and data mining with various domain

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCT03	Title:Core 3:Advanced Computer Networks	Batch:	2020-2022
			Semester:	I
Hrs/Week:	4Hrs		Credits:	4

COURSE OBJECTIVES

- The course is aimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers.
- To learn about the digital networks & internet protocols.
- To have a clear idea about various functions of TCP and UDP.
- To learn about user networks interfaces and protocols of on B-ISDN and its operations and maintenance.
- The learning outcomes include understanding the principles for implementing a multi layer network, management systems for the network and routing of information throughout the network.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain about the data communication and Networking and various transmission methods
CO2	Describe various transmission media and routing algorithms
CO3	Apply the networking protocal and OSI model in computer communication
CO4	Expalin about various Digital Networks and Internet protocols and their standard
CO5	Elusidate gensis, principles and standard of ATM

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCT04	Title: Core 4:Advanced Software Engineering	Batch:	2020-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- To build on their basic software engineering knowledge by extending it with specific techniques for maintenance, evolution, dependability, reliability, safety, security, and resilience.
- To provide an advanced understanding and knowledge of the *software engineering* techniques, techniques to collect software requirements
- To provide knowledge on Software engineering concepts
- To make the students understand various techniques of cost estimation of software , software design and software Requirements.
- To understand various issues in implementation of software , verification , validation and maintenance of software.

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the process models for a software project Development.
CO2	Relate the SRS, Design document, Project plan of a given software system
CO3	Estimate the cost of software using different techniques
CO4	Design and develop a software, verify and validate the same using different techniques
C05	Explain about how to validate and verify the project

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCP05	Title:Core 5:ASP .Net Programming – Practical	Batch:	2020-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- To develop the applications using ASP.NET programming language.
- To apply the concepts like different controls, mathematical functions and database in real problems.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose the looping and decision making statements to solve the problems in ASP.Net.
CO2	Develop an application using Console, GUI and web in .NET
CO3	Develop a programming in ASP.Net
CO4	Creating an application using ASP.Net for connection database.
CO5	Creating an application using ASP.Net validation

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCP06	Title:Core 6: Data Mining Using R Tool –Practical	Batch:	2020-2022
			Semester:	I
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- To develop the Algorithms using R-Tool in Data Mining.
- To apply the Concepts like Prepossessing, Association Rule, Classification Rule and Clustering Rule to various domains

COURSE OUTCOMES

CO Number	CO Statement
CO1	Create and apply various data sets with the help of R-Tool to develop various algorithms involving association, classification and clustering.
CO2	Knowledge of this R-Tool used to demonstrate practical experience in Real-Time applications and to use the knowledge for getting involved research.

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1CSCP07	Title:Core 7:NS2 - Practical	Batch:	2020-2022
			Semester:	I
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- To Find Number of Packets using NS2
- To determinr CRC(Cyclic Redundancy Check) Concepts.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand the simulation using NCTU/NS
CO2	Simulate a three nodes point – to – point network with duplex links between them.
CO3	Understand the error detecting using cyclic redundancy check (CRC).

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P1TSSP01	Title: Technical Skill Subject 1: Open Source software using PHP -Practical	Batch:	2020-2022
			Semester:	I
Hrs/Week:	2 Hrs		Credits :	2

COURSE OBJECTIVES

- To develop web applications using PHP programming language.
- To apply the concepts like different controls and mathematical functions

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a Program in PHP
CO2	Develop an application using Classes web in .NET
CO3	Creating an application and find out biggest numbers
CO4	Creating an application using PHP for Mathematical Function

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSCT08**	**Title: Core 8:Distributed Computing And Linux**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**5 Hrs**		**Credits :4**

COURSE OBJECTIVES

- To Understand foundations of Distributed Systems.
- To provide knowledge in the concepts of operating system and shell programming
- To make the students understand the various techniques in operating systems
- To provide knowledge in linux concepts
- To understand various issues in Synchronization techniques

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental concepts of Computer Networks and ATM Technology.
CO2	Elucidate on Encoding and Decoding and RPC Models.
CO3	Solve the real world problems by using Deadlock concepts
CO4	Categorize the Open source softwares
CO5	Assess the Linux File Structure and TCP/IP networks

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSCT09**	**Title:Core 9:Cloud Computing**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**5 Hrs**		**Credits: 4**

Course Objectives

To understand the Systems with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications.

- To learn the basics of cloud computing .
- Understand the architecture and concept of different cloud models: IaaS, PaaS, SaaS.
- To Understand the Cloud computing architectures, applications and challenges.
- To learn about various cloud storages.

COURSE OUTCOMES

CO NUMBER	CO STATEMENT
CO1	Explain the basics of cloud computing
CO2	Provide details about the Cloud computing architectures, applications and challenges
CO3	Discuss about the various cloud storages, Schedules and Task Management and explain how to collaborate on various functions using cloud
CO4	Create groups on social network and evaluate online groupware
CO5	demonstrate storing and sharing the files, photo using cloud

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSCT10**	**Title: Core 10:Advanced Java Programming**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

COURSE OBJECTIVES

- To learn the basics of Object oriented Programming .
- To Understand the Concept of Inheritance, Exception Handling.
- To learn about JDBC Connectivity and Servlets.
- To develop Java client/server applications.
- To Identify advance concepts of java programming with database connectivity.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamental concepts of java language and control structure
CO2	Elucidate on inheritance, interface and types of Exception
CO3	Classify the java packages
CO4	Demonstrate how to connect a Network using JDBC
CO5	Discuss about Remote method Innovation

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSCP11**	**Title: Core 11:Linux Using Shell Scripting- Practical**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

Course Objectives

- To develop the Linux using the Shell Script .
- To apply the Concepts like basic shell script programs
- To implement the system calls, fork and exec commands

Course Outcomes

CO Number	CO Statement
CO1	Interpret various test command with the help of Shell script involving status of file, menu driven, case conversion, command line arguments etc.,
CO2	Writing various programs using shell script.

