

KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

Re-accredited by NAAC with 'A+' Grade (4th Cycle)

College of Excellence (UGC)

Coimbatore – 641 029

DEPARTMENT OF COMPUTER APPLICATIONS (UG)

COURSE OUTCOMES (CO)

BCA

For the students admitted in the Academic Year 2022-2023

Sub. Code: 22UCA101

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|----------------------------|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 1 – C Programming | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To train the student to the basic concepts of the C-programming language.
2. To provide exposure to problem-solving through programming and to develop programming skills.
3. To impart adequate knowledge of programming languages and problem-solving techniques.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K1 to K5 | CO1 | Developing programs using the control statements, Arrays and Strings. |
| | CO2 | Understanding about the code reusability with the help of user defined functions. |
| | CO3 | Developing programs using pointer, enumerated data types, function, Union and nested structures. |
| | CO4 | Learning the file handling mechanism that is essential for storing and accessing data. |
| | CO5 | Determine efficient techniques in programming to solve various real time problems. |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Practical 1 - C Programming Lab | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 2 |

Course Objectives

1. To introduce C Programming concepts to develop the programming knowledge.
2. To enhance their analyzing and problem solving skills and use the same for writing programs in C.
3. To guide the candidates to explore the fundamental building blocks in the programming language.

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K3 to K5 | CO1 | Learning process helps in deep understanding the concepts of C language. |
| | CO2 | Applying the various basic programming constructs like decision making statements, looping statements, functions, structures, pointers etc., |
| | CO3 | Developing programs using control statements, Arrays and Strings. |
| | CO4 | Enabling effective usage of arrays, structures, functions and pointers. |
| | CO5 | Implementing the files and command line arguments. |

Sub.Code: 22UCA202

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|----------------------------|--|---------------------------|----------------------|
| Programme Code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 2 – Object Oriented Programming with C++ | | |
| Batch 2022-2023 | Hours / Week 4 | Total Hours 60 | Credits 3 |

Course Objectives

1. To perform object- oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O and other standard language constructs.
2. To develop an in-depth understanding of functional, logic, and object-oriented programming paradigms.
3. To program using more advanced OOP's features such as objects, operator overloading, dynamic memory allocation, inheritance and polymorphism, File I/O.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K1 to K5 | CO1 | Understanding the features of C++ Programming. |
| | CO2 | Understanding the advanced features of C++ specifically, Operator Overloading, Templates, Streams. |
| | CO3 | Applying the major object-oriented concepts to implement programs, Inheritance and Polymorphism |
| | CO4 | Implementing different Operations on Functions, Classes & Object, and Constructors. |
| | CO5 | Evaluate the usage of object oriented programming in terms of software reuse and managing complexity to solve real-world problems. |

Sub.Code: 22UCA203

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|----------------------------|---|---------------------------|----------------------|
| Programme Code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 3 – Digital Fundamentals and Microprocessor | | |
| Batch 2022-2023 | Hours / Week 3 | Total Hours 45 | Credits 2 |

Course Objectives

1. To learn the concept of Digital Circuits, Circuit Constructions and Simplifications of Boolean function.
2. To gain an in-depth knowledge about the different types of number systems and number Conversions
3. To teach the architecture and instruction set of Basic Microprocessors and the Architecture of Microcontrollers, and Peripherals.

Course Outcomes (CO)

| | | |
|-----------------|------------|---|
| K1 to K5 | CO1 | Understanding the Basic Digital Computer System. |
| | CO2 | Remember the Gates, Number systems and conversions. |
| | CO3 | Remember the basic architecture of 16 and 32 bit microprocessors. |
| | CO4 | Analyze the Various I/O devices and Drivers. |
| | CO5 | Analyze the Various Ports in Digital system and USB. |

Sub.Code: 22UCA2CM

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|----------------------------|--|---------------------------|----------------------|
| Programme Code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Practical 2 – Object Oriented Programming With C++ Lab | | |
| Batch 2022-2023 | Hours / Week 3 | Total Hours 45 | Credits 2 |

Course Objectives

1. To develop programming skills using object - oriented concepts.
2. To develop the ability to write a program to solve specific problems.
3. To practice the fundamental methodology to implement file and I/O stream concepts.

