KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

Re-accredited by NAAC with A^+ Grade – 4^{th} Cycle

31^{st} Among Colleges in NIRF 2022

College of Excellence (UGC)

COIMBATORE–641029

DEPARTMENT OF COMPUTER SCIENCE [AIDED]

COURSE OUTCOMES (CO)

B.Sc Computer Science

For the students admitted in the Academic Year 2021 - 2022.

Sub. Code: **21UCS101**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Core Paper 1 – C Programming**		
Batch **2021-2022**	Semester **I**	Hours/Week **4**	Total Hours **60**	Credits **4**

Course Objectives

1. To gain adequate knowledge on the need of programming languages and problem solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To get exposure to problem-solving through C programming.

Course Outcomes (CO)

K1 to K5	CO1	Remember various programming constructs and to develop C programs.
	CO2	Understand the fundamentals of C programming.
	CO3	Apply the right data representation formats based on the requirements of the problem.
	CO4	Analyze the different Operations on arrays, functions, pointers, structures, unionsand files.
	CO5	Evaluate the concepts learnt through implementing and testing of the programs that are developed.

Sub. Code: **21UCS1CL**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Core Practical 1 – C Programming–Lab**		
Batch **2021-2022**	Semester **I**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To understand the field of programming using C language.
2. To familiarize the fundamental syntax and semantics of C language.
3. To enhance the analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3 to K5	CO1	Develop programming skills using the fundamentals and basics of C Language.
	CO2	Develop programs using the basic elements like control statements, Arraysand Strings
	CO3	Enable effective usage of arrays, structures, functions and pointers.
	CO4	Implement files and command line arguments.
	CO5	Evaluate the ideas and concepts using testing of the programs

Sub. Code: **21EVS101**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Part IV – Environmental Studies**		
Batch **2021-2022**	Semester **I**	Hours/Week **2**	Total Hours **30**	Credits **2**

Course Objectives

1. The course will provide students with an understanding and appreciation of the complex interactions of man, health and the environment. It will expose students to the multi-disciplinary nature of environmental health sciences
2. To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems.
3. To shape students into good "Eco citizens" thereby catering to global environmental needs.
4. This course is designed to study about the types of pollutants including gases, chemicals petroleum, noise, light, global warming and radiation as well as pollutant flow and recycling and principles of environmental pollution such as air, water and soil
5. The course will address environmental stress and pollution, their sources in natural and workplace environments, their modes of transport and transformation, their ecological and public health effects, and existing methods for environmental disease prevention and remediation.

Course Outcomes (CO)

K3 to K5	CO1	Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities and ecosystems
	CO2	Develop an in depth knowledge on the interdisciplinary relationship of cultural, ethical and social aspects of global environmental issues
	CO3	Acquire values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones
	CO4	Gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity
	CO5	Appraise the major concepts and terminology in the field of environmental pollutants, its interconnections and direct damage to the wildlife, in addition to human communities and ecosystems

Sub .Code: **21UCS202**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper : Core Paper2– Object Oriented Programming with C++				
Batch **2021-2022**	Semester **II**	Hours/Week **4**	Total Hours **60**	Credits **4**

Course Objectives

1. To understand and differentiate the Procedure Oriented Paradigm and Object Oriented Paradigm .
2. To acquire knowledge about Classes, Objects, Inheritance and Polymorphism
3. To develop and implement the programs using Object Oriented concepts .

Course Outcomes (CO)

K1 to K5	CO1	Remember the characteristics of Procedure and Object Oriented Programming Languages
	CO2	Understand the fundamentals of C++ programming structure, function overloading and constructors.
	CO3	Apply C++ features such as composition of objects ,Operator overloading, inheritance, Polymorphism etc., to develop programs.
	CO4	Analyze the concepts of object oriented programming in terms of software reuse and managing complexity to solve real-world problems.
	CO5	Evaluate the concepts learnt through implementing and testing of the programs that are developed.

Sub .Code :**21UCS2CM**

ProgrammeCode:**09**	**B .Sc ., Computer Science.**			
Title of the Paper : Core Practical 2 – Object Oriented Programming with C++ - Lab				
Batch **2021-2022**	Semester **II**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To write programs using operators and data structure concepts .
2. To develop programs using Overloading of operators and Virtual functions.
3. To understand the implementation of File concepts.