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSCP12**	**Title:Core 12:Advanced Java Programming -Practical**	**Batch:2020-2022**
			Semester:II
Hrs/Week:	**4 Hrs**		**Credits:3**

Course Objectives

- To Develop applications using Java Language.
- To apply the Concepts like Looping, Classes, Inheritance, Applets and RMI

Course Outcomes

CO Number	CO Statement
CO1	Create a Java program using inheritance and Exception handling mechanism
CO2	Demonstrate using Java Applets and how to connect a JDBC in Java

SEMESTER - II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2TSSP02**	**Technical Skill Subject 2: Web Technology - Practical**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**2 Hrs**		**Credits: 2**

COURSE OBJECTIVES

- To develop the web applications using HTML programming language.
- To develop the web applications using Java Script and PHP programming language.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a web application using HTML
CO2	Develop a web page using Java Script
CO3	Design a web page of book details using XML

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSET1A**	**Title: Elective 1: Grid Computing**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

Course Objectives

- To get Knowledge on Grid Computing , and its environment.
- To get Knowledge on its techniques and Architecture and Implementation.
- To get Knowledge on Cluster , managing grid and its services.
- To equip the learner with knowledge and skills in implementing Cloud and Grid Computing technologies in organizations.
- To identify the technical foundations of cloud systems architectures.

Course Outcomes

CO Number	CO Statement
CO1	Explain the basics of Grid Computing
CO2	Elaborate on Grid Computing architectures, applications and challenges
CO3	Elucidate on managing grid and its services.
CO4	Give clear idea about the Open Grid Service Architecture and open grid services infrastructure
CO5	Explain different emerging security and Grid Computing Technologies in grid

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSET1B**	**Title:Elective 1: Neural Networks And Genetic Algorithm**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

COURSE OBJECTIVES

- To introduce the fundamentals of neural networks, fuzzy systems, and genetic algorithms.
- To learn about the basics of neural networks and its applications and artificial neural networks and its processes.
- To understand the concept of Genetic Algorithms.
- To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic.
- To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the basics of neural networks
CO2	Narrate the Characteristics of Netural Networks
CO3	Give a clear idea about the Fundamentals of Genetic Algorithms
CO4	Explain the architecture and application of Backpropogation Networks
CO5	Discuss about the ART architecture and relevant algorithms

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSET1C**	**Title:Elective 1: E –Technologies**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

COURSE OBJECTIVES

- To have an understanding of the Basics of E-Commerce and Technology infrastructure required for implementing the same.
- To have a knowledge on various methods and strategies for selling on the web.
- To Know about web server and software required for implementing E-Commerce.
- To Know in detail about various E-Marketing structures and E-Security.
- To improve the educational technology encompasses e-learning.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Demonstrate the knowledge on fundamental concepts of E-Commerce and infrastructure required for the same
CO2	Elucidate on various methods and strategies followed for selling on the web.
CO3	Explain about web server software and its functions
CO4	Enumerate various E-Marketing strategies
CO5	Explain about E-Business Strategy

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	**20P2CSET1D**	**Title:Elective 1: Cyber Law And Security Policy**	**Batch:2020-2022**
			Semester: II
Hrs/Week:	**4 Hrs**		**Credits: 4**

COURSE OBJECTIVES

- To understand the Concepts of Cyber Law and Data Security.
- To understand the Intellectual Property Rights,the Evidence and Criminal Aspect in Cyber Law.
- To develop the understanding of relationship between commerce and cyberspace.
- To enable learner to understand, explore, and acquire a critical understanding Cyber Law.
- To explore the legal and policy developments in various countries to regulate Cyberspace.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	State the History ,Features and Benefits of Cyber Law
CO2	Classify the various methods of providing security data
CO3	Explain the Criminal aspect in Cyber Law
CO4	Elucidate on global trends in Cyber law and information Technology Act
CO5	Explain the Information Technology Act

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P3CSCT13	Title:Core 13:Digital Image Processing	Batch	**2020-2022**
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- To study the image fundamentals and mathematical transforms necessary for image processing.
- To study the image enhancement techniques.
- To study image restoration procedures.
- To study the image compression procedures.
- To analyze images in the frequency domain using various transforms

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the fundamental concepts of a digital image processing system
CO2	Analyze images in the frequency domain using various transforms.
CO3	Show the input – output organization, memory and their functionsEvaluate the techniques for image enhancement and image restoration
CO4	Categorize various compression techniques.
CO5	Interpret Image compression standards.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Masterof Computer Science	
Course Code:	20P3CSCT14	Title:Core 14: Python Programming	Batch	**2020-2022**
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- Develop a basic understanding of programming and the Python programming language.
- Understanding of scripting and the contributions of scripting languages.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To provide Built-in objectives of python knowledge.
- To understand why Python is a useful scripting language for developers

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understanding of modern version control tools.
CO2	Exhibit facility with a Linux command line environment.
CO3	Understanding of the role of testing in scientific computing, and write unit tests in Python.
CO4	Command line tools to write and edit code.
CO5	Write code in Python to perform mathematical calculations and scientific simulations.