Course Outcomes (CO)

| | | |
|-----------------|-----|---|
| K3 to K5 | CO1 | Apply the various basic programming constructs like decision making statements, Looping statements, functions, concepts like overloading, inheritance, polymorphism, virtual functions, constructors and destructors. |
| | CO2 | Designing programs using appropriate predefined functions and classes in C++. |
| | CO3 | Developing applications using Friend functions, Inheritance and polymorphism. |
| | CO4 | Developing a C++ application using the concepts of Templates, stream I/O, Files and usage of the available classes to handle stream objects. |
| | CO5 | Evaluate the implementation of command line arguments. |

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|----------------------------|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 4 – Operating Systems | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To understand the structures of modern computers.
2. To understand the purpose and usage of functions in operating systems.
3. To cover the details of concurrent processes, multi-threads, CPU scheduling, memory management file system, storage subsystem, and input/output management.

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K1 to K5 | CO1 | Understanding of design issues, mastering in functions, structures and history of Operating systems. |
| | CO2 | Learning various Process Management Concepts including Scheduling, Synchronization, Multithreading and Deadlocks. |
| | CO3 | Implementing the processes, resource control, physical and virtual memory, Scheduling, I/O and files. |
| | CO4 | Understanding about Resource Sharing among Users. Familiar with Protection and Security Mechanisms. Types of Operating Systems including Unix. |
| | CO5 | Evaluate the functionality of memory allocation and its policies. |

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|----------------------------|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 5 – Data Structures and Algorithms | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To represent the way of defining Data.
2. To explain the fundamental techniques for designing and analyzing algorithms.
3. To study various algorithms of Sorting, Searching methods in Data structures.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Understanding data structures and the concepts of algorithms for dynamic programming. |
| | CO2 | Applying the data structures algorithms for various applications. |
| | CO3 | Demonstrating familiar data structure algorithms. |
| | CO4 | Applying the computational complexity of various algorithms. |
| | CO5 | Evaluate appropriate sorting/searching technique for given problem. |

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|----------------------------|--|---------------------------|---------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 6 – Relational Database Management Systems | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credit 4 |

Course Objectives

1. To develop the knowledge in various Database concepts, queries, normalization and reports..
2. To study the physical and logical database design and modeling.
3. To learn procedural interfaces using SQL queries.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Understanding the concepts of Database. |
| | CO2 | Understanding the concept of Data Integrity constraints. |
| | CO3 | Applying various DDL and DML statements, joins queries, PL / SQL statements. |
| | CO4 | Applying various types of database management systems for developing the Program. |
| | CO5 | Evaluate the usage of normalization in relational database management system. |

| | | | |
|----------------------------|--|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Practical 3 – Relational Database Management Systems Lab | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 2 |

Course Objectives

1. To understand the use of Structured Query Language (SQL) and its syntax.
2. To understand and apply the principles of data modeling using Entity Relationship and develop a good database design.
3. To study the concepts and techniques relating query processing using SQL engines.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K3 to K5 | CO1 | Designing the basic concepts of Database. |
| | CO2 | Implementing data Integrity constraints in Database. |
| | CO3 | Validating the various fundamental tasks to perform data modeling. |
| | CO4 | Implementing functions, packages, stored procedures and user defined exception. |
| | CO5 | Evaluate the trigger function to perform event. |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Skill Based Subject 1 – Cyber Security | | |
| Batch 2022-2023 | Hours / Week 2 | Total Hours 30 | Credits 3 |

Course Objectives

1. The course introduces the basic concepts of Cyber Security
2. To develop an ability to understand about various modes of Cyber Crimes and Preventive measures
3. To understand about the Cyber Legal laws and Punishments

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K1 to K5 | CO1 | To Understand the Concepts of Cybercrime and Cyber Frauds |
| | CO2 | To Know about Cyber Terrorism and its preventive measures |
| | CO3 | To Analyze about the Internet, Mobile Phone and E-commerce security issues |
| | CO4 | To Understand about E-mail and Social Media Issues |
| | CO5 | To Describe about various legal responses to Cybercrime |

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|----------------------------|--|---------------------------|----------------------|
| Programme code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 7 – Software Engineering | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To understand the basic theory of Software Engineering.
2. To describe software engineering layered technology and Process frame work.
3. To gain knowledge about quality control and how to ensure good quality software.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Learning the fundamentals of software engineering concepts. |
| | CO2 | Understanding common lifecycle processes such as waterfall model, spiral model, prototyping model, evolutionary models etc., |
| | CO3 | Applying the principles and techniques of software engineering in the architectural design, detail design, and implementation of software applications. |
| | CO4 | Developing the software using different testing concepts. |
| | CO5 | Evaluating the ability of students to perform various lifecycle activities like Analysis, Design, Implementation, Testing and Maintenance. |

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|----------------------------|--|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 8 – Computer Networks | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To dealwith basic ideas of networking domain.
2. To present the principles ofCryptography in Computer Networks.
3. To know the classical, advanced encryption standards and techniques, message authentication codes, digital signatures, email.

