KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2022 - 2023 onwards)

DEPARTMENT OF COMPUTER APPLICATIONS (UG)

DEPARTMENT OF COMPUTER APPLICATIONS

Vision:

- Our vision is to offer up to date and flexible programs which will allow our graduates to be competitive in the job market.

- To achieve excellent standards of quality education by keeping pace with rapidly changing technologies.

- Integral Formation and Empowerment of students for social transformation through Computer Applications.

Mission:

- To provide outstanding education and training to our graduate students for their productive careers in industry, academia, and government.

- To impart quality and value based education to raise satisfaction level of all stakeholders.

- To empower students with academic excellence, knowledge and training.

- To enable critical thinking among students towards development in IT with reference to social transformation.

- To apply new developments in Information Management and provide all possible support to promote research & development.

- To serve as a platform whereby the student enrich their personalities to assume greaterresponsibilities.

PROGRAMME OUTCOME (PO)

PO1   To enhance their skills and new computing technologies through practical and theoretical knowledge of Computer.

PO2   To exhibit understanding of broad business concepts and principles.

PO3   To expertise students as computing professionals to earn more and to contribute to the economic development of the region, state and nation.

PO4   To analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.

PO5   To develop various real time applications using latest technologies and programming languages.

PO6   To pursue higher education to enhance their skill and capable of recognizing and resolving ethical issues.

PO7   To demonstrate the capabilities required to apply cross-functional business knowledge and technologies in solving real-world business problems

PO8   To blend analytical, logical and managerial skills with the technical aspects to resolve real world issues.

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO1   An ability to apply knowledge of computing and mathematics appropriate to the discipline.

PSO2   An ability to apply current techniques, skills, and tools necessary for computing practice and to integrate IT-based solutions into the user environment effectively.

PSO3   An ability to apply design and development principles in the construction of softwaresystems of varying complexity.

PSO4   An ability to use knowledge in various domains to identify real world problems and hence to provide solution to new ideas and innovations.

PSO5   An ability to design, document and develop robust applications by considering human, financial and environmental factors using cutting edge technologies to address individual and organizational needs.

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
COIMBATORE – 641 029

Course Name:-Computer Applications

Curriculum and Scheme of Examination under CBCS

(Applicable to the students admitted during the Academic Year 2022-2023)

Semester	Part	Subject Code	Title of the Paper	Instruction	Exam. Marks			Duration of Exam (hours)	Credits
					CIA	ESE	TOTAL		
I	I	22TML1A1	Language I - Tamil I @	6	50	50	100	3	3
	II	22ENG101	Language - English I	6	50	50	100	3	3
	III	22UCA101	Core Paper 1 – C Programming	5	50	50	100	3	4
	III	22UCA1CL	Core Practical 1 – C Programming Lab	5	50	50	100	3	2
	III	22UCA1A1	Allied Paper 1 – Computer Oriented Numerical and Statistical methods	6	50	50	100	3	5
	IV	22EVS101	Environmental Studies **	2	-	50	50	3	2
			Total	**30**	**-**	**-**	**550**	**-**	**19**
II	I	22TML2A2	Language II -Tamil II @	6	50	50	100	3	3
	II	22ENG202	Language -English II	6	50	50	100	3	3
	III	22UCA202	Core Paper 2 - Object Oriented Programming with C++	4	50	50	100	3	3
	III	22UCA203	Core Paper 3 – Digital Fundamentals and Microprocessor	3	50	50	100	3	2
	III	22UCA2CM	Core Practical 2 – Object Oriented Programming with C++ Lab	3	50	50	100	3	2
	III	22UCA2A2	Allied Paper 2 – Operations Research	6	50	50	100	3	5
	IV	22VED201	Value Education - Moral and Ethics**	2	-	50	50	3	2
			Total	**30**	**-**	**-**	**650**	**-**	**20**
III	III	22UCA304	Core Paper 4 – Operating Systems	5	50	50	100	3	4
	III	22UCA305	Core Paper 5 – Data Structures and Algorithms	5	50	50	100	3	4
	III	22UCA306	Core Paper 6 – Relational Database Management Systems	5	50	50	100	3	4
	III	22UCA3CN	Core Practical 3 – Relational Database Management Systems Lab	5	50	50	100	3	2
	III	22UCA3A3	Allied Paper 3 – Business Accounting	6	50	50	100	3	5
	IV	22UGC3S1	Skill Based Subject 1- Cyber Security	2	100	-	100	3	3
	IV	22TBT301/ 22TAT301/ 22UHR3N1	Basic Tamil*/ Advanced Tamil **/ Non-major elective 1 –Human Rights**	2	-	75	75	3	2
			Total	**30**	**-**	**-**	**675**	**-**	**24**
	III	22UCA407	Core Paper 7 – Software Engineering	5	50	50	100	3	4

III	22UCA408	Core Paper 8 – Computer Networks	5	50	50	100	3	4
III	22UCA409	Core Paper 9 – Advanced Java Programming	5	50	50	100	3	4
III	22UCA4CO	Core Practical 4– Advanced Java Programming Lab	5	50	50	100	3	2
III	22UCA4A4	Allied Paper 4 - Organizational Behavior and Communicative Skills	6	50	50	100	3	5
IV	22UCA4SL	Skill Based Subject 2- Python Programming Lab	2	50	50	100	3	3
IV	22TBT402/ 22TAT402/ 22UWR4N2	Basic Tamil*/Advanced Tamil**/ Non-major elective 2-Women's Rights **	2	-	75	75	3	2
		Total	**30**	**-**	**-**	**675**	**-**	**24**
III	22UCA510	Core Paper 10 – Visual Programming	6	50	50	100	3	5
III	22UCA511	Core Paper 11 – Artificial Intelligence and Expert Systems	6	50	50	100	3	5
III	22UCA512	Core Paper 12 – Data Mining and Warehousing	5	50	50	100	3	5
III	22UCA5CP	Core Practical 5 –Visual Programming Lab	6	50	50	100	3	2
III	22UCA5E1	Major Elective 1	5	50	50	100	3	5
IV	-	**EDC**	2	100	-	100	3	3
-	22UCA5IT	**Internship Training ******	Grade					
		Total	**30**	**-**	**-**	**600**	**-**	**25**
III	22UCA613	Core Paper 13 - Web Designing	6	50	50	100	3	5
III	22UCA614	Core Paper 14 – Information Security	6	50	50	100	3	5
III	22UCA6CQ	Core Practical 6 - Web Designing Lab	6	50	50	100	3	2
III	22UCA6E2	Major Elective 2	5	50	50	100	3	5
III	22UCA6Z1	Project & Viva-Voce ***	5	50	50	100	-	5
IV	22UCA6SM	Skill Based Subject 3 – Linux Programming Lab	2	50	50	100	3	3
-	-	**SWAYAM-MOOC**	-	-	-	-	-	2
		Total	**30**	**-**	**-**	**650**	**-**	**27**
V	**22NCC⁵/NSS/ YRC/PYE/ECC/ RRC/WEC101#**	Co-curricular Activities*	-	50	-	50	-	1
		Grand Total	**-**		**-**	**3800**	**-**	**140**

Note: Group column labels at left (IV, V, VI) span multiple rows as printed.

Note:

CBCS – Choice Based Credit system
CIA – Continuous Internal Assessment
ESE – End of Semester Examinations

$ For those students who opt NCC under Co-curricular activities will be studying the prescribed syllabi of the UGC which will include Theory, Practical & Camp components. Such students who qualify the prescribed requirements will earn an additional 24 credits.

@ Hindi/Malayalam/ French/ Sanskrit – 22HIN/MLM/FRN/SAN101 - 202

* - No End-of-Semester Examinations. Only Continuous Internal Assessment (CIA)

**- No Continuous Internal Assessment (CIA). Only End-of-Semester Examinations (ESE)

*** Project Report – 35 marks; Viva Voce – 15 marks; Internal-50 marks.

5 Hours allotted for project will not allotted for staff workload.

**** The students shall undergo Internship training / field work for a minimum period of 2 weeks at the end of the fourth semester during summer vacation and submit the report in the fifth semester. The report will be evaluated for 100 marks along with the internal viva voce by the respective Faculty. According to their marks, the grades will be awarded as given below.

Marks %	Grade
85 – 100	O
70 – 84	D
60 – 69	A
50 – 59	B
40 – 49	C
< 40	U (Reappear)

Major Elective Papers

(2 papers are to be chosen from the following 6 papers)
1. Internet of Things
2. Open Source Systems
3. Android Applications and Development
4. Big Data Analytics
5. Virtual Reality
6. Cloud Computing and Azure

Non-Major Elective Papers

1. Human Rights
2. Women's Rights
3. Consumer Affairs

Sub. Code & Title of the Extra Departmental Course (EDC):
22UCA5XL - Internet and Office Automation

 # List of Co-curricular Activities:
1. National Cadet Corps (NCC)
2. National Service Scheme (NSS)
3. Youth Red Cross (YRC)
4. Physical Education (PYE)
5. Eco Club (ECC)
6. Red Ribbon Club (RRC)
7. Women Empowerment Cell (WEC)

Note: In core/ allied subjects, no. of papers both theory and practical are included wherever applicable. However, the total credits and marks for core/allied subjects remain the same as stated below.

Tally Table:

S. No.	Part	Subject	Marks	Credits
1.	I	Language – Tamil/Hindi/Malayalam/ French/ Sanskrit	200	6
2.	II	English	200	6
3.	III	Core – Theory/Practical	2000	70
	-	SWAYAM-MOOC	-	2
	III	Allied	400	20
		Electives/Project	300	15
4.	IV	Basic Tamil / Advanced Tamil/ Non-major electives	150	4
		Skill Based subject	300	9
		EDC	100	3
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Co-curricular Activities	50	1
		Total	**3800**	**140**

➢ 50 % CIA is applicable to all subjects except EDC, JOC, COP and SBS 1 courses which are considered as extra credit courses.

➢ The students should complete a **SWAYAM-MOOC** before the completion of the 5th semester and the course completed certificate should be submitted through the HOD to the Controller of Examinations. Two credits will be given to the candidates who have successfully completed. In case the students have completed more than one online course, the appropriate 2 extra credits shall be awarded to such candidates upon the submission of certificate through the HOD to the Controller of Examinations.

➢ A **Field Trip** preferably relevant to the course should be undertaken every year.

Components of Continuous Internal Assessment (50 Marks)

Components		Marks	Total
Theory			
CIA I	75	(75+75) converted to 30	50
CIA II	75		
Problem based Assignment**		10	
Attendance		5	
Others*		5	
Practical			
CIA Practical		(50) converted to 30	50
Observation Notebook		15	
Attendance		5	
Project			
Review		45	50
Regularity		5	

* Class Participation, Case Studies Presentation, Field Work, Field Survey, Group Discussion, Term Paper, Workshop/Conference Participation. Presentation of Papers in Conferences, Quiz, Report/Content writing. Etc.

** Two Assignments to be given. (Each 5 marks).

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

(**K1**-Remembering; **K2**-Understanding; **K3**-Applying; **K4**-Analyzing; **K5**-Evaluating)

Theory Examination – Part I, II & III

i)   CIA I & II and ESE: 75 Marks

Knowledge Level	Section	Marks	Description	Total
K1 – K2 Q1 to 20	A (Answer all)	20 x 1 = 20	MCQ-10/ Fill ups-5/ One word-5	75**
K2 – K5 Q21 to 28	B (5 out of 8)	5 x 5 = 25	Short Answers	
K2 – K5 Q29 to 33	C (3 out of 5)	3 x 10 = 30	Descriptive / Detailed	

**For ESE 75 marks converted to 50 marks.

ESE Practical Examination:

Option 1:

Knowledge Level	Section	Marks	Total
K3	Experiments	45	50
K4	Record Work	05	
K5			

ESE Project & VivaVoce:

Option 1:

Knowledge Level	Section	Marks	Total
K3	Project Report	35	50
K4	Viva voce	15	
K5			

UCA1

Sub. Code: 22UCA101

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.