SEMESTER - III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	**20P3CSCT15**	Title: Core 15:BIG DATA and ANALYTICS	Batch: **2020-2022**
			Semester: I
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To explore the fundamental concepts of big data analytics
- To develop in-depth knowledge and understanding of the big data analytic domain.
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the characteristics of Big data and analytics tools.
CO2	Relate the data analysis models of a given data sets
CO3	Learn to use various techniques for mining data stream.
CO4	understand the applications using Map Reduce Concepts
CO5	Ability to understand the Frameworks And Visualization

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Masterof Computer Science	
Course Code:	20P3CSCP16	Title:Core 16: Digital Image Processing - Practical	Batch	**2020-2022**
			Semester	III
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- The fundamentals of digital image processing
- Image transform used in digital image processing
- Image enhancement techniques used in digital image processing
- Image restoration techniques and methods used in digital image processing
- Image compression and Segmentation used in digital image processing

COURSE OUTCOMES

CO Number	CO Statement
CO1	Learning basic digital image representation principals
CO2	Ability to perform spatial and frequency domain analysis
CO3	Learning methods involving binary, gray scale and color image representations
CO4	Gaining hands on experiencein the use of Matlab
CO5	Learning types of image compression.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P3CSCP17	Title:Core 17: Python Programming – Practical	Batch	**2020-2022**
			Semester	III
Hrs/Week:	3 Hrs		Credits	3

COURSE OBJECTIVES

- To acquire basic knowledge of python programming.
- Understand decision making and functions in python.
- Learn object oriented programming using python.
- Write and debug iles handling in python.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the concepts of python functions.
CO2	Develop python program using decision making statement
CO3	Interpret object oriented programming in python.
CO4	Design and develop GUI applications
CO5	Find the error using Exception Handling.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P3CSCP18	TITLE: Core :18 ANDROID AND ITS APPLICATION PRACTICAL	Batch	**2020-2022**
			Semester:	III
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Android Concepts.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the android environment.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Use the basic concepts of android.
CO2	Develop an application using Console, GUI.
CO3	Develop menu concepts in android.
CO4	Creating an application using navigation.
CO5	Develop android application to store data in internal device.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	**20P3CSET2A**	Title: Elective 2: ENTERPRISE RESOURCE PLANNING	Batch	**2020-2022**
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

Course Objectives

- To understand capability to streamline the different organizational processes and work flows in ERP.
- To learn about the improved efficiency, performance, and productivity levels of ERP.
- To know the basics of ERP , key implementation, business modules and future trends in ERP.
- To provide a contemporary and forward-looking on the theory and practice of Enterprise Resource Planning Technology.
- To focus on a strong emphasis upon practice of theory in Applications and Practical-oriented approach.

Course Outcomes

CO Number	CO Statement
CO1	To understand the Functional Module, ERP Market and Vendors
CO2	To Apply the knowledge of ERP Services
CO3	Analyse the Business Process Re-engineering And ERP
CO4	To Evaluate the knowledge of Planning and implementation of ERP
CO5	To Create the Mobile module by Managing ERP Projects

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P3CSET2B	Title: Elective 2: Software Testing	Batch	2020-2022
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
- To discuss various software testing issues and solutions in software unit test, integration, regression, and system testing.
- To understand software test automation problems and solutions.
- To learn how to write software testing documents, and communicate with engineers in various forms.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Investigate the reason for bugs and analyse it for preventing and remove the bugs
CO2	Implement various test process for quality standard
CO3	Designing test plan for various problems
CO4	Manage test case and process
CO5	Understanding testing techniques

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	20P3CSET2C	TITLE: Elective 3: ANDROID AND ITS APPLICATION	Batch:	2020-2022
			Semester:	III
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Android Concepts.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the android environment.
- Familiarize with Android's APIs for data storage, retrieval, user preferences, files and content providers.
- To develop a grasp of the Android OS architecture and application development lifecycle

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the Basics of Programming and development environment in Android
CO2	designed for students to learn how to build Android apps in a professional manner.
CO3	tto impart knowledge of User interface, Activity , Views, Services and SQLite.
CO4	Manage test case and process
CO5	Understanding testing techniques

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course code:	20P3CSET2D	Title: ELECTIVE 2: SOFTWARE PROJECT MANAGEMENT	Batch	2020-2022
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

Course Objectives

- To get knowledge of how to handle project development activities. To understand the threats and opportunities in Project managements.
- To study various project cost, time estimation models and how to make quality software.

Course Outcomes

CO Number	CO Statement
CO1	To understand the activities of
CO2	To Apply the knowledge of Project evaluation
CO3	Analyse the Business Process Re-engineering
CO4	To Evaluate the knowledge of Planning and implementation Projects
CO5	To Create the Mobile module by Managing Projects

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

M.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2019-2020.

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCT01	Title:Core 1:ASP . NET	Batch:	2019-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Asp.net Concepts.
- To inculcate Knowledge tin developing database applications in ASP.Net
- Got the skill of developing Web Applications
- Maintain session and controls related information for user used in multi user web applications.
- Understand the fundamentals of developing modular application by using object oriented methodologies

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the Basics of Programming and development environment in ASP.Net
CO2	Describe about Visual basic. NET and ASP Server object technologies
CO3	Enumerate the ASP.NET Configuration and session object.
CO4	Elucidate on Active Server Components and Server Controls.
CO5	Determine the connect database in Active server web page with web services applications.

SEMESTER – I

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**	
Course Code:	19P1CSCT02	Title:Core 2: Data Mining And Warehousing	Batch:	2019-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- Identify the scope and necessity of Data Mining & Warehousing for the society
- To enable the students to learn the Data mining Tasks and data warehousing Techniques.
- To unterstand the Association Rules,Clustering Techniques in Datamining.
- To know about the OLAP and OLTP Concepts in Datawarehousing.
- To develop ability to design various algorithms based on data mining tools.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental concepts of Data Mining
CO2	Describe Classification and **N**eural Network Based Algorithms
CO3	Illustrating the Clustering and Association rule with suitable algorithm
C04	Explain the fundamental concepts of OLAP
C05	Choose case study about Data warehousing and data mining with various domain

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCT03	Title:Core 3:Advanced Computer Networks	Batch:	2019-2022
			Semester:	I
Hrs/Week:	4Hrs		Credits:	4

COURSE OBJECTIVES

- The course is aimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers.
- To learn about the digital networks & internet protocols.
- To have a clear idea about various functions of TCP and UDP.
- To learn about user networks interfaces and protocols of on B-ISDN and its operations and maintenance.
- The learning outcomes include understanding the principles for implementing a multi layer network, management systems for the network and routing of information throughout the network.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain about the data communication and Networking and various transmission methods
CO2	Describe various transmission media and routing algorithms
CO3	Apply the networking protocal and OSI model in computer communication
CO4	Expalin about various Digital Networks and Internet protocols and their standard
CO5	Elusidate gensis, principles and standard of ATM

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCT04	Title: Core 4:Advanced Software Engineering	Batch:	2019-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- To build on their basic software engineering knowledge by extending it with specific techniques for maintenance, evolution, dependability, reliability, safety, security, and resilience.
- To provide an advanced understanding and knowledge of the *software engineering* techniques, techniques to collect software requirements
- To provide knowledge on Software engineering concepts
- To make the students understand various techniques of cost estimation of software , software design and software Requirements.
- To understand various issues in implementation of software , verification , validation and maintenance of software.

