KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

DEPARTMENT OF COMPUTER TECHNOLOGY

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2022 – 2023 and Onwards)

KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

Coimbatore – 641 029

DEPARTMENT OF COMPUTER TECHNOLOGY

Vision:

- ✓ The Department of Computer Technology strives to provide a rigorous intellectual environment that fosters the search for new knowledge in a highly dynamic computing-centric society and changing students into critical thinkers and lifelong learners who can apply their knowledge and skills for the betterment of society.

Mission:

- ✓ Provide a current, comprehensive, and collaborative student-centered learning environment for Computer Technologies and professional values associated with discipline. Prepare students for professional careers. Promote the discovery, dissemination and application of computing knowledge.

PROGRAMME OUTCOMES (PO)

PO1 Enhance the skills and new computing technologies through practical and theoretical knowledge of computer science and software engineering.

PO2 Pursue higher education or practice as computing professionals to earn a living and to contribute to the economic development of the region, state and nation.

PO3 Apply the knowledge in Computer Science required to work as a team as well as to lead a team.

PO4 Ability to analyze a problem, identify and define the computing requirements appropriate to its solution.

PO5 Apply basic terminologies and principles in problem solving scenarios through various hands on experiences.

PO6 Work as Hardware Designers with the knowledge of Networking Concepts**.**

PO7 Ability to apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design of computer-based systems.

PO8 Analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1 Identify, formulate and solve computer related problems in a way that demonstrates comprehension of the tradeoffs involved in.

PSO2 An ability to select and apply current techniques, skills, and tools necessary for problem solving and integrate Computer Technology based solutions into the user environment effectively.

PSO3 Apply design and development principles in the construction of software systems of varying complexity.

PSO4 Provide effective and efficient real time solutions using acquired knowledge in various domains.

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.

UCT 1

KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]

COIMBATORE - 641029

Course Name: **B.Sc. COMPUTER TECHNOLOGY [B.Sc CT]**

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 hours/Cycle	Exam. Marks			Duration of Exam(hours)	Credits
					CIA	ESE	Total		
I	I	22TML1A1	Language - I @	6	50	50	100	3	3
	II	22ENG101	English - I	6	50	50	100	3	3
	III	22UCT101	Core Paper 1- C Programming	5	50	50	100	3	4
	III	22UCT1CL	Core Practical 1 - C Programming Lab	5	50	50	100	3	2
	III	22UCT1A1	Allied Paper 1 - Discrete Mathematics and Statistics	6	50	50	100	3	5
	IV	22EVS101	Environmental Studies**	2	-	50	50	3	2
Total				**30**	-	-	**550**	-	**19**
II	I	22TML2A2	Language - II @	6	50	50	100	3	3
	II	22ENG202	English - II	6	50	50	100	3	3
	III	22UCT202	Core Paper 2 - Digital Logic and Circuit Designs	4	50	50	100	3	4
	III	22UCT203	Core Paper 3 - Object Oriented Programming with C++	3	50	50	100	3	4
	III	22UCT2CM	Core Practical 2 - Object Oriented Programming with C++ Lab	3	50	50	100	3	2
	III	22UCT2A2	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**	-	**23**
III	III	22UCT304	Core Paper 4 - Operating Systems	5	50	50	100	3	4
	III	22UCT305	Core Paper 5 - Data Structures and Algorithms	5	50	50	100	3	4
	III	22UCT306	Core Paper 6 - Java Programming	5	50	50	100	3	4
	III	22UCT3CN	Core Practical 3 - Java Programming Lab	5	50	50	100	3	2
	III	22UCT3A3	Allied Paper 3 – Organizational Behavior and Communication Skills	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**

IV	III	22UCT407	Core Paper 7 - Relational Database Management Systems	5	50	50	100	3	4
	III	22UCT408	Core Paper 8 - .NET Framework	4	50	50	100	3	4
	III	22UCT409	Core Paper 9 - Computer Networks	5	50	50	100	3	4
	III	22UCT4CO	Core Practical 4 - .NET Framework and Oracle Lab	6	50	50	100	3	2
	III	22UCT4A4	Allied Paper 4 – Computer System Architecture	6	50	50	100	3	5
	IV	22UCT4SL	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**
V	III	22UCT510	Core Paper 10 - Software Engineering and Testing	5	50	50	100	3	4
	III	22UCT511	Core Paper 11 - Wireless Ad-Hoc Network	6	50	50	100	3	5
	III	22UCT512	Core Paper 12 - Data Mining and Warehousing	6	50	50	100	3	5
	III	22UCT5E1	Major Elective - 1	5	50	50	100	3	5
	III	22UCT5CP	Core Practical 5 - Software Engineering and Testing Lab	6	50	50	100	3	2
	IV	-	Extra Departmental Course	2	100	-	100	3	3
	-	22UCT5SP	Aptitude and Logical Reasoning****	Grade					
Total				**30**	-	-	**600**	-	**24**
VI	III	22UCT613	Core Paper 13 - PHP	6	50	50	100	3	4
	III	22UCT614	Core Paper 14 - Information Security	6	50	50	100	3	4
	III	22UCT6CQ	Core Practical 6 – PHP Programming Lab	6	50	50	100	3	2
	III	22UCT6E2	Major Elective - 2	5	50	50	100	3	5
	III	22UCT6Z1	Project and Viva-Voce***	5	50	50	100	-	5
	IV	22UCT6SM	Skill Based Subject 3 - Hardware Installation and Networking Lab	2	50	50	100	3	3
	-	-	SWAYAM – MOOC	-	-	-	-	-	2
Total				**30**			**600**		**25**
	V	22NCC$/NSS/ YRC/ PYE / ECC / RRC / WEC101#	Co-curricular Activities *	-	50	-	50	-	1
Grand Total				-	-	-	**3800**	-	**140**

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. Project will not be allocated for staff workload.

******** - Aptitude and Logical Reasoning: The Written examination will be conducted and evaluated for 100 marks. 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. Web Development Languages
2. Cloud Computing
3. Mobile Application Development
4. Internet of Things
5. Big Data Analytics and Data Science
6. Artificial Intelligence

Non-Major Elective Papers

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

Subject Code and Title of the Extra Departmental Course (EDC):

22UCT5XL - Web Development and Google App Lab

 # 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
		Allied	400	20
		Electives / Project	300	15
	-	SWAYAM– MOOC	-	2
4.	IV	Basic Tamil/ Advanced Tamil/Non Major Elective	150	4
		Skill Based Subjects	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 SBS1 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)

<table>
<tr><th colspan="2">Components</th><th>Marks</th><th>Total</th></tr>
<tr><td colspan="4">Theory</td></tr>
<tr><td>CIA I</td><td>75</td><td rowspan="2">75 + 75
Converted to 30</td><td rowspan="4">50</td></tr>
<tr><td>CIA II</td><td>75</td></tr>
<tr><td colspan="2">Problem Based Assignment**</td><td>10</td></tr>
<tr><td colspan="2">Attendance</td><td>5</td></tr>
<tr><td colspan="2">Others *</td><td>5</td></tr>
<tr><td colspan="4">Practical</td></tr>
<tr><td colspan="2">CIA Practical</td><td>50
Converted to 30</td><td rowspan="3">50</td></tr>
<tr><td colspan="2">Observation Notebook</td><td>15</td></tr>
<tr><td colspan="2">Attendance</td><td>5</td></tr>
<tr><td colspan="4">Project</td></tr>
<tr><td colspan="2">Review</td><td>45</td><td rowspan="2">50</td></tr>
<tr><td colspan="2">Regularity</td><td>5</td></tr>
</table>

* 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).

UCT-13

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:

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

ESE Project Viva Voce:

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

Sub. Code**: 22UCT101**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper: **Core Paper 1 – C Programming**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	4

Course Objectives

1. To impart adequate knowledge on the need of programming languages and problem solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To provide exposure to problem-solving through C programming.
4. To familiarize the basic syntax and semantics of C Language.

Course Outcomes (CO)

K1 to K5	CO1	Recollect various programming constructs and to develop C programs.
	CO2	Understand the fundamentals of C programming.
	CO3	Choose the right data representation formats based on the requirements of the problem.
	CO4	Analyze different Operations on arrays, functions, and pointers,
	CO5	Evaluate the usage of structures, unions and files.