Syllabus

UNIT I   **(14 Hours)**

Overview of C: History of C – Importance of C- Sample programs – Basic Structure of C programs – Programming style. Constants, Variables and Data types: Character set – C Tokens – Keywords and Identifiers – Constants – Variables – Data types – Operators and Expressions: Introduction – Arithmetic operator – Relational operators – Logical operators-Assignment-Increment and Decrement-Conditional– Bitwise operators-Special Operators – Type conversions in Expressions – Operator precedence and Associativity. Managing Input and Output operations: Reading and Writing Character-Formatted Input – Formatted Output.

UNIT II   **(15 Hours)**

Decision making and Branching: Decision making with if statement – Simple if statement – The if ….else statement-Nested If-Else-If Ladder – The Switch statement-The Ternary Operator. Looping: The while statement – The do statement – The for statement – **Jumps in loops*.**

Sub. Code: 22UCA101

UNIT III   **(16 Hours)**

Arrays: Introduction – one dimensional Arrays – Declaration of one dimensional Array – Initialization of one dimensional Arrays – Two dimensional Arrays – Initializing Two dimensional Arrays – Multidimensional Arrays. Character Arrays and Strings: String handling functions. User defined functions: Definition of Functions – Function Declaration – Category of Functions – No Arguments and No Return values – Arguments but No Return values – Arguments with Return values

– No Arguments but Returns a value - Functions that Return Multiple Values- Recursion – The Scope, Visibility and Lifetime of Variables.

UNIT IV   **(16 Hours)**

Pointers: Understanding pointers –Accessing the Address of the Variables- Declaring pointer variables – Pointer and Arrays- Pointers and Character strings – Array of pointers –Pointers as Function Arguments- Functions returning pointers. The Preprocessor: Macro Substitution.

UNIT V   **(14 Hours)**

Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Structure Initialization –Array of Structures-Arrays with in Structures-Structures with in Structures– Unions. File Management in C: Defining and Opening a File – Closing a File – Input/output Operations on Files – Command Line Arguments.

* Self study and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart classroom / PowerPoint presentation / Seminar / Quiz / Discussion

Text Books

1. E. Balagurusamy, (2008), **"Programming in ANSI C",** Eighth Edition -Tata McGraw Hill

Reference Books

1. Ashok N Kamthane, (2007), **"Programming with ANSI and Turbo C",** Pearson Education Publication.

2. P.J.Deiteland H.M.Deitel, (2008**), "C How to Program",** 5th Edition, Tata McGraw Hill.

3. Yeswanth Kanethkar, (2007),**"Let Us C"**, 8th Edition - BTB Publications.

Sub. Code: 22UCA101

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	S	S
CO2	S	S	H	H	S
CO3	H	H	S	M	H
CO4	S	H	M	S	H
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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.

LIST OF PRACTICAL PROGRAMS

1. Write a program to find the median for a given set of numbers.

2. Write a program to find the Standard Deviation for a given set of numbers.

3. Write a program to find the number of palindrome strings in a given sentence.

4. Write a program to generate N Prime and Armstrong numbers.

5. Write a program to perform Matrix addition & Multiplication using Arrays.

6. Write a program to calculate NCR using the formula NCR = N! / (R! * (N-R)!) Using functions.

7. Write a program to print Fibonacci Series using Recursive Function.

8. Write a program to print the student's mark sheet assuming roll number, name, and marks in five subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.

9. Write a program to perform string manipulation operations.

10. Write a program to perform all manipulations like insertion, deletion and modification in files for student mark list.

11. Write a program, which takes a file as command line argument and copy it to another file. At the end of the second file write

    i)   Number of characters,
    ii) Number of words and
    iii) Numbers of lines are available in the first file.

Teaching Methods:

> Smart Classroom, Projectors, Discussions

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks
2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	M
CO2	S	S	M	H	H
CO3	S	H	H	S	M
CO4	H	S	M	H	M
CO5	S	S	S	H	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA202

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.

Syllabus

UNIT I   **(13 Hours)**

Procedure Oriented Programming – Basic Concepts of Object Oriented Programming -

Beginning with C++ - Expression & Control Structure: Data Types – Reference Variables – Operators in C++ - Scope Resolution Operator – Type Cast Operator – Branching & Looping.

UNIT II   **(13 Hours)**

Functions: Function Prototypes – Call by Reference – Return by Reference – Inline Functions –

Default & Const Argument *- Function Overloading – Friend Functions.

UNIT III   **(12 Hours)**

Classes & Objects – Constructors and Destructors: Constructors – Parameterized Constructors – Multiple Constructors in a Class – Constructors with Default arguments – Copy Constructors – Destructors.

UNIT IV   **(11 Hours)**

Operator Overloading – Inheritance: Defining derived class – Types of inheritance – Virtual Base Class. Pointers: This pointer – Pointers to Objects – Virtual functions & Polymorphism – Templates.

Sub.Code: 22UCA202

UNIT V   **(11 Hours)**

Working with Files: Classes for file stream operation - Opening and closing a file – File pointers and their manipulations – Command Line Arguments.

* **Self-study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart Class Room / Power Point Presentation / Seminar / Quiz / Discussion

Text Book

1. E.Balagurusamy, (2020), "Object Oriented Programming with C++", Eighth Edition -

Mc Graw Hill Publications.

Reference Books

1. Ashok N. Kamthane, (2003) **-** "Object oriented Programming with ANSI and Turbo C++", First Edition - Pearson Education Publication.

2. Yashavanth Kanetkar, (2008), "Let us C++", Fourth Edition - BPB Publications.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA9

Sub.Code: 22UCA202

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.

Syllabus

UNIT I (8 Hours)

Programming the Basic Computer: Introduction –Different types of computer systems – Basic components of a digital computer system – Programming languages. Central Processing Unit: Introduction – General Register Organization.

UNIT II (10 Hours)

Number System and Codes: Binary Number System – Binary-to-decimal Conversion – Decimal-to-binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code - Gray Code. Digital Logic: The Basic Gates – NOT, OR, AND Gates. The Universal Gates – NOR, NAND.

UNIT III (10 Hours)

8086 Microprocessor: Introduction – general organization of a Microcomputer - 8086 internal Architecture- **Addressing modes** * – Instructions set.

The 8086 based system design: Pins and Signals-Pin Configuration, Signals, Interfacing memory-Memory Devices, Memory Banks.

UNIT IV **(9 Hours)**

Drives: Introduction – Principles of Magnetic Storage – **Floppy Disk Drive – Hard disk drive – CD-ROM Drive***. Peripherals: Video display system – Keyboard -Printer.

UNIT V **(8 Hours)**

Parallel & Serial Ports: Parallel port – Standard Parallel port (SPP) - Enhanced Parallel port(EPP) – BIOS serial port services. Universal Serial Bus: Introduction – Features of USB – USB System - USB Transfer – USB Controller.

* **Self-study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart classroom/ PowerPoint Presentation / Seminar / Quiz / Discussion

Text Books
1. Thomas C Bartee, (2008), **"Digital Computer Fundamentals"**, Tata McGraw Hill Publications, New Delhi, 6th Edition, (28th Reprint), (Unit – I).

2. Morris Mano, (2011), "**Digital Logic and Computer Design",** Zeroth Edition, Prentice Hall of India, New Delhi, (13th Impression) - (Units II).

3. N.Mathivanan, (2005), **Microprocessors, PC Hardware and Interfacing,** Fourth Edition, PHI Publications, New Delhi. (Units III, IV & V).

Reference Book

1. Thomas C. Bartee, (1998), "**Computer Architecture and Logical Design**", Mc Graw Hill International Edition.

2. John P Hayes, (1998), "**Computer Architecture and Organization**"- Third Edition, McGraw Hill International.

3. Aditya P.Marthur, (2002), **Introduction to Microprocessors**, Third Edition, TMH.

4. Brey.Barry.B, ShramaC.R, (2007), **The Intel Microprocessors,** First Edition, PHI Publications.

Sub.Code: 22UCA203

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	M	H
CO2	S	H	S	S	S
CO3	S	S	H	M	M
CO4	S	M	H	H	M
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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.

LIST OF PRACTICAL PROGRAMS

1. Develop a C++ Program to implement the concept of classes and objects.

2. Write a C++ Program to implement the types of Functions.

3. Develop a C++ Program to implement the concept of Function overloading.

4. Construct a C++ program to implement the concept of Constructors.

5. Develop a C++ Program to implement the concept of Operator overloading.

6. Develop a C++ Program to implement the concept of Inheritance.

7. Construct a C++ Program to implement the concept of Polymorphism using Virtual Functions.

8. Write a C++ program to swap two numbers using the concept of Function Templates.

9. Write a C++ program to perform White Space Suppression in a file.

10. Write a program that performs file copy using command line arguments.

Sub.Code: 22UCA2CM

Teaching Methods

Smart Classroom, Projectors,

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	H	S
CO2	S	H	S	M	M
CO3	H	S	H	S	S
CO4	H	M	H	H	H
CO5	S	H	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA14

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.

Syllabus

UNIT I (14 Hours)

History of the operating Systems - Zeroth, first, Second, Third, Fourth Generation - Computer Architecture: 4GL, 3GL, 2GL, 1GL, OGL. Program, Interrupts - Operating System functions.

UNIT II (15 Hours)

Memory Management - Introduction - Single Contiguous Memory Management - Fixed partition Memory Management Variable, partition - Non-contiguous Allocation - General concepts - Paging - Segmentation - Combined system.

UNIT III (16 Hours)

Process Management - Evolution – Introduction – Evolution of Multi Programming – Context Switching-Process States-Process State Transition-Process Control Block-Process Hierarchy-Create -Kill Process-Dispatch Process-Change the Priority of a Process – Block a Process – Dispatch a Process-Time up a Process-Wake up Process- Suspend/Resume Operations- Multi Tasking- Deadlocks-Introduction-Deadlock prerequisites.

UNIT IV   **(16 Hours)**

Information Management And File Management - Introduction - The File System Block& Block Numbering Scheme –File Support Level -File Directory Entry- Open/Close Operations-Directory Structure -Device Driver-Basics-Path Management-I/O Procedure-I/O Scheduler.

UNIT V   **(14 Hours)**

Case Studies - Unix - **History Of Unix *** – Overview Of Unix-Unix File System: Different types of files , Mounting/Unmounting file systems, Open, close, Read, write system calls, Create a file, Delete a file, Change directory- **Memory Management***.

***Self study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart classroom/ Power point Presentation / Seminar / Quiz / Discussion

Text Books

1. Achyut S. God bole, (2009), "Operating Systems", Second Edition -Tata McGraw Hill Publishing Company Limited, (reprint).

Reference Books

1. William Stallings,(2001), "Operating Systems", Second Edition- Prentice Hall of India Ltd.
2. H.M Deitel, (2003), "Operating Systems", 2nd Edition- Pearson Education, 2003.
3. Deitel, Choffnes,(2007), "Operating Systems", Third Edition-Pearson Education,.
4. Abraham Silberscatz, Peter B.Galvin, Gerg Gagne, (2016)," Operating System Concepts", Ninth Edition, Wiley Publications.