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K1 to K5 | CO1 | Understanding cryptographyand network security concepts and application. |
| | CO2 | Applying securityprinciple in systemdesign. |
| | CO3 | Detecting network securitythreats. |
| | CO4 | Understanding the various cryptographic algorithms. |
| | CO5 | Evaluating the challenges in building networks. |

Sub.Code: 22UCA409

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|----------------------------|---|---------------------------|----------------------|
| Programme code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 9 – Advanced Java Programming | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 4 |

Course Objectives

1. To enhance the knowledge of object-oriented programming using the Java programming language.
2. To understand the applets, files, swings and exception handling mechanisms.
3. To illustrate the various features of java.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Applying java programming language for various programming Applications. |
| | CO2 | Acquiring knowledge of the structure and model of the java programming language |
| | CO3 | Implementing Applets for GUI Concepts. |
| | CO4 | Analyzing the concepts of Threads, Swings and Files. |
| | CO5 | Evaluating applications using Swing Concepts. |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of computer applications | | |
| Title of the paper | Core Practical 4 – Advanced Java Programming Lab | | |
| Batch 2022-2023 | Hours/ Week 5 | Total Hours 75 | Credits 2 |

Course Objectives

1. To implement the advanced Java language syntax and semantics.
2. To implement concepts such as variables, conditional and iterative execution methods.
3. To make students to excel in coding, compiling and execute programs while learning advanced programming concepts.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K3 to K5 | CO1 | Applying the concepts of control structures, inheritance, method overriding in Java. |
| | CO2 | Implementing the concept of interface, packages, multithreading and applets. |
| | CO3 | Manipulating the operations using PL/SQL statements |
| | CO4 | Validating the database using triggers. |
| | CO5 | Evaluating software functionality to decide whether the Java programming can meet user requirements |

Sub.Code: 22UCA4A4

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|----------------------------|--|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Allied Paper 4 – Organizational Behavior and Communicative Skills | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 5 |

Course Objectives

1. To specify the intellectual and behavioral competencies that graduates should possess.
2. To enable the students to gain insight into the management techniques prevailing in the corporate World.
3. To be aimed at preparing young graduates to take up challenging careers in business and industry and enables them to pursue higher studies thereafter.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Comprehend the requirement of communication in a company. |
| | CO2 | Identifying and analyzing product life cycle and developing new products and product characteristics. |
| | CO3 | Applying knowledge of pricing kinds of pricing and factors affecting changes in price. |
| | CO4 | Applying motivational theories to improve the leadership qualities. |
| | CO5 | Analyze the nature of organizational effectiveness. |

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|----------------------------------|---|---------------------------------|----------------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Skill Based Subject 2 – Python Programming Lab | | |
| Batch 2022-2023 | Hours / Week 2 | Total Hours 30 | Credits 3 |

Course Objectives

1. To gain knowledge about the concepts of python programming.
2. To understand the concepts of Built-in functions and User-defined functions.
3. To develop programs using String functions.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K3 to K5 | CO1 | Apply different types of operators in programming. |
| | CO2 | Implement the concepts of built-in functions in programming. |
| | CO3 | Analyze the use control structures in programming. |
| | CO4 | Applying the searching algorithm in programming. |
| | CO5 | Evaluate the functionality of an exception handling mechanism. |

Sub.Code:22UCA510

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|----------------------------|---|---------------------------|----------------------|
| Programme code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 10 - Visual Programming | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 5 |

Course Objectives

1. To gain the practical aspects for developing Graphical User Interface.
2. To provide a consistent object-oriented programming environment.
3. To provide application development using .Net framework.