Syllabus

UNIT I **15 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– Type conversions in Expressions – Operator precedence and Associativity - Managing Input and Output operations: Reading and Writing Character - Formatted Input – Formatted Output.

Sub. Code: **22UCT101**

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. Looping: The while statement – The do statement – The for statement – **Jumps in loops***.

UNIT III **15 Hours**

Arrays : Introduction – one dimensional Arrays – Declaration of one dimensional Arrays – 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 – Passing Arrays to Functions – The Scope, Visibility and Lifetime of Variables.

UNIT IV **15 Hours**

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

UNIT V **15 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 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 Class Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

Sub. Code: **22UCT101**

TEXT BOOK

1. E. Balagurusamy, (2011), **Programming in ANSI C**, Fifth Edition, Tata Mc Graw Hill Publication.

REFERENCE BOOKS

1. Ashok N Kamthane, (2007), **Programming with ANSI and Turbo C**, Pearson Education Publication.
2. P.J.Deitel and H.M.Deitel, (2008), **C How to Program**, Fifth Edition, Tata Mc Graw Hill Publication.

MAPPING

PSO / CO	PSO 1	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	S	M	S	S	S

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

Sub. Code: **22UCT1CL**

Programme Code : 11	**B. Sc Computer Technology**		
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 the field of programming using C language.
2. To enhance the analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3 to K5	CO1	Develop logical and programming skills using the fundamentals and basics of C Language.
	CO2	Apply effective usage of arrays and strings.
	CO3	Implement functions to arranging set of values using different sorting techniques.
	CO4	Apply pointers to perform memory management.
	CO5	Implement files and command line arguments.

LIST OF PRACTICAL PROGRAMS

1. Write a C program to find the roots of a Quadratic Equation.
2. Write a C program to find the greatest and smallest number from set of numbers.
3. Write a C program to find the sum, average, standard deviation from set of numbers.
4. Write a C program to find the given input is a palindrome or not.
5. Write a C program to perform String functions.
6. Write a C program to arrange a set of numbers in ascending order using bubble sort.
7. Write a program to convert decimal to binary using recursive function.
8. Write a C program Using function to perform following operation.
    - ✓ Read two integer arrays with unsorted elements.
    - ✓ Sort them into ascending order.
    - ✓ Merge the sorted arrays and print the elements.
9. Write a generalized program to perform matrix operation.

Sub. Code: **22UCT1CL**

10. Write a program to print the student's mark statement using Structure.
11. Write a program to manipulate array elements using Pointers.
12. Write a program to display an image using graphics in C.
13. Write a program, which takes a file as command line argument, and copy it to another file. At the end of the second, file writes
    - ✓ Number of characters
    - ✓ Number of words
    - ✓ Number of lines

Guidelines to the distribution of marks for practical examinations

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector

MAPPING

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

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

Sub. Code: **22EVS101**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Part IV - Environmental Studies****			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	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 "Ecocitizens" 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	CO 1	Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities and ecosystems.
	CO2	Develop an in depth knowledge on the interdisciplinary relationship of cultural, ethical and social aspects of global environmental issues.
	CO3	Acquiring values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones.
	CO4	To gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity.
	CO5	To appraise the major concepts and terminology in the field of environmental pollutants, its interconnections and direct damage to the wildlife, in addition to human communities and ecosystems.

Sub Code: **22EVS101**

Syllabus

UNIT I MULTIDISCIPLINARY NATURE OF ENVIRONMENT 6 Hours

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 ECOSYSTEMS 6 Hours

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 BIODIVERSITY AND ITS CONSERVATION 6 Hours

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 ENVIRONMENTAL POLLUTION 6 Hours

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 SOCIAL ISSUES AND THE ENVIRONMENT 6 Hours

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 –

Sub Code: **22EVS101**

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 / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOK

1. P.Arul, **A Text Book of Environmental Studies, Environmental Agency**, No 27, Nattar street, Velacherry main road, Velacheery, Chennai – 42, First Edition, Nov.2004.

REFERENCE BOOKS

1. Purohit Shammi Agarwal, A text Book of **Environmental Sciences**, Publisher Mrs.Saraswati Prohit, Student Education , 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

Question Paper Pattern

Duration: 3 hours Total Marks : 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.

Sub. Code: **22UCT202**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 2 – Digital Logic and Circuit Designs**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	4	60	4

Course Objectives

1. The students should get the Knowledge about the Number System, Number representation and Number Conversion.
2. To learn the concept of Digital Circuits, Circuit Constructions and Simplifications of Boolean functions.
3. To know the concept of Arithmetic Circuits, Combination Circuits, Counters and Registers.

Course Outcomes (CO)

K1 to K5	CO1	Retain the information about the Computer Number systems and conversions in Digital Computer System.
	CO2	Understand the concepts of Boolean expressions, Logic Gates and toapply the methods to simplifying the Boolean expression.
	CO3	Apply the knowledge to perform arithmetical operations using various logical circuits and to design various Synchronous and Asynchronous.
	CO4	Analyse the function of Counters and Registers.
	CO5	Evaluate the working nature of various Flip-Flops and Circuits.

Syllabus

UNIT I **14 Hours**

Number System and Codes: Introduction – Number System – Floating Point Representation of Numbers - Arithmetic Operation – 1's and 2's Complement – 9's and 10's Complement – BCD – Codes. Logic Gates: Introduction – Logic Gates.

Sub. Code: **22UCT202**

UNIT II **10 Hours**

Boolean Algebra and Minimization Techniques: Introduction – Boolean Logic Operations – Basic Laws of Boolean Algebra – Demorgan's Theorems – Sum of Products and Product of Sums – Karnaugh Map(Upto Four Variable).

UNIT III **12 Hours**

Arithmetic Circuits: Introduction – Procedure – Half-Adder – Full-Adder – Half-Subtractor - Full-Subtractor - Parallel Binary Adder – Serial Adder - BCD Adder – Binary Multiplier – Binary Divider.

UNIT IV **12 Hours**

Combination Circuits : Multiplexer – De-multiplexer – Decoder – Encoders. Flip-Flops: Introduction – Latches – Flip-Flops: S-R, D, J-K and T – **Triggering of Flip-Flops***.

UNIT V **12 Hours**

Counters : Introduction – Asynchronous Counter – Synchronous Counters. Registers: Introduction – Shift Registers – Shift Counters.

*** 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 / Flipped Class

TEXT BOOK

1. S. Salivahanan, S.Arivazhagan, (2007), **Digital Circuits and Design**, 3rd Edition.

REFERENCE BOOKS

1. Morris Mano, (2011), **Digital Logic and Computer Design**, Thirteenth impression,Tata McGraw Hill Publication. (UNIT I, II and III)
2. Leach Malvnio, (2005), **Digital Principles & Application** , Fifth Edition, Tata McGraw Hill Publication.

Sub. Code: **22UCT202**

MAPPING

PSO / CO	PSO 1	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	M	S	S

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

Sub. Code: **22UCT203**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 3 – Object Oriented Programming with C++**			
Batch 2022 - 2023	**Hours / Week** 3	**Total Hours** 45	**Credits** 4

Course Objectives

1. To develop a greater understanding of the issues involved in programming language design and object oriented paradigms and its implementation.
2. To impart adequate knowledge on the need of object oriented programminglanguages.
3. To enhance problem solving and programming skills in C++ by implementing the object oriented concepts.

Course Outcomes (CO)

K1 to K5	CO1	Remember the characteristics of Procedure and Object Oriented Programming Languages.
	CO2	Understand the fundamentals of C++ programming structure, function overloading and constructors.
	CO3	Examine different C++ features such as composition of objects, Operator overloading and inheritance.
	CO4	Analyse the performance of run-time polymorphism usingpointers and virtual functions.
	CO5	Evaluate the usage of object oriented programming in terms of software reuse and managing complexity to solve real-world problems.

Syllabus

UNIT I **9 Hours**

Principles of OOP: Software Evolution - Procedure versus OOPS - Basic concepts of oops-Benefits of OOPS - Object Oriented Languages - Applications of OOPS.

Beginning with C++: History - Simple C++ Program - Structure of C++ Program. Tokens,Data types, Reference Variables – Typecasting – Operators - Control Structures.