Sub.Code: 22UCA304

MAPPING

CO \ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	S	H
CO2	S	S	H	M	S
CO3	H	H	H	M	M
CO4	H	M	S	H	S
CO5	S	H	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA17

Sub.Code: 22UCA305

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.

Syllabus

UNIT I (14 Hours)

Introduction - Overview - **How To Create Programs Analyze Them *.** Arrays - Structures - Ordered Lists- Representation of Arrays - Simple Applications.

UNIT II (15 Hours)

Stacks and Queues –Fundamentals-Structure s- Operations- Multiple Stacks and Queues- Applications and Evaluation of expressions.

UNIT III (16 Hours)

Linked Lists - Single Linked Lists- Linked Stacks And Queues - The Storage Pool - Applications - Polynomial Addition, Sparse Matrices. Double Linked Lists- Dynamic Storage Management -Garbage Collection And Compaction.

Sub.Code: 22UCA305

UNIT IV **(16 Hours)**

Searching And Sorting: Binary, Sequential, And Fibonacci - Internal Sorting Insertion, Quick, Merge,Heap, Radix Sorts- External Sorting - Sorting With Disks - K-Way Merging- Sorting With Tapes - Balanced Merge – Poly phase Merge. Symbol Tables - Static Tree - Dynamic Tree - Hash Tables.

UNIT V **(14 Hours)**

Files - **queries and sequential organizations *** - index techniques. File organizations sequential, random, linked organizations - inverted files - cellular partitions.

* **Self study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart classroom/ Power point Presentation / Seminar / Quiz / Discussion

Text Book

1. Ellis Horowitz & Sartaj Sahani , (1999)- "Fundamentals of data structure", First Edition Galgothia book source,.

Reference Books

1. Ashok N Kamthane, (2004), "Programming and Data Structures", First Edition, Pearson Education.
2. Alfred V.Aho, John E. Hopcroft, Jeffrey D.Ullman, (2008) – "Data Structures and algorithms", Pearson Education.

MAPPING

PSO / CO	PSO1	PSO 2	PS 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	H	S	M	H	S
CO4	S	M	S	M	H
CO5	S	H	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA19

Sub.Code: 22UCA306

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.

Syllabus

UNIT I **(14 Hours)**

Introduction: Purpose of Database Systems-DBMS and RDBMS-Entity Relationship Diagram, Weak and Strong Entity sets – Codd's Rules. Normalization-Oracle Terminology – Data types - Basics of SQL:-DML-select command, insert, update, delete set operations, usage of Where Clause, **DDL***, DCL-Operators Aggregate functions.

UNIT II **(15 Hours)**

Data Constraints:-NULL value Concepts-Default value Concepts-Primary Key concepts- Unique Key Concepts-Foreign Key Concepts-Check Key Integrity Constraints-Renaming Columns with Expression List-Range Searching-Pattern Searching Manipulating Strings and Dates.

UNIT III **(16 Hours)**

Sophisticated queries-Built in group functions- Joined Relations-Nested Sub queries – Views – Sequences and Synonyms-Table Indexes- Table Partition and Joining of two tables.

Sub.Code: 22UCA306

UNIT IV (15 Hours)

Database Triggers:–Use of Database Triggers-How to apply Database Triggers-Types of Triggers-Combinations-Keywords and Parameters-Dropping Triggers-Basics of PL/SQL –Usage of Stored Functions and Procedures- How do procedures reside-Parameters. Packages-Retrieving data with Cursors-Formatting table. Exception handling.

UNIT V (15 Hours)

New Applications: Decision Support Systems - Data Analysis - Data Mining - Data Warehousing - Spatial and Geographic Databases - Multimedia Databases - Mobility and Personal Databases - Information - Retrieval Systems **-** Distributed Information Systems - **The World Wide Web ***. Working with Reports-Default tabular report- PL/SQL with reports.

* **Self study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart classroom/ Power point Presentation / Seminar / Quiz / Discussion

Text Books
1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, (2002),"Database System Concepts"**,**Fourth Edition -Tata McGraw Hill International Editions.
2. Ivan Bayross, (2000), "Commercial Application Development using Oracle developer 2000", BPB publications.

Reference Books
1. Sharad Maheshwari & Ruchin Jain, (2006),"Database Management Systems" Complete Practical Approach", Second Edition.
2. Nilesh Shah,(2007), "Database Systems using Oracle" A Simplified Guide to SQL & PL/SQL, Second Edition, Prentice Hall of India Private Ltd, New Delhi,
3. Ivan Bayross, (1995),"Oracle 7 the Complete Reference", BPB Publications.

Sub.Code: 22UCA306

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	H	S	S	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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 datamodeling.
	CO4	Implementing functions, packages, stored procedures and user defined exception.
	CO5	Evaluate the trigger function to perform event.

<u>LIST OF PRACTICAL PROGRAMS</u>

1. Creating Tables and writing simple queries using
   - ✓ Comparison Operators
   - ✓ Logical Operators
   - ✓ Set Operators
   - ✓ Sorting and Grouping

2. Creation of Reports using Column format

3. Writing Queries using built in functions.

4. Updating and altering tables using SQL.

5. Creation of Students Information table and write PL/SQL Block find the Total, Average marks and Results.

6. Design a PL/SQL block to prepare the Electricity Bill.

7. Programming with Cursors: Code a PL/SQL Block to partition the students Information Table into two, one with the Passed and other with Failed.

8. Implement the concepts of Joined relations to Database.

9. Create a Database Trigger to check the data validity of Record.

10. Recursive Functions Write a Recursive function to find
    - ✓ Factorial of N
    - ✓ Fibonacci Series with N terms.

11. Use SQL queries to manage Views, Sequences and Synonyms.

12. Create a Database Trigger to implement the Master - Detail Relationship.

13. Implement the concept of Stored Procedure with Parameters using SQL queries.

14. Implement the concept of Packages using Procedure and Function.

15. Design a PL/SQL program to handle User defined exception.

Teaching Methods

Smart Classroom, Projectors, Discussion

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	H	S	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code:22UGC3S1

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

Syllabus

UNIT I **(6 Hours)**

Introduction to Cyber Security: Definition of Cyber Security- Why is Cyber Security important? Layers of Cyber Security- Evolution of Cyber Security. Cyber hacking - Cyber fraud: Definition- Different modes of cyber fraud - Cyber fraud in India. Cyber pornography.

UNIT II **(6 Hours)**

Cyber Terrorism: Modes of cyber terrorism. Cybercrime: What is Cybercrime? Cybercrime preventive methods - Preventive steps for individuals & organizations - Kinds of cybercrime - Malware and its types – Cyber attacks.

UNIT III **(6 Hours)**

Internet Mobile Phone and E-commerce Security issues: Data theft - Punishment of data theft- Theft of internet hours - Internet safety tips for children & parents. Mobile phone privacy- E-Commerce security issues.

UNIT IV **(6 Hours)**

Email and Social media issues: Aspects of Social Media - The Vicious Cycle of unhealthy social media use- Modifying social media use to improve mental health. Computer Virus - Antivirus – Firewalls.

UNIT V   **(6 Hours)**

Cyber Forensics and Digital Evidence: What does Digital Footprint Mean? - Web Browsing and Digital Footprints- Digital Footprint examples – How to Protect Your Digital Footprints? - How to erase your Footprints? - Browser Extensions and Search Engine Deletion - Cyber Crime and Cyber Laws - Common Cyber Crimes and Applicable Legal Provisions: A Snapshot - Cyber Law (IT Law) in India – The Information Technology Act of India 2000 - Cyber Law and Punishments in India - Cyber Crime Prevention guide to users – Regulatory Authorities.

Teaching Methods

Chalk and Talk, Presentation, Seminar, Quiz, Discussion & Assignment

Text Book

1. **"Cyber Security", Text Book** prepared by "Kongunadu Arts and Science College", Coimbatore -29, 2022.

Reference Books

1. Mayank Bhushan, Rajkumar Singh Rathore, Aatif Jamshed, **"Fundamental of Cyber Security",** BPB Publications, 1st Edition, 2017.

2. Anand Shinde, "**Introduction to Cyber Security-Guide to the world of CyberSecurity**", Notion Press, 2021.

3. Paul Grishman, "**Cyber Terrorism- The use of the Internet for Terrorist Purpose**", Axis Publication, 1st Edition 2010.

4. Shilpa Bhatnagar, **"Encyclopaedia of Cyber and Computer Hacking**", Anmol Publications, 1st Edition 2009.

Web References

1. http://deity.gov.in/ - Department of Electronics and Information Technology,

2. Govt. of India

3. http://cybercellmumbai.gov.in/ - Cybercrime investigation cell

4. http://ncrb.gov.in/ - National Crime Records Bureau

5. http://catindia.gov.in/Default.aspx - Cyber Appellate Tribunal

6. http://www.cert-in.org.in/ - Indian Computer Emergency Response Team

7. http://cca.gov.in/rw/pages/index.en.do - Controller of Certifying Authorities

8. www.safescrypt.com - Safes crypt

9. www.nic.in – National Informatics Centre

10. https://www.kaspersky.com/resource-center/definitions/what-is-a-digital-footprint

11. https://geekflare.com/digital-footprint/

Sub.Code: 22UGC3S1

Mapping

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	S	H
CO2	H	S	S	H	S
CO3	M	H	M	S	H
CO4	S	H	H	M	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA407

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.

Syllabus

UNIT I (15 Hours)

Introduction to Software Engineering: Introduction: Professional Software Development: Software Engineering-Software Engineering diversity-Internet Software Engineering-Software Engineering Ethics: Case Studies-***An insulin pump control system -**Software Processes: Software Process Models-Waterfall Model-Incremental development-Integration and Configuration.

UNIT II (14 Hours)

Process Activities: Software Specification-Software design and Implementation-Software Validation-Software Evolution**-**Requirements Engineering: Functional and Non-Functional Requirements-Requirements Engineering Process-Requirements Elicitation-Requirements elicitation Techniques-Stories and Scenarios-Requirements Specification: Natural Language Specification-Structured Specification-Use cases-The Software Requirements document.

UNIT III (16 Hours)

Architectural Design: Architectural design decisions: Architectural views-Architectural patterns: Layered Architecture-Repository Architecture-Client-Server Architecture-Pipe and Filter Architecture. Software Testing: Development Testing: Unit Testing-Choosing unit test cases-Component testing-System testing- Test-Driven Development: Release Testing: Requirement based testing-Scenario testing-Performance testing-User Testing.

Sub.Code: 22UCA407

UNIT IV   **(15 Hours)**

Software Management: Project Management-Risk Management -Risk Identification-Risk Analysis-Risk Planning-Risk monitoring-Managing People:***Motivating People**-Team work: Selecting group members-Group organization-Group Communications. Project Planning: Software Pricing-Plan-driven Development-Project Plans-The Planning Process-Project Scheduling: Schedule Presentation-Estimation Techniques: Algorithmic Cost Modelling-COCOMO Cost Modelling: The Application Composition Model-The early design Model-The reuse Model-Post Architectural level-Project Duration and Staffing.

UNIT V   **(15 Hours)**

Quality Management: Software Quality-Software Standards-The ISO 9001 standards framework-Reviews and Inspections: The review process-program Inspections. Quality Management and Agile Development: Software Measurement: Product metrics-Software Component Analysis-Measurement Ambiguity-Software Analytics.