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the process models for a software project Development.
CO2	Relate the SRS, Design document, Project plan of a given software system
CO3	Estimate the cost of software using different techniques
CO4	Design and develop a software, verify and validate the same using different techniques
C05	Explain about how to validate and verify the project

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCP05	Title:Core 5:ASP .Net Programming - Practical	Batch:	2019-2022
			Semester:	I
Hrs/Week:	4 Hrs		Credits:	3

COURSE OBJECTIVES

- To develop the applications using ASP.NET programming language.
- To apply the concepts like different controls, mathematical functions and database in real problems.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose the looping and decision making statements to solve the problems in ASP.Net.
CO2	Develop an application using Console, GUI and web in .NET
CO3	Develop a programming in ASP.Net
CO4	Creating an application using ASP.Net for connection database.
CO5	Creating an application using ASP.Net validation

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCP06	Title:Core 6: Data Mining Using R Tool –Practical	Batch:	2019-2022
			Semester:	I
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- To develop the Algorithms using R-Tool in Data Mining.
- To apply the Concepts like Preprocessing, Association Rule, Classification Rule and Clustering Rule to various domains

COURSE OUTCOMES

CO Number	CO Statement
CO1	Create and apply various datasets with the help of R-Tool to develop various algorithms involving association, classification and clustering.
CO2	Knowledge of this R-Tool usrd to demonstrate practical experience in Real-Time applications and to use the knowledge for getting involved research.

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1CSCP07	Title:Core 7:NS2 - Practical	Batch:	2019-2022
			Semester:	I
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- To Find Number of Packets using NS2
- To determinr CRC(Cyclic Redundancy Check) Concepts.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand the simulation using NCTU/NS
CO2	Simulate a three nodes point – to – point network with duplex links between them.
CO3	Understand the error detecting using cyclic redundancy check (CRC).

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P1TSSP01	Title:Technical Skill Subject 1: Open Source software using PHP -Practical	Batch:	2019-2022
			Semester:	I
Hrs/Week:	2 Hrs		Credits :	2

COURSE OBJECTIVES

- To develop web applications using PHP programming language.
- To apply the concepts like different controls and mathematical functions

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a Program in PHP
CO2	Develop an application using Classes web in .NET
CO3	Creating an application and find out biggest numbers
CO4	Creating an application using PHP for Mathematical Function

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSCT08	Title:Core 8:Distributed Computing And Linux	Batch:2019-2022
			Semester: II
Hrs/Week:	5 Hrs		Credits :4

COURSE OBJECTIVES

- To Understand foundations of Distributed *Systems*.
- To provide knowledge in the concepts of operating system and shell programming
- To make the students understand the various techniques in operating systems
- To provide knowledge in linux concepts
- To understand various issues in Synchronization techniques

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamental concepts of Computer Networks and ATM Technology.
CO2	Elucidate on Encoding and Decoding and RPC Models.
CO3	Solve the real world problems by using Deadlock concepts
CO4	Categorize the Open source softwares
CO5	Assess the Linux File Structure and TCP/IP networks

SEMESTER - II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSCT09	Title:Core 9:Cloud Computing	Batch:2019-2022
			Semester: II
Hrs/Week:	5 Hrs		Credits: 3

Course Objectives

- To understand the Systems with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications.
- To learn the basics of cloud computing .
- Understand the architecture and concept of different cloud models: IaaS, PaaS, SaaS.
- To Understand the Cloud computing architectures, applications and challenges.
- To learn about various cloud storages.

COURSE OUTCOMES

CO NUMBER	CO STATEMENT
CO1	Explain the basics of cloud computing
CO2	Provide detailst about the Cloud computing architectures, applications and challenges
CO3	Discuss about the various cloud storages, Schedules and Task Management and explain how to collaborate on various functions using cloud
CO4	Create groups on social network and evaluate online groupware
CO5	demonstrate storing and sharing the files, photo using cloud

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSCT10	Title: Core 10:Advanced Java Programming	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To learn the basics of Object oriented Programming .
- To Understand the Concept of Inheritance,Eception Handling.
- To learn about JDBC Connectivity and Servlets.
- To develop *Java* client/server applications.
- To Identify advance concepts of java programming with database connectivity.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamental concepts of java language and control structure
CO2	Elucidate on inheritance,interface and types of Exception
CO3	Clasify the java packages
CO4	Demonstrate how to connect a Network using JDBC
CO5	Discuss about Remote method Innovation

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	19P2CSCP11	Title: Core 11:Linux Using Shell Scripting- Practical	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

Course Objectives

- To develop the Linux using the Shell Script .
- To apply the Concepts like basic shell script programs
- To implement the system calls, fork and exec commands

Course Outcomes

CO Number	**CO Statement**
CO1	Intrepret various test command with the help of Shell script involving status of file, menu driven, case conversion, command line arguments etc.,
CO2	Writing various programs using shell script.