Sub. Code : **22UCT203**

UNIT II **9 Hours**

Functions: Function Prototyping - Call by reference - Return by reference - Inline function -Default arguments - Function Overloading.

Classes & Objects: Specifying a class - Defining member function-Member allocation for objects - Static member - Array of objects - Object as function arguments - friend functions - returning objects - pointers to members.

UNIT III **9 Hours**

Constructors & Destructors: Constructor and its types - **Destructors*.**

Operator Overloading: Definition - Overloading unary and binary operators - Manipulation of strings using operators - Rules for operator overloading - Type conversions.

Inheritance: Introduction - Defining derived classes - Types of inheritance - Virtual base classes - Abstract- Constructors in derived classes.

UNIT IV **9 Hours**

Pointers: Declaration - Pointers to objects - Pointers to derived class - this pointer- Polymorphism & virtual functions. Managing console I/O operations - Formatted & Unformatted I/O.

UNIT V **9 Hours**

Files: Classes for file stream operations - Opening and closing a file - Detecting EOF - Manipulation of file pointers - Sequential I/O operations - **Command line arguments***.

Exception handling: Basics of exception handling - Exception handling mechanism - Try,Catch, Throw.

*** 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 / Flipped Class

Sub. Code : **22UCT203**

TEXT BOOK

1. E. Balagurusamy, (2012), **Object Oriented Programming with C++,** Fifth Edition, Tata Mc Graw Hill Publication.

REFERENCE BOOKS

1. Ashok N Kamthane, (2003), **Object Oriented Programming with ANSI and Turbo C++,** Pearson Education Publication.
2. Yashavant Kanetkar, (2004**), Introduction to Object Oriented Programming and C++,** First Edition, BPB Publication.

MAPPING

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

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

Sub. Code : **22UCT2CM**

Programme Code : 11	**B. Sc Computer Technology**		
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 the programs for solving the problems using function overloading, constructors, classes and object.
2. To apply the object oriented programming concepts to solve the problems.

Course Outcomes (CO)

K3 to K5	CO1	Implement the concepts of object oriented programming.
	CO2	Apply string functions to perform operator overloading.
	CO3	Analyze virtual functions and inheritance.
	CO4	Apply sequential file I/O operations to manipulate a text file
	CO5	Evaluate the implementation of command line arguments.

LIST OF PRACTICAL PROGRAMS

1. Write a C++ program to implement the concept of functions and friend functions.
2. Write a C++ program to perform on concept of function overloading.
3. Write a C++ program to implement the concept of classes and objects.
4. Write a C++ program to perform arithmetic operations using constructors and destructors.
5. Write a C++ program to perform function overloading using this pointer.
6. Write a C++ program to perform Operator Overloading concept.
7. Write a C++ program to perform string manipulation operations.
8. Write a C++ program to prepare employee pay slip using console I/O.
9. Write a C++ program to find Area and Perimeter using Virtual function and inheritance concept.
10. Write a C++ program to perform file manipulations and export the file.
11. Write a C++ program to perform file copy using command line arguments.
12. Write a C++ program using exception handling,

Sub. Code: **22UCT2CM**

Guidelines to the distribution of marks for practical examinations

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector.

MAPPING

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

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

Sub. Code: **22VED201**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Part IV - Value Education - Moral and Ethics****			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	2

Course Objectives

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

Course Outcomes (CO)

K1 to K5	CO1	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

Sub. Code: **22VED201**

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

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 - LifeForce – 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 / Power point 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, 24thReprint Edition (2010).

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

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

Sub. Code: 22VED201

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.

Value Education – Moral & Ethics

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.

Sub. Code: **22UCT304**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 4 – Operating Systems**			
Batch 2022 - 2023	**Hours / Week** 5	**Total Hours** 75	**Credits** 4

Course Objectives

1. To learn the fundamentals of Operating Systems.
2. To understand the structure and organization of the file system, process management,CPU Scheduling and Memory Management.
3. To provide the design principles of Android operating system.

Course Outcomes (CO)

K1 to K5	CO1	Recollect the basic functionality of the salient features of operating systems like DOS history, Processing states, Interrupts and Switching concepts.
	CO2	Understand the concepts of storage management, paging and page replacement concepts.
	CO3	Apply various optimization techniques in operating systems.
	CO4	Analyse the implementation and avoidance of Deadlock in multiprogramming systems.
	CO5	Evaluate the functionalities of Android operating system.

Syllabus

UNIT I **15 Hours**

Introduction - What is an OS? -Mainframe system-Desktop Systems-Multiprocessor systems-Distributed systems-Clustered systems-**Real-Time systems***. Operating system structures: System components-OS services-System calls.

UNIT II **15 Hours**

Process Management: Process concept -process scheduling-Operations on process – Cooperating Process-inter-process communication.CPU scheduling: Basic Concepts - Scheduling criteria-Scheduling algorithms-Multiple-processor Scheduling-Real-Time Scheduling.

Sub. Code: **22UCT304**

UNIT III **15 Hours**

Deadlocks: Deadlock characterization-Methods for handling Deadlocks - Deadlocks prevention - Deadlock avoidance - deadlock detection – Recovery from Deadlock. Memory management: Background – Swapping - Contiguous memory allocation - paging – segmentation - segmentation with paging.

UNIT IV **15 Hours**

Virtual memory: Demand paging-Process creation - Page replacement - Thrashing. I/O Systems: Disk structure - Disk scheduling – Disk management – **Swap Space management** *. File systems: File concepts - Access methods - Directory structure - File system structure- Directory implementation - Allocation methods - Recovery.

UNIT V **15 Hours**

Case Studies: Android – WAP - Open handset alliance - Android platform - Configure develop environment - SDK license agreement-Exploring the core android application framework- Android emulator - **Testing your development environment***- Building your first android application - Create and configure - Core files and directories - Launch configuration - Running.

*** 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 / Flipped Class

TEXT BOOKS

1. Abraham Silberschatz, Galvin, Gagne (2004) , **Operating Systems Concepts**, Sixth Edition,John Wiley & Sons. (Unit I – IV)
2. Lauren Darcey, Shane Conder, (2012),**Android – Wireless Application Development** (Volume - I, Third Edition, Pearson Publication. (Unit V)

REFERENCE BOOKS

1. Achyut S Godbole, (2006), **Operating Systems**, Tata Mc Graw Hill Publication.
2. Jorg H.Kloss, (2013), **Android Apps with APP Inventor** ,Pearson Publication.

Sub. Code: **22UCT304**

MAPPING

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

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

Sub. Code: **22UCT305**

Programme Code:11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 5 - Data Structures and Algorithms**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	4

Course Objectives

1. To impart the basic concepts of data structures and algorithms.
2. To understand the basic concepts of searching and sorting algorithms.
3. To teach efficient storage mechanisms of data for an easy access.

Course Outcomes (CO)

K1 to K5	CO1	Remember the efficiency of algorithms and its Paradigms.
	CO2	Understand the operations of Linked Lists, Stacks and Queues.
	CO3	Apply the Data Structure in Real Time Problem Solving.
	CO4	Analyze the Trees and Graphs.
	CO5	Evaluate the usage of Sorting and Searching Techniques.

Syllabus

UNIT I **15 Hours**

Algorithms – Efficiency of an Algorithm – Asymptotic Notations – Algorithmic Paradigm. Data Structure: Introduction - The List Abstract Data Type – Linked Lists – Types of Linked Lists – Basic Operations in a Singly Linked Lists - Basic Operations in a Doubly Linked Lists - Basic Operations in a Circular Singly Linked Lists - Basic Operations in a Circular Doubly Linked Lists.

UNIT II **15 Hours**

Stacks and Queues: Stacks – Representation of Stacks using Arrays – Representation of Stacks using Linked Lists – Evaluation of Arithmetic Expressions – Queues – Types of Queues – Representation of Linear Queues using Arrays - Representation of Linear Queues using Linked Lists - Representation of Circular Queues using Arrays - Representation of Linear Queues using Arrays.

UNIT III **15 Hours**

Sorting and Searching: Introduction – Bubble Sort – Insertion Sort – Selection Sort – Shell Sort – Quick Sort – Merge Sort – Radix Sort – Heap Sort – External Sorting – Linear Search – Indexed Sequential Search – Binary Search – Fibonacci Search – **Hashing***.