       * **Self study and questions for examinations may be taken from the self study portions also**

Teaching Methods

Smart ClassRoom/Power point presentation/Seminar/Quiz/Discussion

Text Book
1. Ian Sommerville, Software Engineering 10e", Pearson India Education Services Pvt Ltd-10th Edition 2018

Reference Books
1. Sommerville, (2006), "Software Engineering", Pearson India Education Services Pvt Ltd-10th Edition (reprint)

2. Software Engineering,(2007), "Principles and Practices- Vikas Publishing House Pvt Ltd ,ITL Education Solutions Ltd

3. Software Engineering,(2008),"Principles and Practices-Waman S.Jawadekar-Tata McGrawhill Publishing Company limited , (7th reprint)

4. Rajib Mall,(2007),"Fundamentals of Software Engineering"- Prentice Hall of India private Ltd -Second Edition 20th Printing.

MAPPING   **Sub.Code: 22UCA407**

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	M	H
CO2	S	M	H	S	M
CO3	S	H	M	H	S
CO4	S	S	H	M	H
CO5	S	S	S	H	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA408

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 deal with basic ideas of networking domain.

2. To present the principles of Cryptography 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 cryptography and network security concepts and application.
	CO2	Applying security principle in system design.
	CO3	Detecting network security threats.
	CO4	Understanding the various cryptographic algorithms.
	CO5	Evaluating the challenges in building networks.

Syllabus

UNIT I   (13 Hours)

Introduction: Uses of computer networks: Business Applications-Home Applications-Mobile Users-Social Issues. Network Hardware: LAN-MAN-WAN-Wireless Networks-Internetworks – Network Software: Protocol Hierarchies-Design Issues for the Layers-Connection Oriented and Connectionless Services-Service Primitives-The Relationship of Services to Protocol – Reference Models.

UNIT II   (15 Hours)

The Physical layer: Guided transmission media – Magnetic media-Twisted pair - Coaxial cable

– Fiber Optics –Comparison of Fiber optics and Copper wire-The Public Switched telephone network: Structure of the telephone system – The local loop: modems- Switching.

UNIT III   (16 Hours)

The Data link layer: Data link layer design Issues – Error Detection and Correction. The Medium access control sub layer: The channel allocation problem – Multiple access protocols: Carrier sense multiple access protocols – Collision-Free Proto cols- Bluetooth: Blue tooth Architecture, **Bluetooth Applications ***.Data link layer switching: repeaters, hubs, bridges, switches, routers and gateways.

UNIT IV (16 Hours)

The Network layer: Network layer design issues – Routing algorithms: The optimality principle, shortest path routing- Congestion Control Algorithm: Congestion Control in Virtual Circuit Subnet, Datagram Subnet.

The Transport layer: The Transport service: Services provided to the upper layers– Elements of Transport protocols.

UNIT V (15 Hours)

The Application layer: DNS – The Domain Name System – **Electronic mail: Architecture and services ***, the user agent. Network Security: Cryptography – DES – Digital Signatures: Symmetric-Key Signatures, Public-Key signatures.

*Self study and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/Power point presentation/Seminar/Quiz/Discussion

Text Books

1. Andrew S. Tanenbaum, (2008), "**Computer Networks"**, Fourth Edition – Pearson Education Publication.

Reference Books
1. Behrouz A. Forouzan,(2007), **"Data Communications and Network"**, Second Edition, Tata MCGraw Hill.
2. William A Shay, (2001), **"Understanding data communications and Networks",** Second Edition -Vikas Publication.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	S	H	H	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA409

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.

Syllabus

UNIT I (13 Hours)

JAVA Evolution: History – Features – How Java differs from C and C++ - Java and Internet- Java and WWW – Web Browsers. Overview of Java Language: Introduction – Simple Java program – Structure – Java Tokens * – Statements - Java Virtual Machine. Classes, Objects and Methods: Introduction- defining class- field declaration-method declaration- creating objects-Constructors-Method Overloading- Overriding Methods.

UNIT II (15 Hours)

Arrays: One Dimensional Arrays- Creating an Array- Two dimensional Arrays, Strings an d Vectors. Interfaces: Multiple Inheritances.

UNIT III   **(16 Hours)**

Packages: Putting classes together – Multi Threaded Programming. Managing Errors and Exceptions. Applet programming: Introduction-How applet differs from other applications- Applet Life cycle- Applet Tag. Graphics programming: Introduction- The Graphics Class-Lines and Rectangles-Circles and Ellipses- Drawing Arcs Using controlLoops in Applets.

UNIT IV   **(16 Hours)**

Files: Introduction – concept of streams – Stream classes – Using streams – I/O classes- Fileclass – Creation of files- Reading/Writing characters /Bytes-Handling Primitive Data types- Random Access Files.

UNIT V   **(15 Hours)**

        Introducing Swings: Origins of swing- two keyswing features- components and containers- Swing Packages-Event Handling creating swing applet. Exploring Swing: Jlabel and Image Icon-JtextField- The Swing Buttons-JscrollPane- Jlist- Jcombobox-Trees-Jtable.

  *Self study and questions for examinations may be taken from the self study portions also

 Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Books

   1. E.Balagurusamy "Programming with Java – A Primer", Fourth Edition -Tata McGraw-Hill Publication.

   2. Herbert Schildt, (2011),"Java the Complete Reference", Seventh Edition -Tata McGraw-Hill Publication.

Sub.Code: 22UCA409

Reference Books

1. Steven Holzner, (2008), "Java 2 Programming – Black Book ", New Edition
2. C.Xavier, (2000), 'Programming with Java 2", Scitech Publication.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	H
CO2	S	S	H	S	S
CO3	S	M	H	H	H
CO4	S	S	S	S	M
CO5	H	S	S	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA4CO

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 conceptsofcontrol 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

LIST OF PRACTICAL PROGRAMS

1. Write a programto print the following triangle of numbers.

       1

       1 2

       1 2 3

       1 2 3 4

2. Write a java program to define a class, instance methods, overload them and use them

    for dynamic method invocation.

3. Write a programto displaya message and draw several shapes in Applet window.

4. Write a programto create an applet and draw Grid lines.

5. Write a java program to create a frame with three text field for name, age and

    qualification and a text field of multiple lines for addressto display PersonalDetails.

6. Write a java programto demonstratethe multiple selection list box.

7. Write a java programto create a menu bar and pull down menus

8. Write a java program to create a window when we press M/m the window displays Good Morning, A/a the window displays Good Afternoon, E/e the window displays Good Evening, N/n the window displays Good Night.

9. Write a program to move different shapes (Circle, Ellipse, Square, Rectangle) according to the arrow keypressed.

10. Write a java programto handle the divide byzero exception.

11. Write a java program to explain the multithreading with the use of multiplication tables. Three threads must be defined. Each one must create one multiplication table; they are 5 table, 7 table and 13 table.

12. Write a programto display all prime numbers betweentwo limits using files concept.

13. Write a programto implement the concept ofConcatenating and Buffering files in java.

14. Write a java programto Add Items and Remove Items using Swing components.

15. Write a programto implement the concept ofTrees in java.

Teaching Methods

Smart Classroom, Projectors, Discussion

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

Sub.Code: 22UCA4CO

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	H
CO2	S	S	H	S	S
CO3	S	M	H	H	H
CO4	S	S	M	S	M
CO5	H	S	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA39

Sub.Code: 22UCA4A4

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 process.
2. To enable the students to insight in to 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.

Syllabus

UNIT I (18 Hours)

Management - Meaning and Definition – Features-Functions – Importance-Difference between Administration and Management – Management Hierarchy.

Planning – Meaning – Nature-Objectives – Importance-Steps in Planning – Advantages and Limitations –Management by Objectives.

UNIT II (18 Hours)

Organization - Meaning-Functions-Principles- Types Of Organization-Merits& Demerits- Delegation Of Authority-Decentralization- Advantages & Disadvantages Departmentation - Meaning- Process- **Basis Types of Departmentation** *- Importance.

Sub.Code: 22UCA4A4

UNIT III   (17 Hours)

Staffing – Definition-Processing Of Staffing-Recruitment-Sources of Recruitment- Stages In Selection Procedure – Training And Development. Motivation- Meaning And Importance – Types – Theories Of Motivation – Maslow, McGregor, Hertzberg, Leadership – Need And Importance – Qualities Of Leadership – Leadership Styles.

UNIT IV   (19 Hours)

Communication: Meaning – Objectives – Process – Types - Media – Barriers – need and functions of business letter- Written Communication: Business letters-Drafting letters- Oral Communication: Telephone conversation. Conducting Meeting: Notice, Agenda, Minutes and Report writing.

UNIT V   (18 Hours)

Application Letters - Preparation of Resume - Interview: Meaning- Objectives and Techniques of various types of Interview- Public speech – Characteristics of a good speech.

 *Self study and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Books

1. L.M.Prasad, (2004), "Principles & Practice of Management", Sultan Chand & Son
    (Unit I, II & III).
2. R.S.N.Pillai and Bagavathi, Sultan Chand (2011), "Modern Commercial Correspondence",
    (Unit-IV)
3. Rajendran Pal and Koralhal,Sultan Chand(2011), "Essential of Business Communication",
    (Unit- V)

Reference Books

1. Tripathy and Reddy, "Principles of Management", Tata McGraw Hill (Unit I, II & III)
2. Philip Kotler,(2004),"Marketing Management", Prentice Hall of India Unit IV)

Sub.Code: 22UCA4A4

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	H
CO2	S	S	H	S	S
CO3	S	M	H	H	H
CO4	S	H	S	M	H
CO5	H	S	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA42

Sub.Code: 22UCA4SL

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	Appling the searching algorithm in programming.
	CO5	Evaluate the functionality of an exception handling mechanism.

LIST OF PRACTICAL PROGRAMS

1. Write a program to convert temperature in Celsius to Fahrenheit and Fahrenheit to Celsius.

2. Write a program to display all the prime numbers within an interval.

3. Write a program to multiply two matrices using nested loops.

4. Write a program to accept 5 subject marks and to calculate the total, average and grade of a student.

5. Write a program to generate an electricity bill.

6. Write a Program to perform linear search.

7. Write a Program to perform merge sort.

8. Write a Program to perform binary search.

9. Write a Program to find the maximum of a list of numbers.

10. Write a python program to demonstrate File Input and Output operations.

11. Write a program to demonstrate Exception Handling.

12. Write a program to demonstrate Classes and their Attributes.

Sub.Code : 22UCA4SL

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution : 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

Teaching Methods

Smart Classroom, Projectors, Discussion

Mapping

CO \ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	M	S	H
CO2	H	S	M	H	S
CO3	M	H	M	M	H
CO4	S	H	H	M	H
CO5	S	S	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code:22UCA510

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

Syllabus

UNIT I **(18 Hours)**

Introduction to Visual Basic - Steps in VB Application - Integrated development environment (IDE)- Variables - Scope of variables- constants - Data types - Functions - Procedures - Control Structure - Arrays -Control Arrays- User defined Data types - operators - String, **Date and Time functions-** Creating and using Standard Controls - Text Box – Command Button - Check Box - Combo Box - List Box - Option Button - Timer Control - Frame, Label, Shape & Line controls - Picture Box - Image Controls - **Scroll Bars *** - Data Controls

UNIT II **(18 Hours)**

Menus - Menu Editor - Menu Creation - Modifying and Deleting Menu Items - Adding a menu Separator - Creating Submenus. - Data Access Objects (DAO). Data Report - Data Environment Designer - Connection Object - Command Object - Section of the Data Report Designer - Data Report Controls - Creating a Simple Data Report.