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K1 to K5 | CO1 | Learning the concepts of Visual Basic and .Net |
| | CO2 | Summarizing the advantages of Controls in VB |
| | CO3 | Demonstrating the concepts of .NET Framework |
| | CO4 | Designing and developing the distributed data driven applications and C# console applications. |
| | CO5 | Enable students to develop projects using Visual Programming |

Sub.Code: 22UCA511

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|----------------------------|---|---------------------------|----------------------|
| Programme code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 11-Artificial Intelligence and Expert Systems | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 5 |

Course Objectives

1. To learn the concepts of Artificial Intelligence.
2. Create awareness of informed search and exploration methods.
3. To demonstrate AI techniques for knowledge representation, planning and uncertainty management.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Understand the concept of AI |
| | CO2 | Analyze and evaluate informed search and exploration methods. |
| | CO3 | Apply AI techniques for knowledge representation, planning and uncertainty Management. |
| | CO4 | Analyze and develop knowledge of decision making and learning methods for real time application |
| | CO5 | Explore how AI is already being used and evaluate problem areas of AI |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Paper 12- Data Mining and Warehousing | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To learn the basic concepts of Data Mining algorithms, methods and tools.
2. To develop and apply critical thinking, problem-solving, and decision-making skills.
3. To discover interesting patterns, analyze supervised and unsupervised models and estimate the accuracy of the algorithms.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Identifying the key processes of data mining, data warehousing and knowledge discovery process. |
| | CO2 | Understanding the concept of raw data processing using data mining algorithms. |
| | CO3 | Analyze the various data mining techniques to solve problems in other disciplines. |
| | CO4 | Develop practical work of techniques and design hypotheses based on the analysis. |
| | CO5 | Evaluate and implement emerging methodologies to facilitate the knowledge discovery. |

Sub.Code: 22UCA5CP

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|----------------------------|--|---------------------------|----------------------|
| Programme code : 10 | Bachelor of Computer Applications | | |
| Title of the paper | Core Practical 5-Visual Programming Lab | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 2 |

Course Objectives

1. To gain the practical aspects of application development using fundamentals of ASP. Net andC#.
2. To know the concepts of web server controls, form validation, tracking and session handling.
3. To develop programs using error handling, inheritance, delegates, file operations andADO.net Connectivity.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K3 to K5 | CO1 | Understanding and implementing the concepts of Visual Basic. |
| | CO2 | Applying the behavior ofvarious objects and classes in . Net. |
| | CO3 | Implementing the concepts ofdecision and iteration using control structures. |
| | CO4 | Designing and developing the applications using. Net Technologies |
| | CO5 | Implementing Visual programming by using visual basic work environment to solve various real time problems. |

Sub.Code: 22UCA5XL

| | | | |
|----------------------------|---|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Extra Departmental Course – Internet and Office Automation Lab | | |
| Batch 2022-2023 | Hours / Week 2 | Total Hours 30 | Credits 3 |

Course Objectives

1. To gain knowledge about the concepts of Internet
2. To understand the concepts of MS-Word, MS-Excel
3. To develop database using MS-Access and presentation using MS-PowerPoint

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K3 to K5 | CO1 | Understanding and remember various menus in office automation |
| | CO2 | Implementing the concepts of Internet techniques |
| | CO3 | Executing various calculations of MS-Excel |
| | CO4 | Analyzing the applications using MS-Power Point |
| | CO5 | Applying the database components to develop table using MS-Access |

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|----------------------------|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Core Paper 13 -Web Designing | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 5 |

Course Objectives

1. To understand website development in a user friendly manner.
2. To improve the visual design and content structuring.
3. To understand the concept of Bootstrap to develop their web development skill.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K1 to K5 | CO1 | Understanding the use of HTML tags. |
| | CO2 | Acquiring knowledge of Cascading Style Sheet. |
| | CO3 | Analyzing the concepts of JavaScript. |
| | CO4 | Applying the knowledge to perform calculations using various operators and built-in functions. |
| | CO5 | Evaluate the web application using HTML, CSS, JavaScript and Bootstrap. |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the paper: | Core Paper 14 - Information Security | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 5 |

Course Objectives

1. To enable the students to learn fundamental concepts of Computer Security.
2. To provide an understanding of principal concepts, technologies and basic approaches in information security.
3. To understand the concepts of security policies such as authentication, Integrity and confidentiality.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Studying the basic concepts of security. |
| | CO2 | Understanding the issues and technologies in information security. |
| | CO3 | Learning various protection mechanisms. |
| | CO4 | Analyzing tools and technology for combating threats to information assets. |
| | CO5 | Evaluate the usage of Legal and Ethical Issues in Computer Security. |

Sub.Code: 22UCA6CQ

| | | | |
|--|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the paper: Core Practical 6- Web Designing Lab | | | |
| Batch 2022-2023 | Hours / Week 6 | Total Hours 90 | Credits 2 |