Course Outcomes (CO)

K3 to K5	CO1	Apply the concepts of object oriented programming.
	CO2	Examine the string functions to perform operator overloading,
	CO3	Analyze the virtual functions and inheritance.
	CO4	Illustrate the file concepts and command line arguments.
	CO5	Evaluate the ideas and concepts using testing of the programs

Sub .Code :**21VED201**

ProgrammeCode:**09**	**B.Sc .,Computer Science.**			
Title of the Paper : Part IV – Value Education – Moral and Ethics				
Batch **2021-2022**	Semester **II**	Hours/Week **2**	Total Hours **30**	Credits **2**

Course Objectives

1. To impart Value Education in every walk of life.
2. To help the students to reach excellence and reap success.
3. To impart the right attitude by practicing self introspection.
4. To portray the life and messages of Great Leaders.
5. To insist the need for universal brotherhood, patience and tolerance.
6. To help the students to keep them fit.
7. To educate the importance of Yoga and Meditation.

Course Outcomes (CO)

K1 to K5	CO1	Recognize Moral values, Ethics, contribution of leaders, Yoga and its practice
	CO2	Differentiate and relate the day to day applications of Yoga and Ethics in real life situations
	CO3	Emulate the principled life of great warriors and take it forward as a message to self and the society
	CO4	Analyze the Practical outcome of practicing Moral values in real life situation
	CO5	Evaluate and Rank the outcome of the pragmatic approach to further develop the skills

Sub .Code :**21UCS303**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Paper 3 – Data Structures**		
Batch **2021-2022**	Semester **III**	Hours/Week **5**	Total Hours **75**	Credits **4**

Course Objectives

1. To know the concepts of fundamentals of writing algorithms and approach in problem solving.
2. To represent the basic concepts of stack, queue, linked list, trees and graphs.
3. To understand the concepts of searching and sorting techniques.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concepts of algorithms for searching, sorting and dynamic programming.
	CO2	Understand the representations of data and various algorithm
	CO3	Apply appropriate algorithms and data structures for real time applications.
	CO4	Analyze the complexity of different algorithms
	CO5	Evaluate the special trees and Hashing Techniques

Sub .Code:**21UCS304**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Paper4 – Operating Systems**		
Batch **2021-2022**	Semester **III**	Hours/Week **5**	Total Hours **75**	Credits **4**

Course Objectives

1. To gain knowledge on the basic operating system concepts.
2. To attain an in-depth understanding of process concepts, deadlock and memory management.
3. To get an exposure to scheduling algorithms, devices and information management.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of operating system.
	CO2	Understand the concepts like interrupts, deadlock , memory management and file management.
	CO3	Apply the different algorithms used for representation, scheduling, allocation in Linux and Windows operating system.
	CO4	Analyze the need for scheduling algorithms.
	CO5	Evaluate the storage management policies with respect to different storage Management techniques

Sub .Code:**21UCS305**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Paper5 – Java Programming**		
Batch **2021-2022**	Semester **III**	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.
2. To understand the fundamentals of object-oriented programming in Java, including managing classes, objects, invoking methods and exception handling mechanisms.
3. To know the concepts of inheritance, packages, interfaces and multithreading.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of programming such as variables, conditional statements and iterative execution statements.
	CO2	Understand the concepts of arrays, strings, packages and multithreading.
	CO3	Apply the concepts of applet programming, graphics programming and files.
	CO4	Analyze a software application using the Java programming language
	CO5	Evaluate the concepts learnt through implementing and testing of the programs that are developed.

Sub .Code :**21UCS3CN**

ProgrammeCode:**09**		**B. Sc., Computer Science.**		
Title of the Paper :		**Core Practical 3 – Java Programming - Lab**		
Batch **2021-2022**	Semester **III**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To understand the object-oriented programming principles implemented through JAVA programs.
2. To know the event-driven programming methods, including creating and manipulating objects, classes,graphics concepts and applet programming.
3. To design, code, debug and implement JAVA programs.