UNIT III (VB.NET) **(17 Hours)**

.Net Frame work and the CLR –IDE- Procedures, Scope and Exception Handling- Adding Controls – Handling Events – Creating MDI applications-Database connectivity.

UNIT IV (ASP.NET)   **(19 Hours)**

What are Active Server pages– ASP Objects – ADO and ADO.NET Objects- ASP Components.

UNIT V (C SHARP)   **(18 Hours)**

Introduction- Exception, Exception in method –Exception throw- String – Struct- Class definition – Class instance – Object reference – Operator Overload.

* Self study and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Books

1. Content   Development   Group,(2004),"Visual   Basic   6   Programming", First Edition ,TataMCGrawHill Publication,. (Unit-I,II)

2. Steven Holzner, (2002), "Visual Basic.NET Black Book Dream Tech", First Edition. (UnitIII)

3. Dave Mercer, (2002), ASP.Net,A Beginner's Guide", Tata McGraw Hill, (Unit IV)

4. E.Balagurusamy, "Programming in C#", Second Edition, TataMCGraw Hill Publication, (Unit V)

Reference Book:

1.   Scott Warner, (2000),"**Teach Yourself Visual Basic 6**", Tata McGraw-HillEdition, First Edition.

Sub.Code: 22UCA510

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	H	S	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

UCA47

Sub.Code: 22UCA511

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

Syllabus

UNIT I   **(17 Hours)**

INTELLIGENT AGENTS AND SEARCHING METHODS

Definitions of AI - Intelligent Agents**:** Agents and environments - Good behavior – The nature of environments – structure of agents. Informed search and exploration**:** Informed search strategies – heuristic functions – local search algorithms.

UNIT II   **(18 Hours)**

LOGIC
Logical agents: Knowledge-based agents – The Wumpus world. Logic – Propositional logic: A very simple logic. First order logic: Representation revisited – Syntax and semantics for first order logic – Using first order logic – Knowledge engineering in first order logic. Inference in First order logic: propositional versus first order logic –forward chaining – backward chaining.

UNIT III   **(18 Hours)**

PLANNING AND UNCERTAINTY

Planning: The planning problem- planning with state-space search-partial order planning –graphs.
Uncertainty: Overview of probability concepts, Representing knowledge in an Uncertain Domain,
Semantics of Bayesian Networks, Exact Inference in Bayesian Networks

UNIT IV   **(18 Hours)**

DECISION MAKING AND LEARNING

Making Simple Decisions: The basis of Utility theory – Utility and multi-attribute utility functions –
decision networks – The value of information – Decision theoretic expert systems**.** Learning from
Observations: **Forms of learning*** - Inductive learning - Learning decision trees. Knowledge in
Learning – Logical formulation of learning – Explanation based learning – Learning using relevant
information – Inductive logic programming.

UNIT V   **(19 Hours)**

LEARNING AND COMMUNICATION

Statistical Learning Methods: Introduction to neural networks, Perceptron's, Multi-layer feed forward
network, Application of ANN. Reinforcement Learning: Passive reinforcement learning - Active
reinforcement learning - Generalization in reinforcement learning. Communication: Communication
as action – Formal grammar for a fragment of English – Syntactic analysis – Augmented grammars
– Semantic interpretation – Ambiguity and disambiguation.

*Self study and questions for examinations may be taken from the self study portions also

Text Book
1. Stuart Russell, Peter Norvig, (2009) "Artificial Intelligence – A Modern Approach", Third
   Edition, Pearson Education / Prentice Hall of India.

Reference Books
1. Elaine Rich, Kevin Knight, Shivashankar.B.Nair, (2009), "Artificial Intelligence", Tata Mc
   GrawHill Publishing Company Limited. Third Edition.
2. Nils J. Nilsson, (2000), "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd...
3. George F. Luger, (2002), "Artificial Intelligence-Structures and Strategies for Complex
   ProblemSolving", Pearson Education / PHI.

Sub.Code:22UCA511

MAPPING

PSO CO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	H
CO2	H	S	H	S	S
CO3	S	M	H	H	H
CO4	S	S	M	S	M
CO5	H	H	S	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code:22UCA512

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.

Syllabus

UNIT 1 (14 Hours)

Expanding Universe of Data- Production Factor-Data Mining-Data Mining versus Query Tools- **Data Mining In Marketing***-Practical Applications. Learning – Self Learning Computer Systems- Machine Learning and Methodology of Science – Concept Learning.

UNIT II (15 Hours)

Data Warehouse-Need- Designing Decision Support System-Integration with Data Mining – Client Server and Data Ware Housing – Multi Processing Machines- Cost Justification- Knowledge Discovery Process – Data Selection – Cleaning – Enrichment- Coding.

UNIT III   **(15 Hours)**

Data Mining – Preliminary Analysis of the Data Set Using Relational Query Tools – Visualization Techniques – Likelihood and Distance – OLAP Tools – K –Nearest Neighbor – Decision Tree- Association Rule – Neural Networks – **Reporting*-** Different Forms of Knowledge- TenGolden Rules.

UNIT IV   **(15 Hours)**

Developing a data warehouse: Why and how to build a data warehouse? Data warehouse architectural strategies and organizational issues- Design considerations- Data content – *Metadata- Distribution of data- Tools for data warehousing- Performance considerations- crucial decisions in designing a data warehouse- Applications of data warehousing and data mining in government.

UNIT V   **(16 Hours)**

Customer Profiling – Predicting Bit Behavior Of Pilots – Learning As Compression Of Data Sets- Content Of Message – Noise And Redundancy – Significance Of Noise – Fussy Data Base- The Traditional Theory Of Relational Data Base – From Relations To Tables – From Keys To Statistical Development Dependencies – Denormalization – Data Mining Primitives.

 *Self study and questions for examinations may be taken from the self study portions also
 Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Books

 1.   C.S.R.Prabhu,(2002),**"Data Warehousing-concepts, techniques, products and Applications"**,
    Second Edition ,Prentice hall of India private limited, New Delhi, (Unit-IV)

 2. Pieter Adriaans, Dolf Zantinge,(2001), **"Data Mining ",** Addison Wesley,(Unit I,II,III &V)

Reference Book

 1. Margaret H.Dunham, (2003), **"Data Mining – Introductory and Advanced Topics"**, Pearson
    Education.

Sub.Code: 22UCA512

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	S	S
CO2	S	H	S	H	M
CO3	S	H	M	S	H
CO4	S	M	S	M	H
CO5	H	S	H	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA5CP

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 of various objects and classes in . Net.
	CO3	Implementing the concepts of decision 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.

LIST OF PRACTICAL PROGRAMS

1. Develop a program to perform Navigation of list of items between two list boxes.

2. Design an application using the Common Dialog Control to display the font family.

3. Develop a simple project to calculate Electricity Bill using DAO method and print it in a neat Report format.

4. Develop a simple project to search a record & update it newly using DAO method for student information (Calculating Attendance and Mark list).

5. Develop a Simple Project, showing the process (using payroll process)
   1) Move first   2) Move Last   3) Move Previous   4) Move Next.

6. Develop a Program to simulate a simple calculator using VB.Net.

7. Develop a Program to simulate a digital clock with reset option using VB.Net

8. Develop a Program to maintain Employee details using VB.Net.

9. Develop a program to Print one sentence for many times with different font sizes using ASP.NET.

10. Using arrays develop a program to Search a Name from a given list.

11. Develop a C# program to Calculate Student mark list using Loop.

12. Develop a Program to manipulate String Objects using Array Sort() & Array Reverse ().

Sub.Code: 22UCA5CP

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	H	S
CO2	S	H	S	M	M
CO3	H	S	H	S	S
CO4	H	M	H	H	H
CO5	S	H	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

COMPUTER APPLICATIONS   SYLLABUS 2022- 2023

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

LIST OF PRACTICAL LIST

1. Creation of e-mail Id using Internet.

2. Manipulation of mail by sending and receiving using Internet.

3. Create a mail merge using MS-Word.

4. Prepare Resume using MS-Word.

5. Create a front page for Newspaper using MS-Word.

6. Payroll calculation using MS-Excel.

7. Prepare student mark sheet using MS-Excel.

8. Create a slide show for computer components using MS-PowerPoint.

9. Prepare a photo album using MS-PowerPoint.

10. Promote a brand using MS-PowerPoint.

11. Create a database for stock maintenance and generate report.

12. Create a database for employee and apply query to filter the employee's name that have salary.

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

Teaching Methods

Smart Classroom, Projector, Discussion

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	M	S	H
CO2	H	S	S	H	S
CO3	M	H	M	S	H
CO4	S	H	H	M	H
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Sub.Code: 22UCA613

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 visualdesign 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.

Syllabus

UNIT I   **(17 Hours)**

HTML:-Introduction- Core Elements and Attribute – Basic Text Formatting-Presentational Elements-Phrase Elements- Lists- Editing Text- Using Character Entities for Special Characters-Comments-Font Elements- Basic Links-Creating Links with the <a> Element-Adding Images to Website- Using Images as Links- Tables-Forms-Frames.

UNIT II   **(19 Hours)**

Cascading Style Sheets: Introducing CSS-CSS Rules, Properties, Types of CSS –Controlling Fonts-Text Formatting-Selectors: Type, Class, ID, and Attribute Selectors. Lengths-Percentages, Introducing the Box Model. Links- Backgrounds-Positioning with CSS-Page Layout.

UNIT III   **(19 Hours)**

Java Script: Learning JavaScript-How to add a script to your pages-The Document Object Model-Starting to Program with JavaScript- Variables-Operators-Conditional Statements-Looping. Java Script Arrays: Passing Arrays to Functions-Multiple Subscripted Arrays.

Java Script Functions: Functions- Function Definition - Duration Of Identifiers – **Scope Rules***
– Recursion – Java Script Global Functions. Events-Built-In Objects-Writing JavaScript. Working
with JavaScript: Form Validation-Image Rollovers.

UNIT IV   **(19 Hours)**
Bootstrap: What is Bootstrap? Bootstrap History-Why to use Bootstrap? - Where to get Bootstrap?
-Bootstrap Grid System: Basic structure of a Bootstrap Grid- Bootstrap Tables- Bootstrap Images
– Bootstrap Buttons- Bootstrap Buttons Groups.

UNIT V   **(16 Hours)**
Bootstrap List Groups- Bootstrap Form Layouts – Form inputs- Input sizing- Bootstrap
dropdowns- Bootstrap collapse- Bootstrap Panels-Tooltip –Tabs and Pills- Scroll spy- **Bootstrap
carousel plug-in*.**

* **Self study and questions for examinations may be taken from the self study portions also**
Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Books
1. Jon Duckett (2000) – "Beginning Web Programming With HTML, XHTML AND CSS", –
 Second Edition, Wiley India Pvt Ltd (Unit-I, II, III)
2. Bootstrap 4 Quick Start: A Beginner's Guide to Building Responsive Layouts with Bootstrap

 (Unit-IV, V)

Reference Books
1. Thomas A. Powell, "The Complete Reference HTML", – Second Edition Tata McGraw Hill
 Publication.
2. Chris Bates - "Web Programming Building Internet Applications", Second Edition, John
 Wiley & Sons, Ltd.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	H	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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)

	CO1	Studying the basic concepts of security.
	CO2	Understanding the issues and technologies in information security.
K1 to K5	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.