Course Objectives

1. To implement the concepts in visual design and content structuring.
2. To understand the concept of Bootstrap to develop their web development skill.
3. To facilitate students to create a website using HTML and Bootstrap.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K3 to K5 | CO1 | Applying the HTML tags to design Web Pages. |
| | CO2 | Designing attractive web sites using Cascading Style Sheet. |
| | CO3 | Developing user friendly interactive web application using JavaScript. |
| | CO4 | Implementing different operations on JavaScript Functions and Events. |
| | CO5 | Evaluating the functionality of web pages using HTML, CSS, JavaScript and Bootstrap. |

Sub.Code: 22UCA6Z1

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|--|--|---------------------------------|----------------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Core Project – Project Work & Viva – Voce *** | | | |
| Batch 2022-2023 | Hours/Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To acquire the knowledge about selecting the task based on their course skills.
2. To get the knowledge about analytical skill for solving the selected task.
3. To get confidence by implementing the task in a realtime projects.

Course Outcomes (CO)

| | | |
|-----------------|-----|---|
| K3 to K5 | CO1 | Apply the programming skills for solving the project. |
| | CO2 | Analyze the task and to collect the necessary information about the software. |
| | CO3 | Evaluate the task based on the software. |
| | CO4 | Test the project for its successful implementation |
| | CO5 | Implement and Maintain the developed system. |

Sub.Code: 22UCA6SM

| | | | |
|--|--|---------------------------|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the paper: Skill Based Subject 3 – Linux Programming Lab | | | |
| Batch 2022-2023 | Hours / Week2 | Total Hours 30 | Credi ts3 |

Course Objectives

1. To gain knowledge about the usage of shell scripting.
2. To teach the concepts of using arithmetic operations and looping.
3. To impart knowledge about the creation of files and directories.

Course Outcomes (CO)

| | | |
|----------|-----|--|
| K1 to K5 | CO1 | Applying the concepts of control structures in programming |
| | CO2 | Implementing the concepts of file operations in programming |
| | CO3 | Analyzing the concept of dialog utilities in shell programming. |
| | CO4 | Develop solutions for mathematical concept and propose appropriate result. |
| | CO5 | Evaluate the programming techniques and tools to design computer programs. |

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|----------------------------|--|---------------------------|----------------------|
| Programme code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Elective Paper – Internet of Things | | |
| Batch 2022-2023 | Hours/Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To learn the concepts of IOT and its protocols.
2. To learn how to analysis the data in IOT.
3. To develop IOT infrastructure for popular applications.

Course Outcomes (CO)

| | | |
|-----------------|-----|--|
| K1 to K5 | CO1 | Analyzing and evaluate the data received through sensors in IOT. |
| | CO2 | Design and develop smart city in IoT |
| | CO3 | Analyze various communication protocols for IoT. |
| | CO4 | Analyze applications of IoT in real time scenario |
| | CO5 | Evaluate appropriate protocol for communication between IoT. |

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|----------------------------|--|---|----------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the paper | | Elective paper - Open Source Systems | |
| Batch 2022-2023 | Hours/Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To recognize the benefits and features of Open Source Technology.
2. To utilize open source software for developing a variety of software applications, Particularly Web applications.
3. To understand concepts, strategies, and methodologies related to open source software development.

Course Outcomes (CO)

| | | |
|-----------------|-----|---|
| K1 to K5 | CO1 | Understand the use of various open source software available in the industry. |
| | CO2 | Summarize the basic concepts of how a database stores information via tables. |
| | CO3 | Learn how to use lists, tuples, and dictionaries in Python programs. |
| | CO4 | Applying exception handling methods in Python programs. |
| | CO5 | Evaluate applications by applying programming concepts to solve real time problems. |

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|----------------------------------|---|---------------------------------|----------------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Elective Paper- Android Applications and Development | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To learn the basics of Android and understand the application lifecycle.
2. To learn the power of background services, threads, and notifications.
3. To introduce the principles of inheritance, packages, interfaces files and basics of Swings and Android.

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Learning the working process of Android applications |
| | CO2 | Developing Android tools for creating Icons |
| | CO3 | Applying UI-rich apps using all the major UI components |
| | CO4 | Implementing Animation Concepts and Techniques using XML and Android content providers for frame applications |
| | CO5 | Evaluate the tools by applying fundamental concepts to Android application development. |

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|----------------------------------|--|---------------------------------|----------------------------|
| Programme code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Elective Paper – Big Data Analytics | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To know the fundamental concepts of big data and analytics.
2. To explore tools and practices for working with big data.
3. To learn about stream computing and to know about the research that requires the integration of large amounts of data.