UNIT IV **15 Hours**

Graphs: Introduction - Graph Representation and its Operations – Path Matrix – Graph Traversals – Applications of DFS – Shortest Path Algorithm – Minimum Spanning Tree.

UNIT V **15 Hours**

Trees: Trees - Binary Trees – Representation of Binary Trees – Binary Tree Traversal – Conversion of General Trees to Binary Trees – Binary Search Trees - **Threaded Binary Trees** * – Binary Heaps.

***-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 / Flipped Class

TEXT BOOK

1. J. John Manoj Kumar and P. Sudharsan (2007), **Data Structures Using C**, Second Edition, RBA Publications.

REFERENCE BOOKS

1. Robert Kruse, C.L, Jondo Bruce Leung, (2006), **Data Structures and Program Design In C**, Second Edition, Pearson Edition Asia.
2. Alfred V. Aho , Jeffrey D. Ullman, John E. Hopcroft (2012), **Data Structures and Algorithms,** Nineth Edition , Pearson Publication.
3. Dr. A. Chitra and P.T. Rajan (2008), **Data Structures**, First Edition, Mc Graw Hill Education (India) Pvt. Ltd.

Sub. Code: **22UCT305**

MAPPING

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

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

Sub. Code: **22UCT306**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 6 – Java Programming**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	4

Course Objectives

1. To understand the difference between C, C++ and Java programs.
2. To explore the Java Applications and to identify the variations between Stand alonejava applications and Web based applications.
3. To provide the advanced concepts in java programming like Package, Multi Thread,Applet, interface and AWT Components.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of OOPs, Data Types, ControlStatements and Tokens.
	CO2	Understand the concepts interface, package and multithreading.
	CO3	Apply the concepts Package, Thread and Applet.
	CO4	Customize AWT components and event handling.
	CO5	Evaluate the usage of Swing and Java Beans.

Syllabus

UNIT I **15 Hours**

JAVA Evolution: OOPS Concept- History – Features – How Java differs from C and C++ - Java and Internet. Overview of Java Language: Introduction – Simple Java program – Structure – java Tokens – Statements- Scope of Variable – Data types – **Operators** * - Class- Object- Method – Final – Static.

UNIT II **15 Hours**

Arrays- Strings-Inheritance: Introduction-Types of Inheritance.

Interfaces: Multiple Inheritances. Packages: Putting classes together- Multi Threaded Programming - Managing Errors and Exceptions.

Sub. Code: **22UCT306**

UNIT III **15 Hours**

Files: Introduction – Concept of Streams – Stream classes – I/O Exceptions – Reading / Writing characters / Bytes- Handling primitive data types – **Random Access Files ***. Applet programming – Graphics programming – Color - Font.

UNIT IV **15 Hours**

AWT – Introduction – AWT Classes – Container - Labels – PushButtons – CheckBoxs – ChoiceList – List - TextField - TextArea - ScrollBar - MenuBar.

Event Handling – ActionEvent – KeyEvent – MouseEvent – MouseWheelEvent -Item Event. Interface – ActionListener – ItemListener – KeyListener – MouseListener - MouseMotionListener - MouseWheelListener.

UNIT V **15 Hours**

Swing Concepts – Introduction- Component & Containers – Swing Packages – Jlabel – JtextField - JButton – JtabbedPane – JTree – JTable. Java Beans – Introduction –Java Bean API- Simple Java Bean API.

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

Teaching Methods

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

TEXT BOOKS

1. E. Balagurusamy, (2010), **Programming with Java – A Primer**, Fourth Edition, Tata Mc Graw Hill Publication. (Unit I, II and III)
2. Patrick Naughton, (2006), **Java Hand Book**, Tata MCGraw Hill Publication.(Unit IV)
3. Herbert Schildt (2011), **The Complete Reference Java**, 7th Edition, Tata Mc Graw Hill. (Unit V)

Sub. Code: **22UCT306**

REFERENCE BOOKS

1. Patrick Naughton, Herbert Schildt, (2008), **The Complete Reference Java 2**, FifthEdition, Tata Mc Graw Hill Publication.
2. C. Xavier, (2006), **Programming with Java 2**, First Edition, Scitech Publication.

MAPPING

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

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

Sub. Code : **22UCT3CN**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Practical 3 – Java Programming Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	2

Course Objectives

1. To explore the knowledge in stand Alone java applications and web based Applications.
2. To understand the usage of Classes, Package, Interface, Multi Threading, Exception, Applet and AWT.
3. To get the overall idea about java programming structure.

Course Outcomes (CO)

K3 to K5	CO1	Practice the concepts of OOPs, java control statements, data types and Tokens.
	CO2	Review the java package, interface, applet and AWT Components.
	CO3	Work out all the java unique statements through the programs.
	CO4	Explore the usage of event handling mechanisms.
	CO5	Implement the concepts Java swing and Beans.

LIST OF PRACTICAL PROGRAMS

1. Write a program to perform Stack Operation.
2. Write a java program to perform string functions using constructor and user defined package.
3. Write a java program to illustrate multiple inheritances.
4. Write a program to perform thread concept.
5. Write a program to illustrate exception concepts.
6. Write a program to illustrate Applet concepts.
7. Write a java program illustrates file concepts and export the file.
8. Write a program to perform inventory control using AWT components.
9. Write a java program to perform Mouse Event operations

Sub. Code : **22UCT3CN**

10. Write a Java program to demonstrate the multiple selection listbox.
11. Write Java program to create a menu bar and pull down menus.
12. Write a program to illustrate Key Event operations.
13. Write a java program to perform student mark statement using swing concept.
14. Write a java program to design file explorer using JTree concept.
15. Write a java program to implement simple Java Bean Concept.

Guidelines to the distribution of marks for practical Examinations:

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector.

MAPPING

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

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

Sub.Code: **22UCT3A3**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper: **Allied Paper 3 - Organizational Behavior and Communication Skills**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	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 and communication skills 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	Preparing and delivering effective role of business communication.
	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	Analyzing the business communication skills.

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: **22UCT3A3**

UNIT III **18 Hours**

Introducing Communication: The Communication Cycle- Brain Drain – The importance of Effective Communication in Business. Soft Skills: Defining Soft Skills – The Importance of Soft Skills – Kinds Soft Skills – How to develop Soft Skills.

UNIT IV **18 Hours**

Interpersonal Communication: Intrapersonal and Interpersonal Communication – Characteristics of Interpersonal Communication – Importance of Interpersonal Communication – How to Develop Interpersonal Skills.

UNIT V **18 Hours**

Need, Function and Kinds of a Business Letter: Need of a Business Letter- Functions of a Business Letter – Kinds of a Letter - Kinds of a Business Letter . Job Application Letter and Resumes: Introduction – A Personal Analysis – Types of Application Letters – Writing Application Letters and Resumes: General Guidelines – The Form and Content of an Application Letter – Resume / Biodata / Curriculum Vitae - **Specimen Application Letter and Resume***.

*** Self Study and questions for examinations may be taken from the self study portionsalso.**

Teaching Methods

Smart Class Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOKS

1. L. M. Prasad, (2004), **Principles & Practice of Management**, Sultan Chand & Son (Units I, II).
2. Rajendra Pal, J. S. Korlahalli (2013), **Essentials of Business Communication**, Sultan Chand & Son. (Units III, IV & V).

REFERENCE BOOKS

1. Tripathy and Reddy, **Principles of Management**, Tata McGraw Hill (Unit I, II)
2. Callie Daum (2020), **Principles of Management**, Vibrant Publications.

Sub. Code: **22UCT3A3**

MAPPING

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

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

Sub Code : **22UGC3S1**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Skill Based Subject 1 – Cyber Security**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	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	CO1	To understand the concepts of Cyber crime and Cyber Frauds.
K2	CO2	To know about Cyber Terrorism and its preventive measures.
K3	CO3	To analyze about the Internet, Mobile Phone and E-commerce security issues.
K4	CO4	To understand about E-mail and Social Media issues.
K5	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 **5 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.

Sub Code : **22UGC3S1**

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 **7 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

Smart Class Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

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 Cyber Security**, 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.