Syllabus

UNIT I   (**17 Hours**)

Is there Security Problem in Computing? : What does Security mean? –Attacks-The Meaning of Computer Security-Computer Criminals. **Protection in general purpose operating systems**: Memory and Address Protection -File Protection Mechanisms-User Authentication.

UNIT II   (**19 Hours**)

Program Security: Nonmalicious Program Errors – Viruses and other Malicious Code**:** Kinds of Malicious code, how viruses attach, Home for virus, Virus Signature, Example of malicious codes: Brain Virus, Worm, Code red, Web bugs.

Targeted Malicious Code: Trojans, Trap door, Salami attack, Keystroke Logging, Timing attacks-Controls against Program Threats: Developmental controls.

UNIT III (**16 Hours**)

Database and Data Mining Security: Introduction to Databases*- Security Requirements-Reliability and Integrity- Multilevel Databases – Proposals for Multilevel Security: Separation- Data Mining.

UNIT IV (**19 Hours**)

Security in Networks: Network Concepts-Threats in Networks: Categories of Attack, Who attacks networks? Reconnaissance, Pinging, Threats in transit: Eavesdropping and wiretapping, software based packet sniffing, tools, Microwave-Firewalls-Intrusion Detection Systems.

UNIT V (**19 Hours**)

Legal and Ethical Issues in Computer Security: Protecting Programs and Data*- Information and the Law-Computer Crime: Why computer crime is hard to prosecute, Examples of Statutes, Cyber pornography, Accessing protected system, tampering with source code, Cryptography and the law- Case studies of Ethics: privacyrights, Fraud, Ownership ofprograms.

 * Self Study Topic and Questions forexaminations may be taken from Self Study Portions also.

Teaching Methods

PowerPoint Presentation, Assignments, Discussions.

Text Book
 1. Charles P.Pfleeger, Shari Lawrence Pfleeger, Deven N.Shan, **"Security in Computing",** FourthEdition.

Reference Books

 1. Dhiren R.Patel, (2008), **"Information Security Theory and Practice"**, PHI publications.

 2. Ross J.Anderson and Ross Anderson, (2001), **"security Engineering: A Guide to**

  BuildingDependable Distributed Systems", Wiley.

 3.Debby Russell and Sr.G.T.Gangemi, (2006),**"Computer Security Basics (paperback)"**,

  SecondEdition, O'ReilleyMedia.

 4. Thomas   R.Peltier.Juystin   Peltier   and   John   Blackley,   (2010),**"Information   Security**

  Fundamentals",Second Edition, Prentice Hall.

Sub.Code: 22UCA614

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	S
CO2	M	H	M	S	M
CO3	S	H	M	H	M
CO4	S	M	H	M	S
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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)

	CO1	Applying the HTML tags to design Web Pages.
	CO2	Designing attractive web sites using Cascading Style Sheet.
K3 to K5	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.

LIST OF PRACTICAL PROBLEMS

1. Design a web page for your Department.

2. Design a new web page, which shows your Biodata using CSS.

3. Design a web page for a company using HTML Formatting Tags.

4. Design a web page for Computing Student Mark list using JavaScript.

5. Design a web page for an Advertising using Style Sheets.

6. Design a web page with the following components using JavaScript.

   a) Image b) Hyperlink c) Scroll Bar d) Animation.

7. Design a web page for Library system using HTML Tags.

8. Design a web page for Payroll Processing using Java Script.

9. Design a web page for Electricity Bill Preparation using JavaScript.

10. Creating a Table using Bootstrap.

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks
2. Algorithm, Program, Typing and Execution: 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

Teaching Methods

Smart Classroom, Projectors, Discussion

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	H	S
CO2	S	H	S	M	M
CO3	H	S	H	S	S
CO4	S	M	H	M	H
CO5	S	S	S	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Project Work and Viva-Voce

Sub.Code: 22UCA6Z1

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.

Guidelines to the Distribution of Marks:

Knowledge Level	Particulars		Marks	Total
K3	CIA	Review	45	50
		Regularity	05	
	ESE	Project report *	35	50
		Viva –Voce *	15	

* Both Internal and External Examiners shall evaluate Project & Viva-Voce jointly

Teaching Methods

Power Point Presentation/Project Demo

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	H	S
CO2	S	M	M	H	H
CO3	S	H	S	H	H
CO4	S	S	S	S	S
CO5	S	S	S	H	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

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 / Week** **2**	**Total Hours** **30**	**Credits** **3**

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)

K3 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.

LIST OF PRACTICAL PROGRAMS

1. Write a shell program to display your address.

2. To perform arithmetic operations using shell arithmetic.

3. Print the different patterns using looping operations.

4. To perform simple inventory control operation using read statement.

5. To prepare the student mark statement using necessary controls.

6. Sort the given numbers in both ascending and descending orders.

7. Write a shell program to perform user defined function concept.

8. Write a shell program using dialog utility concept.

9. Write a program to perform file operation.

10. Write a shell script to print 'Hello Linux' message in Bold, Blink and different colors.

Sub.Code: 22UCA6SM

<u>Guidelines to the distribution of marks for practical Examinations:</u>

Two questions will be given for each student (3 Hours / 50 Marks)

1. Record Work - 5 Marks

2. Algorithm, Program, Typing and Execution : 45 Marks.

Particulars	Program I (Marks)	Program II (Marks)
Algorithm	5	5
Program Writing	15	10
Typing and Execution	5	5

Teaching Methods

Smart Classroom, Projector, Discussion

Mapping

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	M	S	H
CO2	H	S	M	H	S
CO3	M	H	M	M	H
CO4	S	H	H	M	H
CO5	S	S	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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.

Syllabus

UNIT I   **(14 Hours)**

Introduction to IoT-Genesis of IoT-IoT and Digitization-IoT Impact-Convergence of IT and OT-IoT Challenges- IoT Network Architecture and Design-Drivers Behind New Network Architectures-Comparing IoT Architectures- Additional IoT Reference Models.

UNIT II   **(15 Hours)**

The Core IoT Functional Stack- IoT Data Management and Compute Stack - Fog Computing-Edge Computing - The Hierarchy of Edge, Fog, and Cloud-Smart Objects- The Things in IoT-Sensors, Actuators, and Smart Objects- Sensor Networks-Wireless Sensor Networks-Communication Protocols for Wireless Sensor Networks.

UNIT III   **(16 Hours)**

Connecting Smart Objects-Communications Criteria-IoT Access Technologies- Standardization and Alliances- -Competitive Technologies- IEEE 802.15.4- IEEE 802.15.4g and 802.15.4e- IEEE 1901.2a- IEEE 802.11ah- LoRaWAN- NB-IoT and Other LTE Variations.

UNIT IV   **(16 Hours)**

IP as the IoT Network Layer- The Business Case for IP- Optimizing IP for IoT- Authentication and Encryption on Constrained Nodes- *ACE- DICE-* Application Protocols for IoT- The Transport Layer- IoT Application Transport Methods- SCADA- Generic Web-Based Protocols- IoT Application Layer Protocols- CoAP.

UNIT V   **(14 Hours)**

IoT in Industry*- Transportation*- Transportation Challenges- IoT Use Cases for Transportation- An IoT Architecture for Transportation- Extending the Roadways IoT Architecture to Bus Mass Transit- Extending Bus IoT Architecture to Railways- **Public Safety*-** Public and Private Partnership for Public Safety IoT- An IoT Blueprint for Public Safety Emergency Response IoT Architecture- **School Bus Safety*- School Bus Safety Network Architecture*.**

   *Selfstudy and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/ Powerpoint Presentation / Seminar / Quiz / Discussion

Text Book
1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry
   (2017), IoT Fundamentals: Networking Technologies, Protocols and Use Cases for
   Internetof Things, Cisco Press.

Reference Books
1. Arshdeep Bahga, Vijay Madisetti (2015), "Internet of Things – A hands-on approach",
Universities Press.

2. Olivier Hersent, David Boswarthick, Omar Elloumi (2012), ―The Internet of Things – Key
   applications and Protocols‖, Wiley.

3. Honbo Zhou (2012), "The Internet of Things in the Cloud: A Middleware Perspective", CRC
Press.

MAPPING

PSO / CO	PSO1	PSO2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	S
CO2	M	H	M	S	M
CO3	S	H	M	H	M
CO4	S	M	H	M	S
CO5	H	S	S	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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.

Syllabus

UNIT I   **(14 Hours)**
Introduction: Introduction to Open Sources – Need of Open Sources – Advantages of Open Sources– *__Application of Open Sources__ - Open Source Operating Systems: LINUX: Introduction – General Overview – Kernel Mode and User Mode- Development with Linux.

UNIT II   **(15 Hours)**
MySQL : Introduction – Setting up Account –Record Selection Technology – Working with Strings – Date and Time– Sorting Query Results – Generating Summary – Working with Metadata – Using Sequences.

UNIT III   **(16 Hours)**
PHP : Introduction – Programming in Web Environment – Variables – Constants –Data; Types – Operators – Statements – Functions – Arrays – OOP – String Manipulation and Regular Expression – File Handling and Data Storage – PHP and SQL Database – PHP and LDAP – PHP Connectivity – Sending and Receiving E-mails.

UNIT IV **(16 Hours)**

Python Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – **Dictionaries*** – Conditionals and Loops – Files – Input and Output – Errors and Exceptions –Functions – Modules – Classes and OOP – Execution Environment.

UNIT V **(14 Hours)**

PERL Perl Backgrounder – Perl Overview – Perl Parsing Rules – Variables and Data – Statements and Control Structures – Subroutines - Packages and Modules - Working with Files – DataManipulation.

*Selfstudy and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/ Powerpoint Presentation / Seminar / Quiz / Discussion

Text Books
1. Remy Card, Eric Dumas and Frank Mevel (2003), "The Linux Kernel Book", Wiley Publications.
2. Steve Suchring(2002), "MySQL Bible", John Wiley.
3. Wesley J. Chun (2001), "Core Phython Programming", Prentice Hall.
4. Martin C. Brown (2009), "Perl: The Complete Reference", Second edition, Tata McGraw-Hill, IndianReprint.
5. Steven Holzner (2009) "PHP: The Complete Reference", Second edition, Tata McGraw-Hill, IndianReprint.

Reference Books
1. Vikram Vaswani (2009), "MYSQL: The Complete Reference", Second edition, Tata McGraw-Hill,Indian Reprint.
2. Rasmus Lerdorf and Levin Tatroe (2002), "Programming PHP", O'Reilly.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	M	S	H
CO2	S	H	H	H	M
CO3	S	H	M	M	M
CO4	S	S	H	M	S
CO5	H	S	S	H	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

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 learnthe basics of Android and understand the application lifecycle.

2. To learnthe power ofbackground 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 allthe major UI components
	CO4	Implementing Animation Concepts and Techniques using XML andAndroid content providers for frame applications
	CO5	Evaluate the tools by applying fundamental concepts to Android applicationdevelopment.

Syllabus

UNIT I   **(14 Hours)**

The History of the Android OS-Configuring Your Android App Development System- Updating Eclipse ADT- Configuring Eclipse Android SDK Manager Repository- Android Virtual Devices-Creating the AVD.

UNIT II   **(15 Hours)**

Android Application Development Platform: How the Android Platform is Structured – Android Runtimes - Creating Your First Android Application - **Android Resources***- Asset Project

Folders-Creating a Custom App Launch Icon: Creating a Launch Icon for Each Screen Density-Creating Transparency-Creating Resolution Density App Launch Icons.