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSCP12	Title:Core 12:Advanced Java Programming -Practical	Batch:2019-2022
			Semester:II
Hrs/Week:	4 Hrs		Credits:3

Course Objectives

- To Develop applications using Java Language.
- To apply the Concepts like Looping, Classes, Inheritance, Applets and RMI

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Create a Java program using inheritance and Exception handling mechanism
CO2	Demonstrate using Java Applets and how to connect a JDBC in Java

SEMESTER - II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2TSSP02	**Technical Skill Subject 2:** Web Technology - Practical	Batch:2019-2022
			Semester: II
Hrs/Week:	2 Hrs		Credits: 2

COURSE OBJECTIVES

- To develop the web applications using HTML programming language.
- To develop the web applications using Java Script and PHP programming language.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a web application using HTML
CO2	Develop a web page using Java Script
CO3	Design a web page of book details using XML

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSET1A	Title:Elective 1: Grid Computing	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

Course Objectives

- To get Knowledge on Grid Computing , and its environment.
- To get Knowledge on its techniques and Architecture and Implementation.
- To get Knowledge on Cluster , managing grid and its services.
- To equip the learner with knowledge and skills in implementing Cloud and *Grid Computing* technologies in organizations.
- To identify the technical foundations of cloud systems architectures.

Course Outcomes

CO Number	CO Statement
CO1	Explain the basics of Grid Computing
CO2	Elaborate on Grid Computing architectures, applications and challenges
CO3	Elucidate on managing grid and its services.
CO4	Give clear idea about the Open Grid Service Architecture and open grid services infrastructure
CO5	Expalin different emerging security and Grid Computing Technologies in grid

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSET1B	Title:Elective 1: Neural Networks And Genetic Algorithm	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To introduce the fundamentals of neural networks, fuzzy systems, and genetic algorithms.
- To learn about the basics of neural networks and its applications and artificial neural networks and its processes.
- To understand the concept of Genetic Algorithms.
- To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic.
- To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the basics of neural networks
CO2	Narrate the Characteristics of Netural Networks
CO3	Give a clear idea about the Fundamentals of Genetic Algorithms
CO4	Explain the architecture and application of Backpropogation Networks
CO5	Discuss about the ART architecture and relevant algorithms

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	19P2CSET1C	Title:Elective 1: E –Technologies	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To have an understanding of the Basics of E-Commerce and Technology infrastructure required for implementing the same.
- To have a knowledge on various methods and strategies for selling on the web.
- To Know about web server and software required for implementing E-Commerce.
- To Know in detail about various E-Marketing structures and E-Security.
- To improve the educational technology encompasses e-learning.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Demonstrate the knowledge on fundamental concepts of E-Commerce and infrastructure required for the same
CO2	Elucidate on various methods and strategies followed for selling on the web.
CO3	Explain about web server software and its functions
CO4	Enumerate various E-Marketing strategies
CO5	Explain about E-Business Strategy

SEMESTER - II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	19P2CSET1D	Title:Elective 1: Cyber Law And Security Policy	Batch:2019-2022
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To understand the Concepts of Cyber Law and Data Security.
- To understand the Intellectual Property Rights,the Evidence and Criminal Aspect in Cyber Law.
- To develop the understanding of relationship between commerce and cyberspace.
- To enable learner to understand, explore, and acquire a critical understanding Cyber Law.
- To explore the legal and policy developments in various countries to regulate Cyberspace.

COURSE OUTCOMES

CO Number	CO Statement
CO1	State the History ,Features and Benefits of Cyber Law
CO2	Classify the various methods of providing security data
CO3	Explain the Criminal aspect in Cyber Law
CO4	Elucidate on global trends in Cyber law and information Technology Act
CO5	Explain the Information Technology Act

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19P3CSCT13	Title:Core 13:Digital Image Processing	Batch	2019-2021
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- To study the image fundamentals and mathematical transforms necessary for image processing.
- To study the image enhancement techniques.
- To study image restoration procedures.
- To study the image compression procedures.
- To analyze images in the frequency domain using various transforms

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the fundamental concepts of a digital image processing system
CO2	Analyze images in the frequency domain using various transforms.
CO3	Show the input – output organization, memory and their functionsEvaluate the techniques for image enhancement and image restoration
CO4	Categorize various compression techniques.
CO5	Interpret Image compression standards.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19P3CSCT14	Title:Core 14: Python Programming	Batch	2019-2021
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- Develop a basic understanding of programming and the Python programming language.
- Understanding of scripting and the contributions of scripting languages.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To provide Built-in objectives of python knowledge.
- To understand why Python is a useful scripting language for developers

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understanding of modern version control tools.
CO2	Exhibit facility with a Linux command line environment.
CO3	Understanding of the role of testing in scientific computing, and write unit tests in Python.
CO4	Command line tools to write and edit code.
CO5	Write code in Python to perform mathematical calculations and scientific simulations.

SEMESTER - III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	**19P3CSCT15**	Title: Core 15:BIG DATA and ANALYTICS	Batch:2019-2021
			Semester: I
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To explore the fundamental concepts of big data analytics
- To develop in-depth knowledge and understanding of the big data analytic domain.
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the characteristics of Big data and analytics tools.
CO2	Relate the data analysis models of a given data sets
CO3	Learn to use various techniques for mining data stream.
CO4	understand the applications using Map Reduce Concepts
CO5	Ability to understand the Frameworks And Visualization

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19P3CSCP16	Title:Core 16: Digital Image Processing - Practical	Batch	2019-2021
			Semester	III
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- The fundamentals of digital image processing
- Image transform used in digital image processing
- Image enhancement techniques used in digital image processing
- Image restoration techniques and methods used in digital image processing
- Image compression and Segmentation used in digital image processing

COURSE OUTCOMES

CO Number	CO Statement
CO1	Learning basic digital image representation principals
CO2	Ability to perform spatial and frequency domain analysis
CO3	Learning methods involving binary, gray scale and color image representations
CO4	Gaining hands on experiencein the use of Matlab
CO5	Learning types of image compression.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	19P3CSCP17	Title:Core 17: Python Programming – Practical	Batch	2019-2021
			Semester	III
Hrs/Week:	3 Hrs		Credits	3