Sub. Code: 22UGC3S1

WEB REFERENCES

1. http://deity.gov.in/ - Department of Electronics and Information Technology, Govt. of India.
2. http://cybercellmumbai.gov.in/ - Cybercrime investigation cell.
3. http://ncrb.gov.in/ - National Crime Records Bureau.
4. http://catindia.gov.in/Default.aspx - Cyber Appellate Tribunal.
5. http://www.cert-in.org.in/ - Indian Computer Emergency Response Team.
6. http://cca.gov.in/rw/pages/index.en.do - Controller of Certifying Authorities.
7. www.safescrypt.com - Safescrypt.
8. www.nic.in – National Informatics Centre.
9. https://www.kaspersky.com/resource-center/definitions/what-is-a-digital-footprint
10. https://geekflare.com/digital-footprint/

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: **22UCT407**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 7 – Relational Database Management Systems**			
Batch 2022 - 2023	**Hours / Week** 5	**Total Hours** 75	**Credits** 4

s

Course Objectives

1. To develop the knowledge in various Database concepts, queries, normalization and reports.
2. To be able to construct a new normalized database.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of database management systems and database techniques.
	CO2	Understand Data constraints and CODDs rules, DML and DDL statements of ORACLE,
	CO3	Apply various DDL and DML statements, joins queries, PL / SQL statements.
	CO4	Analyze the granting and revoking permissions in cursors.
	CO5	Evaluate the usage of normalization in relational database management system.

Syllabus

UNIT I **15 Hours**

Introduction: Purpose of Database Systems - View of Data - Data Models - Database Languages - Database Administrator - Database Users. Entity Relationship Model: Basic concepts – Mapping Cardinalities - Entity Relationship Diagram- E-R Features - Relational Model: Structure of Relational Databases - Relational Algebra.

UNIT II **15 Hours**

Interactive SQL : Invoking SQL * Plus- data definition- data manipulation in DBMS – The oracle data types – DML and DDL statements-Data constraints - arithmetic, logical operators- oracle functions - grouping data from tables - manipulating dates - union, intersect and minusclause - Granting permissions - Revoking permissions - Codd's Rules.

Sub. Code : **22UCT407**

UNIT III **15 Hours**

PL/SQL: Introduction, PL/SQL syntax, understanding PL/SQL block structure, oracle transactions, cursors, stored procedures, stored functions, database triggers – **Creating Default Tabular Report***.

UNIT IV **15 Hours**

SQL: Nested Sub queries - Derived Relations – **Views** * - Joined Relations. Integrity Constraints: Domain Constraints- Referential Integrity - Assertions.

UNIT V **15 Hours**

Functional Dependencies - Relational Database Design: Pitfalls – Normalization-First Normal Form, Second Normal Form, Third Normal Form and BCNF.

*** 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 / Flipped Class

TEXT BOOKS

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, (2006), **Database System Concepts**, Fifth Edition, Tata McGraw Hill Publication. (Unit I, IV and V).
2. Ivan Bayross, (2007), **Commercial Application Development Using ORACLE Developer 2000**, First Edition. (Unit II and III).

REFERENCE BOOKS

1. Bipin. C. Desai, (2000), **An Introduction to Database Systems**, First Edition, Galgotia Publication.
2. Ivan Bay Ross(1995), **Oracle 7 - The Complete Reference**, First Edition, BPBPublications, Chennai.

Sub. Code : **22UCT407**

MAPPING

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

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

Sub. Code : **22UCT408**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 8 – .NET Framework**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	4	60	4

Course Objectives

1. To design and develop the distributed event driven programming in both VB and .Net framework
2. To apply CLR, .NET framework classes and ADO.Net.
3. To analyze the Properties, Events and Methods in .Net Environment.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic Visual basic concepts and advanced features of VB.Net.
	CO2	Understand the concepts of .Net framework Technology and summarize the advantages and disadvantages of .Net framework.
	CO3	Apply the web applications using VB.Net.
	CO4	Analyze the distributed event driven programming using .Net framework.
	CO5	Assess the database connectivity in windows and web applications.

Syllabus

UNIT I **12 Hours**

Essential Visual Basic – Upgrading from Visual Basic - .Net Frame work and the CLR – IDE– Building VB.Net Applications. Operations – Conditionals and Loops – Procedures, Scope and Exception Handling.

UNIT II **12 Hours**

Windows Forms – Adding Controls – Handling Events – Creating MDI applications – Textboxes, Rich Text boxes, Labels – Buttons, Check boxes, Radio buttons, panels and Group boxes – List box, **Checked list box***, Combo box and Picture boxes.

Sub. Code : **22UCT408**

UNIT III **12 Hours**

Windows Forms – Scroll bars, Splitters, Track Bars, Pickers, Notify Icons, Tool tips and Timers. Menus – Built in Dialog Boxes – Image list, Tree and List view, Toolbars, Status bars and progress bars and tabbed controls.

UNIT IV **12 Hours**

Web forms – Buttons, Test boxes, Labels, Literals, Place Holders, Check boxes, Radio buttons, Tables, Panels, Images, Image buttons, List boxes, Drop down lists, Hyperlinks and link buttons, **HTML controls***.

UNIT V **12 Hours**

Data Access with ADO.net – binding controls to database – database access with web applications – creating window services, web services and deploying applications.

*** 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 / Flipped Class

TEXT BOOK

1. Steven Holzner, (2005), **Visual Basic .NET Black Book**, First Edition, Dream Tech Publication.

REFRENCE BOOKS

1. Evangelos Petroustes, (2002), **Mastering Visual Basic .NET**, First Edition, BPBPublication.
2. Bill Evjen Beres, (2002), **Visual Basic .NET Programming Bible**, Wiley – DreamTech Publication.

Sub. Code : **22UCT408**

MAPPING

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

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

Sub. Code : **22UCT409**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 9 – Computer Networks**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	4

Course Objectives

1. To provide the concepts and fundamentals of different layers used in computer networking.
2. To understand a basic knowledge of the use of cryptography and different techniques keys used for Encryption and Decryption.

Course Outcomes (CO)

K1 to K5	CO1	Recollect OSI reference Model and knowledge of using different Layers in the networking model.
	CO2	Understand about the use of cryptography.
	CO3	Apply the techniques used in the devices like switches, repeaters, hubs. Bridges and gateways.
	CO4	Analyse different routing algorithms.
	CO5	Evaluate the usage of Symmetric-Key Signatures and Public - Keysignatures.

Syllabus

UNIT I **12 Hours**

Introduction: Uses of computer networks-Network Hardware – Network Software – Reference Models.

UNIT II **15 Hours**

The Physical layer: Guided transmission media – Communication satellites – The Public Switched telephone network: Structure of the telephone system – The local loop : modems, wireless local loops – Switching-Cable Television-Community Antenna Television-Internet Over Cable.

Sub. Code : **22UCT409**

UNIT III **16 Hours**

The Data link layer: Data link layer design issues -The Medium access control sub layer: The channel allocation problem – Multiple access protocols: **ALOHA*-**Carrier sense multiple access protocols, collision-free protocols, Limited-Contention protocols – 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 shortest path routing, distance vector routing, routing for mobile hosts, link state routing, hierarchical routing, broadcast routing and multicast routing.

The Transport layer: The Transport service: Services provided to the upper layers, transport service primitives, Berkeley sockets – Elements of Transport protocols.

UNIT V **16 Hours**

The Internet Transport Protocols: UDP-Introduction to UDP-Remote Procedure Calls - TCP- Introduction to TCP- TCP Service Model .The Application layer: DNS– Electronic mail - Architecture and services-User agent. Network Security: Cryptography – DES – RSA. 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 Class Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOK

1. Andrew S. Tanenbaum, (2003), **Computer Networks**, Fourth Edition, Pearson Education Publication.

Sub. Code : **22UCT409**

REFERENCE BOOKS

1. Behrouz A. Forouzan, (2003), **Data Communications And Network**, Second Edition,Tata Mc Graw Hill Publication.
2. William A Shay, (2001), **Understanding Data Communications and Networks**, SecondEdition, Vikas Publication.

MAPPING

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

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

Sub. Code : **22UCT4CO**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Practical 4 – .Net Framework and Oracle Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	2

Course Objectives

1. To design and develop the applications using ADO.Net and session tracking.
2. To make the students to develop the database projects with a back end concept.
3. To construct .NET applications and to maintain the database.
4. To familiarize the students in crystal report creation.