UNIT III   (16 Hours)

Introduction to XML: Defining an Android App, Its Design, and Constants-Android Screen Design: Writing to the Display Using Activity and View- Making Apps Interactive: Intents, Event Handling, and Menus.

UNIT IV   (16 Hours)

Android Animation: Making Your UI Designs Move-Frame Animation Concepts and Techniques-Creating Frame Animation Using XML Markup-Creating Frame Animation in Main Activity-Creating Tween Animation Using XML- Markup Hybrid Animation Using Frames with Tween.

UNIT V   (14 Hours)

Digital Video: Streaming Video, MediaPlayer, and MediaController classes-Android Service Class and Threads: Background Processing- Android Content Providers: Providing Data to Applications.

*Selfstudy and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/ Powerpoint Presentation / Seminar / Quiz / Discussion

Text Book

1. Wallace Jackson, (2014),"Android Applications for Absolutes Beginners", Third Edition, Publisher Apress.

Reference Books

1. W. Frank Ableson Robi Sen Chris King, (2011), "Android in Action", Second Edition -Manning Publications,

2. Shawn Van Every, "Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smartphones and Tablets ".

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	H	H
CO2	H	S	H	S	S
CO3	S	M	H	H	H
CO4	S	S	M	S	M
CO5	H	S	H	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

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

Syllabus

UNIT I   **(14 Hours)**

Understanding Big Data: Introduction – Concepts and Terminology – Big Data Characteristics – Different types of Data. Business Motivation and Drivers for Big Data Adoption: Marketplace Dynamics – Business Architecture – Business Process management – Information and Communications Technology – Internet of Everything (IoE).

UNIT II   **(16 Hours)**

Big Data Adoption and Planning Considerations: Organization Prerequisites - Data Procurement Privacy - Security - Provenance - Limited Real-time Support - Distinct Performance Challenges - Distinct Governance Requirements - Distinct Methodology – Clouds - Big Data Analytics Lifecycle. **Enterprise Technologies and Big Data Business Intelligence**: Online Transaction Processing (OLTP) - **Online Analytical Processing (OLAP)*** - Extract Transform Load (ETL) - Data Warehouses - Data Marts - Traditional BI - Ad-hoc Reports - Dashboards - Big Data BI- Traditional Data Visualization - Data Visualization for Big Data.

UNIT III   (15 Hours)

Storing and Analyzing Big Data: Big Data Storage Concepts- Clusters - File Systems and Distributed File Systems - NoSQL – Sharding – Replication - Master-Slave - Peer-to-Peer - Sharding and Replication - Combining Sharding and Master-Slave Replication - Combining Sharding and Peer-to-Peer Replication - CAP Theorem - ACID – BASE. **Big Data Processing Concepts**: Parallel Data Processing - Distributed Data Processing - Hadoop - Processing Workloads - Batch - Transactional – Cluster.

UNIT IV   (16 Hours)

Processing in Batch Mode - Batch Processing with Map Reduce - Map and Reduce Tasks - Map - Combine - Partition - Shuffle and Sort- Reduce - A Simple Map Reduce Example - Understanding Map Reduce Algorithms - Processing in Real time Mode - Speed Consistency Volume (SCV) - Event Stream Processing - Complex Event Processing – Real time Big Data Processing and SCV – Real time Big Data Processing and Map Reduce. **Big Data Storage Technology**: On-Disk Storage Devices - Distributed File Systems - RDBMS Databases - NoSQL Databases – Characteristics- Rationale – Types - Key-Value - Document - Column-Family - Graph - NewSQL Databases.

UNIT V   (14 Hours)

In-Memory Storage Devices - In-Memory Data Grids - Read-through - Write-through - Write-behind - Refresh-ahead- In-Memory Databases. **Big Data Analysis Techniques**: Quantitative Analysis - Qualitative Analysis - Data Mining - Statistical Analysis - A/B Testing - Correlation - Regression - Machine Learning - Classification (Supervised Machine Learning- Clustering (Unsupervised Machine Learning) - Outlier Detection – Filtering - Semantic Analysis - Natural Language Processing - Text Analytics - Sentiment Analysis - Visual Analysis - Heat Maps - Time Series Plots - Network Graphs - Spatial Data Mapping.

*Self study and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart ClassRoom/Powerpoint presentation/Seminar/Quiz/Discussion

Text Book

1. Thomas Erl,. Wajid Khattak, and Paul Buhler, "Big Data Fundamentals. Concepts, Drivers &Techniques" Pearson Publications, 2016.

Reference Books

1. Seema Acharya and Subhashini C, (2015),"Big Data and Analytics", Wiley Publication

2. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman, (2013), "Big data for dummies",Wiley Publication.

3. Tom White, (2015), "Hadoop: The Definitive Guide", O'Rilly Publication,.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	S
CO2	M	H	M	S	M
CO3	S	H	M	H	M
CO4	S	M	H	M	S
CO5	H	S	S	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

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

Syllabus

UNIT I (14 Hours)

Virtual Reality and Virtual Environment: Introduction – Computer graphics – Real time computer graphics –Flight Simulation – Virtual environments –What is required? – **The Benefits of virtual reality***. **The Historical development of VR**: Introduction – Scientific Landmark.

UNIT II (15 Hours)

3D Computer Graphics: Introduction – **The Virtual world space*** – The perspective projection – Human vision – Stereo perspective projection – 3D clipping – Colour theory – Simple 3D modeling– Illumination models – Reflection models – Shading algorithms- Radiosity– Hidden Surface Removal – Realism-Stereographic image.

UNIT III (16 Hours)

A Generic VR system: Introduction – The virtual environment – The Computer environment– VR Technology– Model of interaction –VR Systems.

Animating the Virtual Environment: Introduction –The dynamics of numbers -The animation of objects - Shape & object in betweening – Free from deformation–Particle system.

UNIT IV **(16 Hours)**

 Human factors: Introduction – The eye - The ear- The somatic senses. VR Hardware:

 Introduction – Sensor hardware –Head-coupled displays –Acoustic hardware –Integrated VR systems.

UNIT V **(14 Hours)**

 Virtual Reality Software: Introduction –Modelling virtual world –Physical simulation-VR toolkits.

 Virtual Reality Applications: Introduction- Engineering – Entertainment – Science – Training.

*Selfstudy and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart Class Room/Powerpoint Presentation/Seminar/Quiz/Discussion

Text Book
    1. John Vince (2007), "Virtual Reality Systems ", Pearson Education Asia.

Reference Books
    1. Adams (2000), "**Visualizations of Virtual Reality**", Tata McGraw Hill.

    2. Grigore C. Burdea, Philippe Coiffet (2006), "Virtual Reality Technology", Wiley

    Interscience, 2ndEdition.

MAPPING

PSO CO	PSO1	PSO2	PSO3	PSO 4	PSO5
CO1	S	S	H	S	S
CO2	S	H	S	H	M
CO3	S	H	M	H	S
CO4	S	M	S	M	H
CO5	H	S	H	S	S

 S – Strong   **H** – High   **M** – Medium   **L** – Low

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 real time scenarios using Azure concept
	CO5	Evaluate the fundamental concepts of cloud storage and demonstrate their use in storage systems

Syllabus

UNIT-I **(14 Hours)**

Cloud Computing Basics: Cloud Computing Overview – Applications – Intranets and the Cloud. Hardware and Infrastructure: Clients– Security– Network - Services.

UNIT-II **(14 Hours)**

Accessing the Cloud: Platforms **– Web Applications* –** Web Browsers**.** Cloud Storage: **Overview –** Cloud Storage Providers**.** Standards: Application – Client – Infrastructure – Service.

UNIT III **(16 Hours)**

Getting started with Microsoft Azure: What is Azure? Azure Resource Manager- Power Shell changes for the Resource Manager and classic deployment models- Role-Based Access Control - The Azure portal - Subscription management and billing - Azure documentation and samples.

UNIT IV **(16 Hours)**

App Service and App Service plans - Creating and deploying Web Apps - Configuring, scaling, and monitoring Web Apps .***What is Azure Virtual Machines?** Virtual machine models- Virtual machine components- Create virtual machines - Connecting to a virtual machine - Configuring and managing a virtual machine - Scaling Azure Virtual Machines.

UNIT V (15 Hours)

Azure Storage - Storage accounts- Storage services- Security and Azure Storage - Creating and managing storage: Create a storage account using the Azure portal, Create a file share and upload files using the Azure portal, Create a table and add records using the Visual Studio Cloud Explorer, Create a storage account using Power Shell, Create a container and upload blobs using Power Shell, AzCopy: A very useful tool, The Azure Data Movement Library.

*Selfstudy and questions for examinations may be taken from the self study portions also

Teaching Methods

Smart Class Room/Powerpoint Presentation/Seminar/Quiz/Discussion

Text Books
1. Anthony T.Velte ,Toby J.Velte, Robert Elsenpeter ,(2010) "Cloud Computing – A Practical Approach".TMH (UNIT I, UNIT II)
2. Michael Collier, Robin Shahan, "Fundamentals of Azure" Second Edition.

Reference Books
1. Rajkumar Buyya, Christian vecchiola , Thamarai selvi,(2013) "Mastering Cloud computing", Mc Gram Hill Edu, (UNIT II, UNIT IV)
2. Haley Beard, (July 2008) "Cloud Computing Best Practices for measuring processes for on demand computing, Applications and data centers in the cloud with SLA's " .
3. Michael Miller , (2009)" Cloud computing – Web based application " , Pearson Edu Inc, First Impression.
4. Hash Bai,Steve Maier,Dan StoltsArchitecting , "Microsoft Azure Solutions "Eastern Economy Edition.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	S
CO2	M	H	M	S	M
CO3	S	H	M	H	M
CO4	S	M	H	M	S
CO5	H	S	H	S	H

S – Strong   **H** – High   **M** – Medium   **L** – Low

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 HumanRights, 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.

UNIT – I   (6 Hours)

Definition, Meaning, Concept ,Theories and Kinds of Human Rights- Evaluation and Protection of Human Rights in India- Development of Human Rights under the United Nations.

UNIT – II   (6 Hours)
United Nations Charter and Human Rights - U.N.Commission on Human Rights-
Universal Declaration of Human Rights - International Covenant on

- Civil & Political Rights
- Economic, Social and Cultural Rights

UNIT – III   (6 Hours)
 Human Rights and Fundamental Rights (Constitution) - Enactments regarding Human Rights

 Laws in India - National Human Rights Commission and State Human Rights Commission.

UNIT – IV **(6 Hours)**

Aged persons and their Human Rights - Human Rights of Persons with Disabilities - Tribal Human Rights in India - Three Generation Human Rights -Social Awareness and Responsibilities of Individuals.

UNIT – V **(6 Hours)**

Rights of Women, Child, Refugees and Minorities –Social media and Human Rights - NGO's in protection of Human Rights - Right to Election.

Text Book

1. Human Rights (2019), Compiled by Kongunadu Arts and Science College, Coimbatore –29.

Reference Book

	Jaganathan,MA.,MBA.,MMM.,ML.,ML.,
1. Human Rights, (2018)	J.P.Arjun Proprietor,Usha Jaganathan
Humanitarian Law and	law series, 1st floor, Narmatha Nanthi
Refugee Law	Street, Magathma Gandhi Nagar, Madurai – 625014.

NON-MAJOR ELECTIVES I – HUMAN RIGHTS

QUESTION PAPER PATTERN

22UHR3N1

(External only)

Duration: 3 Hours   **Max. Marks: 75**

Answer ALL Questions

SECTION A   (5 x 5 = 25 marks)

Short answers, either or type, one question from each unit.