Course Outcomes (CO)

K3 to K5	CO1	Apply the fundamentals of Java programming language in software development.
	CO2	Examine the basics of Java programming, multi-threaded programs and Exception handling.
	CO3	Analyze and use Java in a variety of applications.
	CO4	Illustrate a software application using the Java programming language.
	CO5	Evaluate the ideas and concepts using testing of the programs.

Sub .Code :**21UCS3S1**

ProgrammeCode:**09**		**B. Sc., Computer Science.**		
Title of the Paper :		**Skill Based Subject1 – HTML and CSS Lab**		
Batch **2021-2022**	Semester **III**	Hours/Week **2**	Total Hours **30**	Credits **3**

Course Objectives

1. To develop the ability to build the web site using HTML
2. To learn the basic constructs in CSS.
3. To utilize the concepts of CSS to build the web based applications.

Course Outcomes (CO)

K3 to K5	CO1	Apply the internet related concepts that are vital in understanding web site development.
	CO2	Examine the important HTML tags for designing web pages and separate design from content using Cascading Style Sheet.
	CO3	Analyze the interactive web applications through coding using HTML, CSS.
	CO4	Illustrate the creation of static webpage using HTML,CSS.
	CO5	Evaluate the results on creativity and innovation of web pages developed using HTML tags and CSS.

Sub .Code :**21UCS406**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Core Paper6 – Database Management System**		
Batch **2021-2022**	Semester **IV**	Hours/Week **5**	Total Hours **75**	Credits **4**

Course Objectives

1. To understand the different issues involved in the design of a database system.
2. To know the essential DBMS concepts such as: database security, integrity and normalization.
3. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling and designing a DBMS.

Course Outcomes (CO)

K1 to K5	CO1	Remember data independence, data models for database systems, database schema and database instances.
	CO2	Understand and use data manipulation language to query and manage a database.
	CO3	Analyze various database types.
	CO4	Apply normalization concepts for designing a good database with integrity constraints.
	CO5	Evaluate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization.

Sub Code :**21UCS407**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Paper7 – Software Engineering and Testing**		
Batch **2021-2022**	Semester **IV**	Hours/Week **5**	Total Hours **75**	Credits **4**

Course Objectives

1. To understand the basic software engineering methods and practices.
2. To familiarize the techniques for developing software systems.
3. To enrich the knowledge about object oriented design and software testing approaches.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of software engineering
	CO2	Understand the software engineering models in developing software applications.
	CO3	Apply the object oriented design in various projects
	CO4	Analyze the various software testing approaches
	CO5	Evaluate the Software testing Plan and Reporting

Sub .Code :**21UCS408**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Core Paper 8 – Visual Basic and Oracle**		
Batch **2021-2022**	Semester **IV**	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objective

1. To acquire GUI skills required for modern software development.
2. To understand the advantages of Controls available with visual basic.
3. To gain basic understanding of database access and management using data controls.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamental skills in utilizing the tools of a visual environment such as menus and toolbars.
	CO2	Understand the SDI and MDI applications using forms, dialogs, and other types of GUI components.
	CO3	Apply the connectivity between VB with MS-ACCESS, ORACLE andSQL and SQL database
	CO4	Analyze the methods and techniques to develop VB projects.
	CO5	Evaluate the concepts learnt through implementing and testing of the programs that are developed.

Sub Code : **21UCS4CO**

ProgrammeCode:**09**		**B.Sc Computer Science**		
Title of the Paper :		**Core Practical 4– Visual Basic and Oracle - Lab**		
Batch **2021-2022**	Semester **IV**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To develop applications using Graphical User Interface tools.
2. To understand the design concepts.
3. To design and build database systems and demonstrate their competence.

Course Outcomes (CO)

K3 to K5	CO1	Apply the concepts of Visual Basic
	CO2	Examine the various Controls in Visual Basic
	CO3	Analyze how to design and develop the event- driven applications using Visual Basic framework.
	CO4	Illustrate the applications using the components of toolbox
	CO5	Evaluate the ideas and concepts using implementation and testing of the programs

Sub .Code :**21UCS4A4**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper : Allied4–Digital Principles and Computer System Architecture				
Batch **2021-2022**	Semester **IV**	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To know the basics of computer hardware and how software interacts with computer hardware.
2. To familiarize with different numbering methods like binary, octal, and hexadecimal.
3. To understand the concepts of memory hierarchy and compare different methods for computer architecture.