Course Outcomes (CO)

K3 to K5	CO1	Apply the decision and control structures in .NET and apply the concepts of queries and creation of console applications.
	CO2	Analyze the concept of windows application and project creation and Oracle functions.
	CO3	Construct the queries using DDL and DML queries.
	CO4	Execute the console, window application, crystal report, PL/SQL triggers.
	CO5	Apply the connectivity to retrieve the data from database.

LIST OF PRACTICAL PROGRAMS

. NET FRAMEWORK

1. Perform Matrix Multiplication using Arrays Concept in Console Application
2. Program to simulate a simple calculator in Windows Application.
3. Program to simulate a digital clock with reset option in Windows Application.
4. Program for a notepad application in Windows Application.
5. Program to maintain student details in Windows Application.
6. Design a website to display your bio-data using ASP.Net.
7. Design a website with login control using ASP.net
8. Develop a Simple Project for Hotel Management using VB.NET as front end and ORACLE as back end and create a Crystal report.

Sub. Code : **22UCT4CO**

ORACLE

1. Create a student mark list and do the following
   - ✓ Alter the table to add total and average fields with required size.
   - ✓ Modify to increase the total field size.
   - ✓ Calculate the total and average.
2. Create two tables in the name Employee_Personal and Employee_Salary using Primary and Foreign key concept and perform necessary operations.
   - ✓ Display the employee details who are all getting salary above15000.
   - ✓ Display the employee name and address who are all coming from city "Coimbatore" or "Chennai".
   - ✓ Display the employee name ,who are all coming from city "Coimbatore" and pin code 641029 or641001.
   - ✓ Display the employee details in descending order based on name.
3. Create a table and perform the queries using comparison, logical, set, sorting and grouping operators.
4. Write necessary queries to perform oracle built-in functions.
5. Write PL/SQL block to prepare electricity bill.
6. Write PL/SQL block:
   - ✓ Find the sum of individual number.
   - ✓ Find the given number is Armstrong number or not.
7. Create a Data base Triggers to check the validity of records.
8. Write PL/SQL block to partition the details of the student into two tables.

Sub. Code : **22UCT4CO**

Guidelines to the distribution of marks for practical Examinations:

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation, Program demonstration using Projector.

MAPPING

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

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

Sub. Code : **22UCT4A4**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Allied Paper 4 – Computer System Architecture**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	5

Course Objectives

1. To understand the basic architecture of computers and its registers.
2. To understand machine language, arithmetic and logic operations.
3. To be aware of the techniques used in input output devices and memory organization.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic architecture of computer.
	CO2	Understand the 16 bit memory and peripheral devices.
	CO3	Apply the concepts of I/O devices, memory organization.
	CO4	Analyze the development tools, I/O devices.
	CO5	Evaluate the usage of various Memory Hierarchy of Computer System Structure.

Syllabus

UNIT I **18 Hours**

Basic Computer Organization and Design : Instruction Codes – Computer Registers – Computer Instructions – Timing and Control – Instruction Cycle – Memory - Reference Instructions – Input - Output and Interrupt – Design of Basic Computer – Design of Accumulator Logic.

UNIT II **18 Hours**

Programming the Basic Computer: Introduction – Machine Language – Assembly Language – The Assembler – Program Loops – Programming Arithmetic and Logic Operations – Subroutines – Input-Output Programming.

Sub. Code : **22UCT4A4**

UNIT III **18 Hours**

Central Processing Unit: Introduction – General Register Organization – Stack Organization – Instruction Formats – **Addressing Modes*** – Data Transfer and Manipulation – Program Control – Reduced Instruction Set Computer (RISC).

UNIT IV **18 Hours**

Input-Output Organization: Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access – Input-Output Processor – **Serial Communication***.

UNIT V **18 Hours**

Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory– Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.

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

Teaching Methods

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

TEXT BOOK

1. M. Morris Mano (2011), **Computer System Architecture**, 3rd Edition, Pearson.

REFERENCE BOOK

1. John P Hayes, (1998), **Computer Architecture and Organization** , Third Edition , Mc Graw Hill International Publication.

MAPPING

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

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

Sub. Code : **22UCT4SL**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Skill Based Subject 2 – Python Programming Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	3

Course Objectives

1. To gain knowledge about the fundamentals of python programming.
2. To understand the concepts of string, list, tuple.
3. To implement the concept of exception handling, classes and objects.

Course Outcomes (CO)

K3 to K5	CO1	Implement basic operators and function concepts.
	CO2	Review various string and list methods.
	CO3	Execute exception handling.
	CO4	Develop the programs using tuple and dictionaries.
	CO5	Evaluate the usage of classes and attributes in python programs.

LIST OF PRACTICAL PROGRAMS

1. Write a python program to print the prime numbers in given range.
2. Write a python program to calculate the area of a triangle.
3. Write a python program to find LCM, HCF of the given numbers.
4. Write a python program to create a simple calculator.
5. Write a python program to display Fibonacci series sequence using recursion.
6. Write a python program to demonstrate the string methods.
7. Write a python program to demonstrate the built-in list methods.
8. Write a python program to perform tuple and Dictionaries methods.
9. Write a python program to demonstrate exception handling.
10. Write a python program to demonstrate classes and their attributes.

Sub. Code : **22UCT4SL**

Guidelines to the distribution of marks for practical Examinations:

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector.

MAPPING

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

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

Sub. Code : **22UCT510**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 10 – Software Engineering and Testing**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	4

Course Objectives

1. To remember the methods and technologies involved in building complex software.
2. To understand the various steps involved in developing software including requirement elicitation, System design, object design and testing.
3. To implement the Software testing techniques in the projects.

Course Outcomes (CO)

K1 to K5	CO1	Remember the steps involved in developing the software.
	CO2	Understand the roles and responsibilities of various persons involved in development cycle.
	CO3	Implement the methods and techniques to develop a small project.
	CO4	Analyze the problems that may occur in each and every phase of software development cycle.
	CO5	Evaluate the usage of Integration and Acceptance testing.

Syllabus

UNIT I **15 Hours**

Introduction – The evolving role of software – Software crisis – software myths – Software engineering technology – The software process – Software process models.

UNIT II **15 Hours**

Requirements engineering Tasks – Developing Use-Cases – Negotiating requirements – Validating requirements – Requirement analysis – Data modeling concepts – Flow oriented modeling .

UNIT III **15 Hours**

Design engineering – Design concepts – Data Design – Performing user interface Design - The golden rules - Design heuristics for effective modularity.

Sub. Code : **22UCT510**

UNIT IV **15 Hours**

Types of testing: White box testing-Black Box Testing: What, How to do Black box testing – Requirement based testing – Positive and Negative Testing – Boundary Value Analysis – Decision Tables – Equivalence partitioning – State Based or graphic Based Testing – Compatibility Testing – **User Documentation** * – Domain Testing.

UNIT V **15 Hours**

Integrating Testing: Introduction - Integration Testing as a Type of Testing – Integration Testing as a phase Testing.

System and Acceptance Testing: Introduction – Functional Versus Non – Functional System Testing – Functional System Testing – Non - Functional System Testing - **Acceptance Testing *.**

*** 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 / Flipped Class

TEXT BOOKS

1. Roger S Pressman, (2005), **Software Engineering**, Sixth Edition, TMH Publication.(Units I, II and III)
2. Srinivasan Desikan, Gopalaswamy Ramesh,(2008), **Software Testing Principles and Practices**, Dorling Kindersely Publication. (Units IV and V)

REFERENCE BOOKS

1. Watts S Humphrey, (2008), **A discipline for Software Engineering**, First Edition, Pearson Education Publication.
2. Ian Somerville, (2007), **Software Engineering**, Seventh Edition, Pearson EducationPublication.

Sub. Code : **22UCT510**

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	H	S	S	S

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

Sub. Code: **22UCT511**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 11 – Wireless Ad-Hoc Network**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	5

Course Objectives

1. To introduce the basic concepts Wireless Ad-Hoc Network
2. To get knowledge about various concepts in wireless Ad-Hoc Network.
3. To provide an opportunity for students to understand the concept of Routing Protocols, Trust Management and Applications.