COURSE OBJECTIVES

- To acquire basic knowledge of python programming.
- Understand decision making and functions in python.
- Learn object oriented programming using python.
- Write and debug iles handling in python.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the concepts of python functions.
CO2	Develop python program using decision making statement
CO3	Interpret object oriented programming in python.
CO4	Design and develop GUI applications
CO5	Find the error using Exception Handling.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	19P3CSCP18	TITLE: Core :18 ANDROID AND ITS APPLICATION PRACTICAL	Batch	2019-2021
			Semester:	III
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Android Concepts.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the android environment.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Use the basic concepts of android.
CO2	Develop an application using Console, GUI.
CO3	Develop menu concepts in android.
CO4	Creating an application using navigation.
CO5	Develop android application to store data in internal device.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

An Autonomous Institute, Affiliated to Bharathiar University,Coimbatore.

Re-Accredited with 'A" Grade by NAAC

Narasipuram, Coimbatore -641109

DEPARTMENT OF COMPUTER SCIENCE

COURSE OUTCOMES (CO)

M.SC COMPUTER SCIENCE

For the Students Admitted in the Academic year 2018-2019.

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCT01	Title:Core 1:ASP . NET	Batch:2018-2020
			Semester: I
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Asp.net Concepts.
- To inculcate knowledge on ASP.Net.
- got the skill of developing Web Applications
- knowledge to develop database applications in ASP.Net

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the Basics of Programming and development environment in ASP.Net
CO2	Describe about Visual basic. NET and ASP Server object technologies
CO3	Enumerate the ASP.NET Configuration and session object.
CO4	Elucidate on Active Server Components and Server Controls.
CO5	Determine the connect database in Active server web page with web services applications.

SEMESTER – I

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	18P1CSCT02	Title:Core 2: Data Mining And Warehousing	Batch:2018-2020
			Semester: I
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

To enable the students to learn the Data mining Tasks and data warehousing Techniques.
To unterstand the Association Rules,Clustering Techniques in Datamining.
To know about the OLAP and OLTP Concepts in Datawarehousing.

COURSE OUTCOMES

CO Number	**CO Statement**
CO1	Explain the fundamental concepts of Data Mining
CO2	Describe Classification and **N**eural Network Based Algorithms
CO3	Illustrating the Clustering and Association rule with suitable algorithm
C04	Choose case study about Data warehousing and data mining with various domain

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCT03	Title:Core 3:Advanced Computer Networks	Batch:2018-2020
			Semester: I
Hrs/Week:	4Hrs		Credits: 4

COURSE OBJECTIVES

To learn about the digital networks & internet protocols
To have a clear idea about various functions of TCP and UDP.
To learn about user networks interfaces and protocols of on B-ISDN and its operations and maintenance.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain about the data communication and Networking and various transmission methods
CO2	Describe various transmission media and routing algorithms
CO3	Apply the networking protocal and OSI model in computer communication
CO4	Expalin about various Digital Networks and Internet protocols and their standard
CO5	Elusidate gensis, principles and standard of ATM

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCT04	Title: Core 4:Advanced Software Engineering	Batch:2018-2020
			Semester: I
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To provide knowledge on Software engineering concepts
- To make the students understand various techniques of cost estimation of software , software design and software Requirements.
- To understand various issues in implementation of software , verification , validation and maintenance of software.

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the process models for a software project Development.
CO2	Relate the SRS, Design document, Project plan of a given software system
CO3	Estimate the cost of software using different techniques
CO4	Design and develop a software, verify and validate the same using different techniques

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCP05	Title:Core 5:ASP .Net Programming – Practical	Batch:2018-2020
			Semester: I
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To develop the applications using ASP.NET programming language.
- To apply the concepts like different controls, mathematical functions and database.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Choose the looping and decision making statements to solve the problems in ASP.Net.
CO2	Develop an application using Console, GUI and web in .NET
CO3	Develop a programming in ASP.Net
CO4	Creating an application using ASP.Net for connection database.

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCP06	Title:Core 6:Data Mining Using R Tool -Practical	Batch:2018-2020
			Semester: I
Hrs/Week:	3 Hrs		Credits: 3

COURSE OBJECTIVES

- To develop the Algorithms using R-Tool in Data Mining.
- To apply the Concepts like Preprocessing, Association Rule, Classification Rule and Clustering Rule.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Create and apply various datasets with the help of R-Tool to develop various algorithms involving association, classification and clustering.
CO2	R-Tool to demonstrate practical experience in Real-Time applications and to use the knowledge of get involved research.

SEMESTER - I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1CSCP07	Title:Core 7:NS2 - Practical	Batch:2018-2020
			Semester: I
Hrs/Week:	3 Hrs		Credits: 3

COURSE OBJECTIVES

- To Find Number of Packets usind NS2
- To Determine the CRC(Cyclic Redundancy Check) Concepts.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Understand the simulation using NCTU/NS
CO2	Simulate a three nodes point – to – point network with duplex links between them.
CO3	Understand the error detecting using cyclic redundancy check (CRC).