SECTION B   (5 x 10 = 50 marks)

Essay type questions, either or type, one question from each unit.

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

	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.
K1 to K5	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.

Syllabus

Unit I   **(6 Hours)**

Women Studies:

Basic concepts of Women's studies in Higher education, Women's studies perspectives-Socialization- Patriarchy- Women's studies as an academic discipline- Growth and development of Women's studies as a discipline internationally and in India.

Unit II   **(6 Hours)**
Socio-economic Development of Women:
Family welfare measures, role of women in economic development, representation of women in media status of women land rights, Women entrepreneurs, National policy for the empowerment of women.

Unit III   **(6 Hours)**
(6 Hours)

Women's rights – Access to Justice:
Crime against women, domestic violence – physical abuse- verbal abuse – emotional abuse - economic abuse – minorities, dowry- harassment and death, code of conduct for work place, abetment of suicide.

Unit IV   **(6 Hours)**

Women protective acts:
Protective legislation for women in the Indian constitution- Anti dowry, SITA, PNDT, and Prevention Sexual Harassment at Workplace (Visaka case), Domestic violence (Prevention) Act.

Unit V   **(6 Hours)**
Women and Child welfare:
Safety provisions - various forms of mass media, radio, visual, internet, cyber space, texting, SMS and smart phone usage. Healing measures for the affected women and child society by private and public sector, NGO and society.

Teaching Methods

Smart Class Room/ Powerpoint Presentation / Seminar / Quiz / Discussion / Flipped Class

Text Book

1. **Women's Rights** (2021), compiled by Kongunadu Arts & Science College, Coimbatore – 641 029.

Reference Books
1. Rights of Indian women by Vipul Srivatsava. Publisher: Corporate Law Advisor, 2014.
2. Women's security and Indian law by Harsharam Singh. Publisher : Aabha Publishers and Distributors, 2015
3. Women's Property Rights in India by Kalpaz publications, 2016.

NON-MAJOR ELECTIVES I – WOMEN'S RIGHTS

22UWR4N2

Question Paper Pattern

(External only)

Duration: 3 hrs   Max: 75 marks

Answer <u>ALL</u> Questions

Section A (5x5=25)

Short notes – Either – Or/ Type - Question from each unit

Section B (5X10=50)

Essaytype - Either – Or/ Type - Question from each unit

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)

	CO1	Able to know the rights and responsibility of consumers.
K1 to K5	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

Syllabus

UNIT I   **(6 Hours)**

Conceptual Framework - Consumer and Markets: Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E-Commerce with reference to Indian Market, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labeling and packaging along with relevant laws, Legal Metrology. Experiencing and Voicing Dissatisfaction: Consumer buying process, Consumer Satisfaction/dissatisfaction-Grievances-complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process: ISO 10000suite

UNIT II   (6 Hours)

The Consumer Protection Law in India - Objectives and Basic Concepts: Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, restrictive trade practice.

Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels; Adjudicatory Bodies: District Forums, State Commissions, and National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA with important case law.

UNIT III   (6 Hours)

Grievance Redressal Mechanism under the Indian Consumer Protection Law - Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy available; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Leading Cases decided under Consumer Protection law by Supreme Court/National Commission: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity and Telecom Services; Education; Defective Products; Unfair Trade Practices.

UNIT IV   (6 Hours)

Role of Industry Regulators in Consumer Protection

   i. Banking: RBI and Banking Ombudsman

   ii.Insurance: IRDA and Insurance Ombudsman

   iii.Telecommunication: TRAI

   iv. Food Products: FSSAI

   v.Electricity Supply: Electricity Regulatory Commission

   vi.Real Estate Regulatory Authority

UNIT V   **(6 Hours)**

Contemporary Issues in Consumer Affairs - Consumer Movement in India: Evolution of Consumer Movement in India, Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing, Sustainable consumption and energy ratings.

Quality and Standardization: Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance; Role of International Standards: ISO an Overview.

Note: Unit 2 and 3 refers to the Consumer Protection Act, 2086. Any change in law would be added appropriately after the new law is notified.

Teaching Methods:

Smart Class rooms /Power Point Presentations / Seminars/Quiz /Discussion /Flipped Classrooms

SUGGESTED READINGS:

1.   Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) Consumer Affairs, Universities Press.

2.   Choudhary, Ram Naresh Prasad (2005). Consumer Protection Law Provisions and Procedure, Deep and Deep Publications Pvt Ltd.

3.   G. Ganesan and M. Sumathy. (2012). Globalization and Consumerism: Issues and Challenges, Regal Publications

4.   Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, New Delhi

5.   Rajyalaxmi Rao (2012), Consumer is King, Universal Law Publishing Company

6.   Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.

7.   E-books :-www.consumereducation.in

8.   Empowering Consumers e-book,www.consumeraffairs.nic.in

9.   ebook,www.bis.org

10.   The Consumer Protection Act, 2086 and its later versions.

Question paper pattern (External Only)

Duration: 3 hrs   Max: 75 Marks

Section A (5 x 5=25)

Short notes

Either – or / type – question from each unit.

Section B (5 x 10=50)

Essay type

Either – or / type – question from each unit.

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.

Syllabus

Unit I   **(6 Hours)**
Multidisciplinary Nature of Environment
Definition: scope and importance – Need for public awareness - Natural resources – Types of resources – Forest Resources – Water Resources – Mineral Resources – Food Resources – Energy Resources – Land Resources.

Unit II   **(6 Hours)**
Ecosystems
Concept of an ecosystem – Structure and functions of an ecosystem – Procedures, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food web and ecological pyramids – Structure and function of the following ecosystem – Forest Ecosystem –Grassland Ecosystem – Desert Ecosystem – Aquatic Ecosystem.

Unit III   **(6 Hours)**
Biodiversity and its Conservation
Introduction – Definition – Genetic – Species and ecosystem diversity- Bio geographical classification of India – Value of biodiversity – Biodiversity at global, national and local levels– India as a mega - diversity Nation - Hot spot of biodiversity – Threats to biodiversity - Endangered and endemic species of India – Conservation of Biodiversity – Insitu Conservation of Biodiversity – Exsitu Conservation of Biodiversity.

Unit IV   **(6 Hours)**
Environmental Pollution
Definition - Causes, effects and control measures of : Air Pollution – Water Pollution – Soil Pollution – Marine Pollution – Noise Pollution – Thermal Pollution – Nuclear Pollution – Solid Waste Management: Causes, effects, control measures of urban and industrial wastes – Role of individual in prevention of pollution – Pollution case studies – domestic waste water, effluent from paper mill and dyeing, cement pollution – Disaster Management – Food, Drought, Earthquake, Tsunami, Cyclone and Landslide.

Unit V   **(6 Hours)**
Social Issues and the Environment
Sustainable Development – Smart City, Urban planning, Town Planning , Urban problems related to energy – Water Conservation: Rain Water Harvesting and Watershed Management– Resettlement and rehabilitation of people, its problems and concerns, case studies Narmatha Valley Project – Environmental ethics, issues and possible solutions – Climate change, global warming, ozone layer depletion, acid rain, nuclear accidents and holocaust, case studies – Hiroshima and Nagasaki, Chernobyl – Consumerism and waste products – Environmental Protection Act – Air Pollution Act (Prevention and Control) – Water Pollution Act (Prevention and control) – Wild Life Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness – Human Population and the environment – Population Growth and Distribution – Population Explosion – Family Welfare Programme – Environment and Human Health – Human Rights – Value Education – HIV/ AIDS – Women and Child Welfare – Role of Information Technology in Environment and Human Health.

Teaching Methods

Smart Class Room / Powerpoint Presentation / Seminar / Quiz / Discussion / Flipped Class

Text Book

1. P.Arul, **"A Text Book of Environmental Studies",** Environmental Agency, No27,

   Nattarstreet, Velacherry main road, Velacherry, Chennai – 42, First Edition, Nov. 2004.

Reference Books

1. Purohit Shammi Agarwal, "A Text Book of Environmental Sciences", Publisher Mrs.

   Saraswati Prohit, Student Edition, Behind Naswan Cinema Chopansi Road, Jodhpur.

2. Dr.Suresh and K.Dhameja, "Environmental Sciences and Engineering", Publisher

   S.K.Kataria & Sons, 424/6, Guru Nanak Street, Vaisarak, Delhi – 110 006.

3. J.Glynn Henry and Gary W Heinke, "Environmental Science and Engineering", Prentice

   Hall of India Private Ltd., New Delhi – 110 001.

Sub. Code: 22VED201

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

Syllabus

Unit I   **(4 Hours)**

Moral and Ethics: Introduction – Meaning of Moral and Ethics – Social Ethics – Ethics and Culture– Aim of Education.

Unit II   **(6 Hours)**

Life and Teachings of Swami Vivekananda: Birth and Childhood days of Swami Vivekananda – At the Parliament of Religions – Teachings of Swami Vivekananda.

Unit III   **(4 Hours)**

Warriors of our Nation: Subhas Chandra Bose – Sardhar Vallabhbhai Patel – Udham Singh - V.O. Chidambaram Pillai – Bhagat Singh – Tiruppur Kumaran – Dheeran Chinnamalai-Thillaiaadi Valliammai – Velu Nachiyar – Vanchinathan.

UCA97

Unit IV   **(8 Hours)**

Physical Fitness and Mental Harmony: Simplified Physical Exercise – Hand Exercises Leg Exercises – Neuro Muscular Breathing Exercises – Eye Exercises – Kabalabathi Maharasana A & B – Massage - Acupressure – Relaxation – Kayakalpa Yogam Life Force– Aim & Objectives - Principle – Methods. Introspection – Analysis of Thoughts Moralization of Desires - Neutralization of Anger – Eradication of Worries.

Unit V   **(8 Hours)**

Yoga and Meditation – The Asset of India: Yogasanam – Rules & Regulations – Surya Namaskar– Asanas –Sitting – Stanging – Prone - Supine - Pranayama – Naadi Sudhi – Ujjayi– Seethali – Sithkari -Benefits. Meditation – Thanduvasudhi - Agna – Shanthi – Thuriyam – Benefits.

Teaching Methods

Smart Class Room / Powerpoint Presentation / Seminar / Quiz / Discussion / Flipped Class

Text Book

1. **Value Based Education – Moral and Ethics** – compiled by **Kongunadu Arts and Science College** (Autonomous), 2nd Edition (2021).

Reference Books

1. **Swami Vivekananda – A Biography**, Swami Nikhilananda, Advaita Ashrama,India, 24th Reprint Edition (2010).

2. **Gandhi, Nehru, Tagore and other eminent personalities of Modern India**, Kalpana Raja ram, Spectrum Books Pvt. Ltd., revised and enlarged edition (2004).

3. **Freedom Fighters of India**, Lion M.G. Agrawal, Isha Books Publisher, First Edition(2008).

4. **Easy steps to Yoga by Swami Vivekananda**, A Divine Life Society Publication(2000).

5. **Yoga Practices - 1 – The World Community Service Centre** – Vethathiri Publications, Sixth Edition (2017), Erode.

6. **Yoga Practices - 2 – The World Community Service Centre** – Vethathiri Publications –Eighth Edition (2017), Erode.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	S	S
CO2	S	S	S	H	H
CO3	S	H	S	H	H
CO4	S	H	S	H	H
CO5	S	H	H	S	S

S – Strong   **H** – High   **M** – Medium   **L** – Low

Value Education – Moral & Ethics

22VED201

Question Paper Pattern

(External only)

Duration: 3 hours   Total Marks: 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.