Course Outcomes (CO)

K1 to K5	CO1	Understand the concept configuration, Healing and self-Organize in Ad-Hoc Network.
	CO2	Understand various routing protocols natures.
	CO3	Apply the various techniques used for Multicasting and Broadcasting.
	CO4	Analyze wireless Ad-Hoc Network Vehicular applications.
	CO5	Evaluate the Mobile Ad-Hoc and Vehicular Ad-Hoc networks using various Trust and security issues.

Syllabus

UNIT I **18 Hours**

Properties of Wireless Multihop Networks: Introduction - Terminology and Models – Datasampling and Simulation Methodology.

Self - Configuring, Self - Organizing and Self-Healing Scheme: Introduction – Hidden Terminal Problem - Self Configuring and Organizing MANETs - Self Healing.

Cooperation in mobile Ad-hoc network: Introduction -Virtual Currency System – Reputation System – CONFIDANT - CORE-OCEAN.

UNIT II **18 Hours**

Routing in Mobile Ad-hoc network: Introduction - **Routing Protocol** *- Expected properties of MANET routing protocol – Categorizing the Routing Protocols for MANET - Proposed Protocols - Criteria for proposed evaluation of MANET routing protocols.

Sub. Code : **22UCT511**

UNIT III **18 Hours**

Multicasting in mobile Ad-hoc network: Introduction - Design and considerations. Broadcast in Ad-hoc network: Introduction – Heuristic Based broadcast - Neighbor coverage broadcast – Dominating sets based broadcast - Cluster based broadcast - Resource aware broadcast

UNIT IV **18 Hours**

Verification of routing protocols: Introduction – Formal verification techniques-Tools. Security Threads in Ad-hoc Routing protocols: Introduction – Taxonomy of Ad-hoc network - Elements - Attack behaviour - Attack scenarios

UNIT V **18 Hours**

Trust management in Mobile Ad-hoc network: Introduction-Security issues in MANET - Trust management system trust – Reputation - Components of Trust management system - Trust evaluation in Ad-hoc network. **Vehicular Ad-hoc networks *** - Applications and Networks Architecture.

*** 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 / Flipped Class

TEXT BOOK

1. Sudip Misra, Isaac Woungang, Subhas Chandra Misra (2009),**The Guide of Wireless Ad-hoc Network**, Springer International Edition..

REFERENCE BOOKS

1. Savo G. Glisic(2016), **Advanced Wireless Networks**, 3rd Edition, Wiley Publication.
2. Carlos de Morais Cordeiro and Dharma Prakash Agrawa (2011) **Ad Hoc and Sensor Networks: Theory and Applications**", 2nd Edition.

Sub. Code: **22UCT511**

MAPPING

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

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

Sub. Code: **22UCT512**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 12 – Data Mining and Warehousing**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	5

Course Objectives

1. To understand the different techniques in Data Mining and to develop the knowledge about Data Warehousing, Data Mining and KDD process.
2. To study the methodology of data warehousing and data mining to derive business rules for decision support systems.
3. To describe and demonstrate the data mining algorithms and methods.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts in database management system and understand the discovery of knowledge in databases.
	CO2	Understand the techniques of genetic algorithms, neural networks and decision trees.
	CO3	Apply various classification algorithms in data mining.
	CO4	Analyse the clustering algorithms and rule generation algorithms.
	CO5	Evaluate the process flow within a data warehouse, Extract and load process, clean and transform data, Backup and archive process.

Syllabus

UNIT I **18 Hours**

Basic Data Mining Tasks - Data Mining Versus Knowledge Discovery in Databases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT II **18 Hours**

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures –Decision Trees – Neural Networks – Genetic Algorithms.

Sub. Code: **22UCT512**

UNIT III **18 Hours**

Classification: Introduction – Statistical-based Algorithms – Distance Based Algorithms – **Decision Tree-based Algorithms *** – Neural Network-based Algorithms –Rule-based Algorithms – Combining Techniques.

UNIT IV **18 Hours**

Clustering: Introduction – Similarity and Distance Measures – Outliers - Hierarchical Algorithms - Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel and Distributed Algorithms.

UNIT V **18 Hours**

Delivery process: Introduction – Data warehouse delivery method. System processes: Overview – typical process flow within a data warehouse – Extract and load process – clean and transform data – Backup and archive process – **Query management process***.

*** 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 / Flipped Class

TEXT BOOKS

1. Margaret H.Dunbam, (2003), **Data Mining Introductory and Advanced Topics**, Pearson Education Publication. (Units I To IV).
2. Sam Anahory, Dennis Murray, (2007), **Data Warehouse in the Real World – Practical Guide for building decision Support System**, Second Impression,

   (Unit V).

REFERENCE BOOK

1. Jiawei Han, Micheline Kamber, (2001), **Data Mining Concepts and Techniques**, Academic Press Publication.

Sub. Code : **22UCT512**

MAPPING

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

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

Sub. Code : **22UCT5CP**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Practical 5 – Software Engineering and Testing Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	2

Course Objectives

1. To develop a web based application for the real time project.
2. To find bugs in the product or application and to expand effective reporting.

Course Outcomes (CO)

K3 to K5	CO1	Apply the principles of system and component testing.
	CO2	Analyze the strategies for generating system test cases.
	CO3	Evaluate the tools used in automation testing.
	CO4	Execute the performance of load testing.
	CO5	Develop UML diagrams for various applications using smart draw.

LIST OF PRACTICAL PROGRAMS

1. Write a program to create calculator using HTML and validate using Selenium IDE with test case.
2. Write a program to create image link using HTML and validate using Selenium IDE with test case.
3. Write a program to create a registration form using HTML and validate using Selenium IDE with test case.
4. Write a program to create a webpage to scroll the text in right, left, up and down directions using HTML and validate using Selenium IDE with test case.
5. Write a program to create company website using HTML and validate using Selenium IDE with test case.
6. Write a program to create department website using HTML and validate using Selenium IDE with test case.
7. Write a program to create a resume using HTML and validate using Selenium IDE with test case.

8. Write a program to create a web page using jQuery and validate using Selenium IDE with test case.
9. Create and Test java Standalone applications using Jmeter.
10. Create a Java application using awt package and test it using Jmeter.
11. Develop UML diagrams for the application Student Marks Management System, Draw ER diagram, Level 0 and Level 1 DFD and use case diagram using smart draw.
12. Develop UML diagrams for the application Employee Personal Management System, Draw ER diagram, Level 0 and Level 1 DFD and use case diagram using smart draw.
13. Develop UML diagrams for the application Library Book Management System,
14. Draw ER diagram, Level 0 and Level 1 DFD and use case diagram using smart draw.

TEACHING METHODS

Presentation and Program demonstration using Projector.

Guidelines to the distribution of marks for practical Examinations:

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

- ✓ Record Work : 05 Marks
- ✓ Algorithm, Program, Typing and Execution : 45 Marks.

Particulars	**Program I (Marks)**	**Program II (Marks)**
Test Case & Algorithm	5	5
Program Writing	15	10
Execution and Testing	5	5

Sub. Code : **22UCT5CP**

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	H	H
CO5	S	S	S	H	H

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

Sub. Code : **22UCT613**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 13 – PHP**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	4

Course Objectives

1. To understand the basic concept of website requirements and to realize the basic requirements of PHP.
2. To learn the concepts of PHP and Data base through various PHP and SQL Statements.
3. To get the overall idea about PHP and SQL and able to get the knowledge about Web site development.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic web development requirements and PHP concepts.
	CO2	Understand the PHP program flow, arrays, string and functions.
	CO3	Apply classes, Cookies, Sessions, OOPs and File concepts.
	CO4	Review the concepts of SQLite and PHP Statements.
	CO5	Evaluate the usage of various XML technologies.

Syllabus

UNIT I **18 Hours**

Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT II **18 Hours**

Controlling Program Flow: Writing Simple Conditional Statements – Writing More ComplexConditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

Sub. Code : **22UCT613**

UNIT III **18 Hours**

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations - Using Arrays with Forms – Working with Array Functions – Working with Dates and Times. Using Functions and Classes: Creating User – Defined Functions – Creating Classes –Using Advanced OOP Concepts.