SEMESTER – I

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P1TSSP01	Title:Technical Skill Subject 1: Open Source software using PHP - Practical	Batch:2018-2020
			Semester: I
Hrs/Week:	2 Hrs		Credits :2

COURSE OBJECTIVES

- To develop web the applications using PHP programming language.
- To apply the concepts like different controls and mathematical functions

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a Program in PHP
CO2	Develop an application using Classes web in .NET
CO3	Creating an application and find out biggest numbers
CO4	Creating an application using PHP for Mathematical Function

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSCT08	Title:Core 8:Distributed Computing And Linux	Batch:2018-2020
			Semester: II
Hrs/Week:	5 Hrs		Credits :4

COURSE OBJECTIVES

- To provide knowledge in the concepts of operating system and shell programming
- To make the students understand the various techniques of Models in operating systems
- To understand the knowledge to the students of using linux platform.
- To understand various issues in Sychronization techniques

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamental concepts of Computer Networks and ATM Technology.
CO2	Elucidate on Encoding and Decoding and RPC Models.
CO3	Solve the real world problems by using Deadlock concepts
CO4	Categorize the Open source softwares
CO5	Assess the Linux File Structure and TCP/IP networks

SEMESTER - II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSCT09	Title:Core 9:Cloud Computing	Batch:2018-2020
			Semester: II
Hrs/Week:	5 Hrs		Credits: 4

Course Objective

- To learn the basics of cloud computing .
- To Understand the Cloud computing architectures, applications and challenges
- To learn about various cloud storages.

COURSE OUTCOMES

CO NUMBER	CO STATEMENT
CO1	Explain the basics of cloud computing
CO2	Provide detailst about the Cloud computing architectures, applications and challenges
CO3	Discuss about the various cloud storages, Schedules and Task Management and explain how to collaborate on various functions using cloud
CO4	Create groups on social network and evaluate online groupware
CO5	demonstrate storing and sharing the files, photo using cloud

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSCT10	Title: Core 10:Advanced Java Programming	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To learn the basics of Object oriented Programming .
- To Understand the Concept of Inheritance,Eception Handling.
- To learn about JDBC Connectivity and Servlets.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the fundamental concepts of java language and control structure
CO2	Elucidate on inheritance,interface and types of Exception
CO3	Clasify the java packages
CO4	Demonstrate how to connect a Network using JDBC
CO5	Discuss about Remote method Innovation

SEMESTER – II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	18P2CSCP11	Title: Core 11:Linux Using Shell Scripting- Practical	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 3

Course Objectives

- To develop the Linux using the Shell Script .
- To apply the Concepts like basic shell script programs
- To implement the system calls, fork and exec commands

Course Outcomes

CO Number	**CO Statement**
CO1	Intrepret various test command with the help of Shell script involving status of file, menu driven, case conversion, command line arguments etc.,
CO2	Writing various programs using shell script.

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSCP12	Title:Core 12:Advanced Java Programming -Practical	Batch:2018-2020
			Semester:II
Hrs/Week:	4 Hrs		Credits:3

Course Objectives

- To Develop a application using Java Language.
- To apply the Concepts like Looping, Classes, Inheritance, Applets and RMI

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Create a Java program using inheritance and Exception handling mechanism
CO2	Demonstrate using Java Applets and how to connect a JDBC in Java

SEMESTER - II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2TSSP02	**Technical Skill Subject 2:** Web Technology - Practical	Batch:2018-2020
			Semester: II
Hrs/Week:	2 Hrs		Credits: 2

COURSE OBJECTIVES

- To develop the web applications using HTML programming language.
- To develop the web applications using Java Script and PHP programming language.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Develop a web application using HTML
CO2	Develop a web page using Java Script
CO3	Design a web page of book details using XML

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSCT13	Title:Core 13:Digital Image Processing	Batch	2018-2020
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- To study the image fundamentals and mathematical transforms necessary for image processing.
- To study the image enhancement techniques
- To study image restoration procedures.
- To study the image compression procedures.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the fundamental concepts of a digital image processing system
CO2	Analyze images in the frequency domain using various transforms.
CO3	Show the input – output organization, memory and their functionsEvaluate the techniques for image enhancement and image restoration
CO4	Categorize various compression techniques.
CO5	Interpret Image compression standards.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSCT14	Title:Core 14: Python Programming	Batch	2018-2020
			Semester	III
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- Develop a basic understanding of programming and the Python programming language.
- Understanding of scripting and the contributions of scripting languages.
- Buil-in objectives of python knowledge.

COURSE OUTCOMES

CO Number	CO Statement
CO1	understanding of modern version control tools.
CO2	exhibit facility with a Linux command line environment.
CO3	understanding of the role of testing in scientific computing, and write unit tests in Python.
CO4	command line tools to write and edit code.
CO5	write code in Python to perform mathematical calculations and scientific simulations.

SEMESTER - III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	**18P3CSCT15**	Title: Core 15:BIG DATA and ANALYTICS	Batch:2018-2020
			Semester: I
Hrs/Week:	4 Hrs		Credits: 3

COURSE OBJECTIVES

- To explore the fundamental concepts of big data analytics
- To develop in-depth knowledge and understanding of the big data analytic domain.
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts

\

COURSE OUTCOMES

CO Number	CO Statement
CO1	Classify the characteristics of Big data and analytics tools.
CO2	Relate the data analysis models of a given data sets
CO3	Learn to use various techniques for mining data stream.
CO4	understand the applications using Map Reduce Concepts
CO5	Ability to understand the Frameworks And Visualization

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSCP 16	Title:Core 16: Digital Image Processing - Practical	Batch	2018-2020
			Semester	III
Hrs/Week:	4 Hrs		Credits	3

COURSE OBJECTIVES

- The fundamentals of digital image processing
- Image transform used in digital image processing
- Image enhancement techniques used in digital image processing
- Image restoration techniques and methods used in digital image processing
- Image compression and Segmentation used in digital image processing

COURSE OUTCOMES

CO Number	CO Statement
CO1	Learning basic digital image representation principals
CO2	Ability to perform spatial and frequency domain analysis
CO3	Learning methods involving binary, gray scale and color image representations
CO4	Gaining hands on experiencein the use of Matlab
CO5	Learning types of image compression.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSCP 17	Title:Core 17: Python Programming - Practical	Batch	2018-2020
			Semester	III
Hrs/Week:	3 Hrs		Credits	3

COURSE OBJECTIVES

- To acquire basic knowledge of python programming.
- Understand decision making and functions in python.
- Learn object oriented programming using python.
- Write and debug iles handling in python.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Review the concepts of python functions.
CO2	Develop python program using decision making statement
CO3	Interpret object oriented programming in python.
CO4	Design and develop GUI applications
CO5	Find the error using Exception Handling.