Course Outcomes (CO)

K1 to K5	CO1	Remember basic structure of computer, numbering methods, arithmetic and logical operations performed by computers.
	CO2	Understand various data transfer techniques in digital computer and control unit operations.
	CO3	Apply performance issues in processor and memory design of a digital computer various data representations.
	CO4	Analyze architectures and computational designs and computer architecture concepts related to design of modern processors, memories and I/Os.
	CO5	Evaluate the performance of commercially available computers.

Sub .Code :**21UCS4S2**

ProgrammeCode:**09**	**B. Sc ., Computer Science.,**			
Title of the Paper : Skill Based Subject 2 – Mobile Application Development Lab				
Batch **2021-2022**	Semester **IV**	Hours/Week **2**	Total Hours **30**	Credits **3**

Course Objectives

1. To understand the Android application development environment
2. To know the user interfaces for interacting with apps and triggering actions
3. To realize the tasks used in handling multiple activities

Course Outcomes (CO)

K3 to K5	CO1	Apply the skills for designing and implementing basic mobile apps
	CO2	Examine the basic programming skills needed for developing mobile apps for a specific platform.
	CO3	Analyze the options to save persistent application data
	CO4	Illustrate the role of security and performance in Android applications
	CO5	Evaluate the functionality of mobile application using android sdk

Sub .Code :**21UCS509**

ProgrammeCode:**09**		**B. Sc .,Computer Science .**		
Title of the Paper :		**Core Paper 9 – Artificial Intelligence**		
Batch **2021-2022**	Semester **V**	Hours/Week **6**	Total Hours **90**	Credits **4**

Course Objectives

1. To understand the basic concepts of Artificial Intelligence and identify the AI problems and domains.
2. To know appropriate search techniques to solve the problems.
3. To represent and access the domain specific knowledge.

Course Outcomes (CO)

K1 to K5	CO1	Remember the nature of AI problems and task domains of AI.
	CO2	Understand the appropriate search procedures to solve the problems.
	CO3	Apply the suitable knowledge representation method.
	CO4	Analyze the acquired knowledge and infer new knowledge.
	CO5	Evaluate the AI techniques for encoding and accessing the knowledge in the development of AI systems.

Sub .Code :**21UCS510**

ProgrammeCode:**09**		**B.Sc., Computer Science.**		
Title of the Paper :		**Core Paper 10 – Python Programming and IoT**		
Batch **2021-2022**	Semester **V**	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To understand the fundamentals of Python Programming and IOT
2. To get exposure to Programming Raspberry Pi with Python.
3. To acquire knowledge about IOT Enabling Technologies.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concept of operators, data types, looping statements in python programming.
	CO2	Understand the concepts of Input / Output operations in file.
	CO3	Apply the various protocols for IOT.
	CO4	Analyze the applications of IOT in real time scenario.
	CO5	Evaluate the concept of Python's web Application

Sub .Code :**21UCS5CP**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Practical 5 – Python Programming and IoT - Lab**		
Batch **2021-2022**	Semester **V**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To gain knowledge on the concepts of python programming.
2. To design IoT applications in different domain and be able to analyze their performance
3. To know thevarious hardware and sensing technologies to build IoT applications.

Course Outcomes (CO)

K3 to K5	CO1	Apply the basic concepts of python programming with IOT.
	CO2	Examine the IOT Enabling Technologies and Domain Specific IOTs.
	CO3	Analyze Programming Raspberry Pi with Python.
	CO4	Illustrate the Python Packages for IOT.
	CO5	Evaluate the ideas and concepts using Python with IOT.

Sub .Code:**21UCS511**

ProgrammeCode:**09**		**B. Sc., Computer Science.**		
Title of the Paper : Core Paper 11 – Data Communication and Networking				
Batch **2021-2022**	Semester **V**	Hours/Week **6**	Total Hours **90**	Credits **4**

Course Objectives

1. To know the OSI reference model and the TCP/IP reference model and protocols such as TCP,UDP and IP.
2. To familiarize the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
3. To understand the concepts of transmission media, routing algorithms and collision control.