Course Outcomes (CO)

| | | |
|-----------------|-----|---|
| K1 to K5 | CO1 | Identify the need for Big Data analysis |
| | CO2 | Develop ability to analyze and process Big Data |
| | CO3 | Build necessary skills to process Big Data by identifying the use case. |
| | CO4 | Acquire knowledge about Hadoop Ecosystem. |
| | CO5 | Disseminate the new knowledge and implement into the organization |

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|---------------------------|--|--------------------------|---------------------|
| Programme Code:10 | Bachelor of Computer Applications | | |
| Title of the Paper | Elective Paper - Virtual Reality | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. Understand the Virtual environment.
2. To study about Virtual Hardware's and Software's
3. To develop Virtual Reality applications

Course Outcomes (CO)

| | | |
|----------|-----|---|
| K1 to K5 | CO1 | Understand the features of Virtual environment |
| | CO2 | Understand the Virtual Hardware and software's |
| | CO3 | Identify Virtual Reality toolkits |
| | CO4 | Explore the basic awareness of theoretical contexts relevant to virtual reality |
| | CO5 | Demonstrate an understanding of techniques, processes, technologies and equipment used in immersive virtual reality |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Elective Paper - Cloud Computing and Azure | | |
| Batch 2022-2023 | Hours / Week 5 | Total Hours 75 | Credits 5 |

Course Objectives

1. To learn the concept of Cloud Computing basics.
2. To learn the Cloud storage and Standards.
3. To learn the concepts Azure and Azure documentation.

Course Outcomes (CO)

| | | |
|-----------------|------------|--|
| K1 to K5 | CO1 | Understand the concept of Cloud Computing |
| | CO2 | Understand and deploy Web applications using Azure concept |
| | CO3 | Acquire knowledge about Azure virtual machine and Azure storage |
| | CO4 | Develop and test realtime scenarios using Azure concept |
| | CO5 | Evaluate the fundamental concepts of cloud storage and demonstrate their use instorage systems |

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|----------------------------|---|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Part IV - Non-major elective 1- Human Rights** | | |
| Batch 2022-2023 | 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)

| | | |
|--------|-----|--|
| K1toK5 | CO1 | To understand the hidden truth of Human Rights by studying various theories |
| | CO2 | To acquire overall knowledge regarding Human Rights given by United Nation Commission (UNO). |
| | CO3 | To gain knowledge about various organs responsible for Human Rights such as National Human Rights Commission and State Human Right Commission (UNHCR). |
| | CO4 | To get habits of how to treat aged person, others and positive social responsibilities. |
| | CO5 | To treat and confirm, child, refugees and minorities with positive social justice. |

Sub.Code: 22UWR4N2

| | | | |
|----------------------------|--|---------------------------|----------------------|
| Programme Code: 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Part IV -Non- major elective 2 - Women's Rights** | | |
| Batch 2022-2023 | 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 of 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)

After Completion of the Course the student will be able to

| | | |
|----------|-----|---|
| 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, India 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. |

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|---|--|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Part IV-Non- major elective 3 – Consumer Affairs | | | |
| Batch 2022-2023 | 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 | Applying the role of different agencies in establishing product and service Standards. |
| | CO4 | Analyse to handle the business firms' interface with consumers. |
| | CO5 | Assess Quality and Standardization of consumer affairs |

Sub.Code: 22EVS101

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|----------------------------|--|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Part – IV - Environmental Studies** | | |
| Batch 2022-2023 | 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)

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

| | | |
|----------|-----|---|
| K1 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 | Acquiring values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones. |
| | CO4 | To gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity. |
| | CO5 | To 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: 22VED201

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|----------------------------|---|---------------------------|----------------------|
| Programme Code : 10 | Bachelor of Computer Applications | | |
| Title of the Paper | Value Education – Moral and Ethics** | | |
| Batch 2022-2023 | Hours / Week 2 | Total Hours 30 | Credits 2 |

Course Objectives

1. To impart Value Education in everywalk 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)

After completing the course, the students

| | | |
|-----------------|-----|---|
| K1 to K5 | CO1 | Will be able to recognize Moral values, Ethics, contribution of leaders, Yoga and its practice |
| | CO2 | Will be able to differentiate and relate the day to day applications of Yoga and Ethics in real life situations |
| | CO3 | Can emulate the principled life of great warriors and take it forward as a message to self and the society |
| | CO4 | Will be able to Analyse the Practical outcome of practicing Moral values in real life situation |
| | CO5 | Could Evaluate and Rank the outcome of the pragmatic approach to further develop the skills |