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	18P3CSCP18	TITLE: Core :18 ANDROID AND ITS APPLICATION PRACTICAL	Batch	2018-2020
			Semester:	III
Hrs/Week:	3 Hrs		Credits:	3

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Android Concepts.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the android environment.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Use the basic concepts of android.
CO2	Develop an application using Console, GUI.
CO3	Develop menu concepts in android.
CO4	Creating an application using navigation.
CO5	Develop android application to store data in internal device.

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSET1A	Title:Elective 1: Grid Computing	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

Course Objectives

- To get Knowledge on Grid Computing , and its environment
- To get Knowledge on its techniques and Architecture and Implementation
- To get Knowledge on Cluster , mamhaging grid and its services.

Course Outcomes

CO Number	CO Statement
CO1	Explain the basics of Grid Computing
CO2	Elabrate on Grid Computing architectures, applications and challenges
CO3	Elucidate on managing grid and its services.
CO4	Give clear idea about the Open Grid Service Architecture and open grid services infrastructure
CO5	Expalin differnece emerging security and Grid Computing Technologies in grid and Grid Implementation

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSET1B	Title:Elective 1: Neural Networks And Genetic Algorithm	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To learn about the basics of neural networks and its applications and artificial neural networks and its processes.
- To understand the concept of Genetic Algorithms.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the basics of neural networks
CO2	Narrate the Characteristics of Netural Networks
CO3	Give a clear idea about the Fundamentals of Genetic Algorithms
CO4	Elucidation architecture and application of Backpropogation Networks
CO5	Discuss about the ART architecture and relevant algorithms

SEMESTER – II

Programme code:	M.Sc CS	Programme Title	Master of Computer Science
Course Code:	18P2CSET1C	Title:Elective 1: E –Technologies	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To have an understanding of the Basics of E-Commerce and Technology infrastructure required for implementing the same.
- To have a knowledge on various methods and strategies for selling on the web
- To Know about web server and software required for implementing E-Commerce.
- To Know in detail about various E-Marketing structure and E-Security.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Demonstrate his knowledge on fundamental concepts of E-Commerce and infrastructure required
CO2	Elucidate on various methods and strategies followed for selling on the web.
CO3	Explain about web server software and its functions
CO4	Enumerate various E-Marketing
CO5	Enumerate various E-Strategies

SEMESTER - II

Programme code:	**M.Sc CS**	**Programme Title**	**Master of Computer Science**
Course Code:	18P2CSET1D	Title:Elective 1: Cyber Law And Security Policy	Batch:2018-2020
			Semester: II
Hrs/Week:	4 Hrs		Credits: 4

COURSE OBJECTIVES

- To understand the Concepts of Cyber Law and Data Security.
- To understand the Intellectual Property Rights,the Evidence and Criminal Aspect in Cyber Law

COURSE OUTCOMES

CO Number	CO Statement
CO1	State the History ,Features and Benefits of Cyber Law
CO2	Classify the various methods of security data
CO3	Explain the Criminal aspect in Cyber Law
CO4	Elucidate on global trends in Cyber law information Technology Act
CO5	Explain the Information Technology Act

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	**18P3CSET2A**	Title: Elective 2: ENTERPRISE RESOURCE PLANNING	Batch	2018-2020
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

Course Objectives

- To undrstand capability to streamline the different organizational processes and work flows in ERP.
- To learn about the improved efficiency, performance, and productivity levels of ERP.
- To know the basics of ERP , key implementation, business modules and future trends in ERP.

Course Outcomes

CO Number	CO Statement
CO1	To understand the Functional Module, ERP Market and Vendors
CO2	To Apply the knowledge of ERP Services
CO3	Analyse the Business Process Re-engineering And ERP
CO4	To Evaluate the knowledge of Planning and implementation of ERP
CO5	To Create the Mobile module by Managing ERP Projects

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSET2B	Title: Elective 2: Software Testing	Batch	2018-2020
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

COURSE OBJECTIVES

- To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
- To discuss various software testing issues and solutions in software unit test, integration, regression, and system testing. To understand software test automation problems and solutions. To learn how to write software testing documents, and communicate with engineers in various forms.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Investigate the reason for bugs and analyse it for preventing and remove the bugs
CO2	Implement various test process for quality standard
CO3	Designing test plan for various problems
CO4	Manage test case and proces
CO5	Understanding testing techniques

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Master of Computer Science	
Course Code:	18P3CSET2C	TITLE: Elective 3: ANDROID AND ITS APPLICATION	Batch:	2018 - 2020
			Semester:	III
Hrs/Week:	4 Hrs		Credits:	4

COURSE OBJECTIVES

- On Successful Completion of this subject the students should have knowledge on Android Concepts.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the android environment.

COURSE OUTCOMES

CO Number	CO Statement
CO1	Explain the Basics of Programming and development environment in Android
CO2	designed for students to learn how to build Android apps in a professional manner.
CO3	tto impart knowledge of User interface, Activity , Views, Services and SQLite.
CO4	Manage test case and proces
CO5	Understanding testing techniques

SEMESTER – III

Programme code:	M.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code:	18P3CSET2D	Title: ELECTIVE 2: SOFTWARE PROJECT MANAGEMENT	Batch	2018-2020
			Semester	**III**
Hrs/Week:	4 Hrs		Credits	4

Course Objectives

- To get knowledge of how to handle project development activities.To understand the threats and opportunities in Project managements.
- To study various project cost, time estimation models and how to make quality software.

Course Outcomes

CO Number	CO Statement
CO1	To understand the activities of
CO2	To Apply the knowledge of Project evaluation
CO3	Analyse the Business Process Re-engineering
CO4	To Evaluate the knowledge of Planning and implementation Projects
CO5	To Create the Mobile module by Managing Projects