Course Outcomes (CO)

K1 to K5	CO1	Remember the organization of computer networks, factors influencing computer network development and the reasons for having variety of different types of networks.
	CO2	Understand the Internet structure and can see how standard problems are solved and the use of cryptography and network security
	CO3	Apply the knowledge of different techniques of error detection and correction todetect and solve error bit during data transmission.
	CO4	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies
	CO5	Evaluate the different types of network devices and their functions within a network. Identify the different types of network topologies and protocols.

Sub .Code :**21UCS5X1**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**EDC– Web Designing using HTML**		
Batch **2021-2022**	Semester **V**	Hours/Week **2**	Total Hours **30**	Credits **3**

Course Objectives

1. To know the basic concepts of the World Wide Web, principles and tools used to develop Web applications.
2. To develop an ability to design and implement static and dynamic website.
3. To design and develop a Web site using text, images, links, lists, and tables for navigation and layout.

Course Outcomes (CO)

K3 to K5	CO1	Apply the internet related concepts that are vital in understanding web site development.
	CO2	Examine the important HTML tags for designing web pages.
	CO3	Analyze the interactive web applications through coding using HTML.
	CO4	Illustrate the creation of static webpage using HTML.
	CO5	Evaluate the results on creativity and innovation of web pages developed using HTML tags.

Sub .Code :**21UCS612**

ProgrammeCode:**09**		**B .Sc., Computer Science.**		
Title of the Paper :		**Core Paper 12 – Data Analytics**		
Batch **2021-2022**	Semester **VI**	Hours/Week **4**	Total Hours **60**	Credits **4**

Course Objectives

1. To understand the fundamental concepts in data science.
2. To familiarize Data Classification, Sources of Data, Data Science user- roles and skills.
3. To acquire knowledge in Basics of R tool and statistical measures.

Course Outcomes (CO)

K1 to K5	CO1	Understand data classification, process of big data technology, user roles and skills in data science.
	CO2	Apply the fundamental concepts and techniques of data science in 360 view of Customer
	CO3	Analyze the methodologies of data science
	CO4	Implement the statistical measures using R
	CO5	Evaluate the data analysis techniques for applications handling large data.

Sub .Code :**21UCS613**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Paper 13 – PHP Programming**		
Batch **2021-2022**	Semester **VI**	Hours/Week **4**	Total Hours **60**	Credits **4**

Course Objectives

1. To understand the basic programming techniques using PHP.
2. To gain an insight of creating classes and using functions in PHP.
3. To know the process of developing a PHP application and to work with files and directories.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic syntax of PHP
	CO2	Understand Arrays and Strings in PHP
	CO3	Apply the concepts of files and directories
	CO4	Analyze the database connectivity using PHP and SQL
	CO5	Evaluate the effectiveness of PHP programming concepts in developed applications.

Sub .Code :**21UCS6CQ**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Core Practical 6 – PHP Programming Lab**		
Batch **2021-2022**	Semester **VI**	Hours/Week **6**	Total Hours **90**	Credits **2**

Course Objectives

1. To develop the ability to build efficient web based applications using PHP
2. To learn the basic constructs in PHP Programming.
3. To utilize the concepts of Strings and Array functions in PHP applications.

Course Outcomes (CO)

K3 to K5	CO1	Apply the concepts of PHP programming fundamental features
	CO2	Examine string functions and arrays to develop the applications.
	CO3	Analyze file system functions.
	CO4	Illustrate SESSION and COOKIE concepts in PHP applications.
	CO5	Evaluate the web pages implemented containing PHP and MySQL.

Sub .Code :**21UCS614**

ProgrammeCode:**09**		**B. Sc .,Computer Science.,**		
Title of the Paper :		**Core Paper 14 – Information Security**		
Batch **2021-2022**	Semester **VI**	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To understand the basics of computer security and cyber-crimes.
2. To familiarize the role of security in operations system and databases.
3. To know various types of viruses, attacks and threats in hardware, software and data security.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basics of computer security and its terminology.
	CO2	Understand the various Attacks, Threats and Vulnerabilities in the system.
	CO3	Apply cyber security risk management policies in order to adequately protect critical information and assets.
	CO4	Analyze the needs of the Information security of data.
	CO5	Evaluate the appropriate security technologies and policies to protect computers and digital information.

Sub .Code :**21UCS6Z1**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Project Work and Viva-Voce**		
Batch **2021-2022**	Semester **VI**	Hours/Week **4**	Total Hours **60**	Credits **5**

Course Objectives

1. To understand and select the task based core skills.
2. To get knowledge about analytical skill for solving the selected task.
3. To get confidence for implementing the task and solving the real time problems.

Course Outcomes (CO)

K3 to K5	CO1	Apply the domain specific knowledge and define the project.
	CO2	Analyze the achievable goals and choose the right software for project development
	CO3	Estimate the resources and create the project schedule
	CO4	Test the deliverables
	CO5	Evaluate the project results.

Sub .Code :**21UCS6S3**

ProgrammeCode:**09**		**B. Sc., Computer Science.**		
Title of the Paper : Skill Based Subject 3 – Data Analytics Lab				
Batch **2021-2022**	Semester **VI**	Hours/Week **2**	Total Hours **30**	Credits **3**

Course Objectives

1. To get exposure to the fundamental concepts of R Programming
2. To analyze large amount of data using algorithms and mathematical models.
3. To know the fundamental techniques and principles of big data analytics.

Course Outcomes (CO)

K3 to K5	CO1	Apply the basics in R programming in terms of constructs, control statements, string functions
	CO2	Examine the use of Scilab, SPSS and R tool for Big Data analytics
	CO3	Analyze the concepts and metrics to evaluate and optimize digital marketing efforts
	CO4	Illustrate R programming from a statistical perspective
	CO5	Evaluate the tools required to manage and analyze big data like Hadoop, NoSql Map Reduce

ProgrammeCode:**09**	**B .Sc .,Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Cloud Computing**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objective

1. To understand the basics of cloud computing and its architecture.
2. To acquire the knowledge on accessing the cloud and cloud storage.
3. To familiarize the concepts of cloud applications, cloud services and cloud security.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concepts of cloud Architecture and its services.
	CO2	Understand the different services providers and its services, tools.
	CO3	Apply the various web based applications for collaborating everyone inthe cloud computing.
	CO4	Analyze the best service provider for cloud computing in terms of storage, services.
	CO5	Evaluate the appropriate cloud computing solutions and recommendations according to application use

ProgrammeCode:**09**	**B. Sc., Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Network Security**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To understand the need for network security and security approaches.
2. To know the concept of transferring authentic data along the network with several algorithms.
3. To enrich the knowledge on different types of Internet Security Protocols.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concept of Cryptography and various types of attacks.
	CO2	Understand about various types of protocols for Internet Security.
	CO3	Apply the various algorithms for Cryptography
	CO4	Analyze the Firewall and IP security
	CO5	Evaluate the strengths and limitations of network security in real time scenarios.

ProgrammeCode:**09**	**B. Sc .,Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Embedded Systems**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To familiarize all aspects of design and development of an embedded System.
2. To understand hardware and software requirements for developing a system.
3. To know the basic concepts of operating systems and embedded system project management.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basics about microcontrollers, embedded processors and their applications.
	CO2	Understand the internal architecture and interfacing of different peripheral devices with Microcontrollers.
	CO3	Apply key concepts of embedded systems like interrupts interaction, drivers, and ports with peripheral devices.
	CO4	Analyze the design concept of embedded systems.
	CO5	Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.

ProgrammeCode:**09**	**B. Sc., Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Systems Software**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objective

1. To comprehend the processing of programs on a computer system.
2. To understand the design and implementation of language processors.
3. To gain knowledge about code optimization and software tools.

Course Outcomes (CO)

K1 to K5	CO1	Remember the program generation and program execution activities.
	CO2	Understand the design of an assembler
	CO3	Apply the concept of macro expansion
	CO4	Analyze the process of compilation
	CO5	Evaluate the phases of program development by applying software tools.

ProgrammeCode:**09**	**B. Sc .,Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Mobile Computing**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To know the basic concepts of Mobile Computing and its Applications.
2. To familiarize the various emerging technologies in Mobile computing services.
3. To gain knowledge about GSM, GPRS, CDMA and 3G.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concept of Wireless LANs, PAN, Mobile Networks
	CO2	Understand positioning techniques of location-based services and applications
	CO3	Apply all techniques used in the GSM and GPRS
	CO4	Analyze CDMA and wireless LANS.
	CO5	Evaluate the infrastructures and technologies of mobile computing.

ProgrammeCode:**09**	**B.Sc .,Computer Science.**		
Batch:**2021-2022**	**Elective Paper–Machine Learning**		
	Hours/Week **5**	Total Hours **75**	Credits **5**

Course Objectives

1. To know the basic concepts of machine learning.
2. To apply the appropriate machine learning strategy for any given problem
3. To distinguish between, supervised, unsupervised and semi-supervised learning

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts and techniques of Machine Learning.
	CO2	Understand supervised, unsupervised or semi-supervised learning algorithms
	CO3	Apply the appropriate machine learning strategy for any given problem
	CO4	Analyze the uses of appropriate graph models of machine learning
	CO5	Evaluate the existing machine learning algorithms to improve its efficiency

Sub .Code :**21UHR3N1**

ProgrammeCode:**09**		**B. Sc .,Computer Science.**		
Title of the Paper :		**Part IV – Non – Major Elective–1 Human Rights**		
Batch **2021-2022**	Semester **III**	Hours/Week **2**	Total Hours **30**	Credits **2**

Course Objectives

1. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
2. To impart education on national and international regime on Human Rights.
3. To sensitive students to human suffering and promotion of human life with dignity.
4. To develop skills on human rights advocacy
5. To appreciate the relationship between rights and duties
6. To foster respect for tolerance and compassion for all living creature.

Course Outcomes (CO)

K1 to K5	CO1	Understand the hidden truth of Human Rights by studying various theories.
	CO2	Acquire overall knowledge regarding Human Rights given by United Nation Commission. (UNO)
	CO3	Gain knowledge about various organs responsible for Human Rights such as National Human Rights Commission and state Human Right commission (UNHCR)
	CO4	Get habits of how to treat aged person, others and positive social responsibilities
	CO5	Treat and confirm, child, refugees and minorities with positive social justice.

ProgrammeCode:**09**	**B. Sc ., Computer Science.**			
Title of the Paper :	**Part IV -Non-Major Elective–2 Women's Rights**			
Batch **2021-2022**	Semester IV	Hours/Week 2	Total Hours 30	Credits 2

Course Objectives:

1. To know about the laws enacted to protect women against violence.
2. To impart awareness about the hurdles faced by women.
3. To develop a knowledge about the status of all forms of women to access to justice.
4. To create awareness about women's rights.
5. To know about laws and norms pertaining to protection women.
6. To understand the articles which enables the women's rights
7. To understand the Special Women Welfare Laws.
8. To realize how the violence against women puts an undue burden on healthcare services.

Course Outcomes(CO)

K1 to K5	CO1	Appraise the importance of Women's Studies and Incorporate Women's Studies with other fields.
	CO2	Analyze the realities of Women Empowerment, Portrayal of Women in Media, Development and Communication.
	CO3	Interpret the laws pertaining to violence against Women and legal consequences.
	CO4	Contribute to the study of the important elements in the Indian Constitution, Indian Laws for Protection of Women.
	CO5	Spell out and implement Government Developmental schemes for women and create awareness on modernization and impact of technology on Women.

Subject Code Objective Description knowledge about laws enacted to protect women

ProgrammeCode:09	**B. Sc., Computer Science.**		
Title of the Paper : Non-Major Elective –Consumer Affairs			
Batch 2021-2022	**Hours/Week** 2	**Total Hours** 30	**Credits** 2

Course Objectives

1. To familiarize the students with their rights and responsibilities as a consumer.
2. To understand the procedure of redress of consumer complaints.
3. To know more about decisions on Leading Cases by Consumer Protection Act.
4. To get more knowledge about Organizational set-up under the Consumer Protection Act.
5. To impart awareness about the Role of Industry Regulators in Consumer Protection.
6. To understand Contemporary Issues in Consumer Affairs.

Course Outcomes (CO)

K1 to K5	CO1	Able to know the rights and responsibility of consumers.
	CO2	Understand the importance and benefits of Consumer Protection Act.
	CO3	Apply the role of different agencies in establishing product and service standards.
	CO4	Analyze to handle the business firms' interface with consumers.
	CO5	Assess Quality and Standardization of consumer affairs