UNIT IV **18 Hours**

Working with Files and Directories: Reading Files – Writing Files – Processing Directories. Working with Databases and SQL: Introducing Databases and SQL- Creating and Populating a Database - Using PHP's SQLite Extension – Introducing SQLite – Retrieving Data – Adding or Modifying Data – Handling Errors –Using PHP's PDO Extension – Retrieving Data – Adding and Modifying Data –**Switching to a Different Database***.

UNIT V **18 Hours**

Working with XML : Introducing XML – XML Basics – Anatomy of an XML Document – Well-Formed and Valid XML – XML Parsing Methods* – XML Technologies – Simple XML and DOM Extensions.

*** 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 / Flipped Class

TEXT BOOK

1. Vikram Vaswani, (2008), **PHP – A Beginner's Guide,** Tata Mc Graw–HillPublication.

REFERENCE BOOKS

1. Steven Holzner, (2007), **The PHP Complete Reference**, Tata McGraw–Hill Publication.
2. Steven Holzer (2005), **Spring into PHP 5**, Addison Wesley Publication.

Sub. Code : **22UCT613**

MAPPING

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

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

Sub. Code : **22UCT614**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Paper 14 – Information Security**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	4

Course Objectives

1. To understand all aspects of cyber security including network security, computer security and information security.
2. To become information security professionals for the high-end jobs insecurity.

Course Outcomes (CO)

K1 to K5	CO1	Recollect the basic security concepts of the digital computer system.
	CO2	Understand the malicious codes and virus attachments of a file.
	CO3	Apply the security mechanisms, firewalls and intrusion detection systems in the computer field.
	CO4	Analyze different types of security flaws , Legal and Ethical issues in computer security.
	CO5	Evaluate the usage of Legal and Ethical Issues in Computer Security.

Syllabus

UNIT I **18 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 : File Protection Mechanisms-User Authentication.

UNIT II **18 Hours**

Program Security: Non malicious Program Errors – Viruses and other Malicious Code: Kinds of Malicious Code, How Viruses Attach, Home for Viruses, The Source of Viruses, Prevention of Virus Infection, Truths and Misconceptions About Viruses. Targeted Malicious Code: Trapdoors, Salami Attacks - Controls against Program Threats: **Developmental controls*.**

Sub. Code : **22UCT614**

UNIT III **18 Hours**

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

UNIT IV **18 Hours**

Security in Networks: Network Concepts-Threats in Networks: Who attacks networks? Reconnaissance, Threats in transit: Eavesdropping and wiretapping, Microwave - Summary of wiretapping-Intrusion Detection Systems.

UNIT V **18 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 - Ethical Issues in Computer Security.

*** 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 / Flipped Class

TEXT BOOK

1. Charles P.Pfleeger, Shari Lawrence Pfleeger, Deven N.Shan, (2007), **Security in Computing**, Fourth Edition, Prentice Hall Publication.

REFERENCE BOOKS

1. Ross J. Anderson, Ross Anderson, (2001), **Security Engineering: A Guide to Building Dependable Distributed Systems**, Wiley Publication.
2. Debby Russell, Sr. G. T. Gangemi, (2006), **Computer Security Basics** (Paperback),Second Edition, O'Reilly Media Publication.
3. Thomas R. Peltier, Justin Peltier, John Blackley, (2010), **Information Security Fundamentals**, Second Edition, Prentice Hall Publication.

Sub. Code : **22UCT614**

MAPPING

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

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

Sub. Code : **22UCT6CQ**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Practical 6 – PHP Programming Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	6	90	2

Course Objectives

1. To be able to get the knowledge about platform independent language.
2. To get the idea about PHP and MariaDB connectivity concepts.
3. To be able to design their own website.

Course Outcomes (CO)

K3 to K5	CO1	Execute array functions, file and directory functions, date and time functions in PHP Script.
	CO2	Inspect PHP expressions, Cookies and Sessions.
	CO3	Apply various predefined functions.
	CO4	Develop the programs using Tokenizer.
	CO5	Evaluate the database using PHP's MariaDB extensions

LIST OF PRACTICAL PROGRAMS

1. Develop a PHP program using controls and functions.
2. Develop a PHP program and check message passing mechanism between pages.
3. Develop a PHP program using String function and Arrays.
4. Develop a PHP program to display student information using MariaDB.
5. Develop a PHP program to design a college application form using MariaDB.
6. Develop a PHP program using parsing functions (use Tokenizing).
7. Develop a PHP program and check Regular Expression, HTML functions, Hashing functions.
8. Develop a PHP program and check File System functions, Network functions, and date and time functions.
9. Develop a PHP program using session.
10. Develop a PHP program using cookie and session.

Sub. Code : **22UCT6CQ**

Guidelines to the distribution of marks for practical examinations

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector.

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	H	H
CO5	S	S	H	H	H

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

Sub. Code : **22UCT6Z1**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Core Project – Project and Viva - Voce *****			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

On successful completion of all the above courses

1. To be able to get 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 confident for implementing the task.

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:

CIA	Project Review	45	**50**
	Regularity	5	
ESE	Project Report	35	**50**
	Viva – Voce	15	
Grand Total			**100**

Sub. Code : **22UCT6Z1**

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	S	H	S
CO2	S	S	S	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: **22UCT6SM**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Skill Based Subject 3 – Hardware Installation and Networking Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	3

Course Objectives

1. To understand the knowledge about the hardware components and troubleshooting
2. To get the knowledge about hardware assembling.
3. To understand the knowledge about LAN connectivity and network file sharing.

Course Outcomes (CO)

K3 to K5	CO1	Recollect the architecture and functionalities of a computer.
	CO2	Implement the hardware assembling.
	CO3	Apply the computer trouble shooting mechanism.
	CO4	Analyze the LAN connectivity.
	C05	Execute the network file sharing.

LIST OF PRACTICAL PROGRAMS

1. Study of different components of a PC assembly.
2. Study of printer troubleshooting.
3. Study of shut downing the remote host with alert message.
4. Study of LAN connectivity in the environment.
5. Study on network file sharing.

Sub. Code: **22UCT6SM**

Guidelines to the distribution of marks for practical examinations

One question will be given for each student (3 Hours / 50 Marks)

- ✓ Record Work : 05 Marks
- ✓ Procedure, Assembling, Trouble shooting/Networking : 45 Marks.

Particulars	**Program I (Marks)**
Procedure	15
Assembling	10
Trouble shooting/Networking	20

Teaching Methods

Presentation and Program demonstration using Projector.

MAPPING

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

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

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Elective Paper - Web Development Languages**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

1. To get knowledge about Web development related languages.
2. To understand HTML, DHTML tags.
3. To get an idea about scripting languages for web development.

Course Outcomes (CO)

K1 to K5	CO1	Recollect basic concept about web technologies.
	CO2	Understand the idea web development tools.
	CO3	Implement various HTML, DHTML and CSS Concepts.
	CO4	Analyse various JQuery Function and Events.
	CO5	Evaluate scripting languages syntax for web Developments.

Syllabus

UNIT I **15 Hours**

Introduction to the Internet: Computers in Business – Networking – Internet – Emails – Resource Sharing – WWW – Usenet – Telnet. Internet Technology: Modem – Internet Address – Physical Connection.

Introduction to HTML: History – HTML Generations – HTML Documents. Head Section: Title – links – color – **Comment Lines*.** Body Section: Heading – Alignment – Horizontal Rule – Formatting Tags – Images – Anchor Tag – Order and Unordered Lists- Meta Tag.

UNIT II **17 Hours**

Html Tables – Introduction – Table Properties – Frames – HTML forms – Method Attributes – Drop Down List.

DHTML: -Introduction – Object Reference – Event Model – Onclick – onload – MouseEvent – onfocus – onblur – onsubmit - onreset.

UNIT III **15 Hours**

CSS (Cascading Style Sheets) : Introduction – Inline CSS – Embedded CSS – External CSS - Positioning Elements – Background – Text flow – Box Model – User Style Sheet.

Java Script: History – Understand basic Terminology – variable- Execute Code – Repeat Statements – Comment –Handle Error – Exception.

UNIT IV **14 Hours**

Getting started with jQuery – Selectors – Each Functions - Attributes – Document - readyEvent – Events.

UNIT V **14 Hours**

DOM Manipulation – DOM Traversing – CSS Manipulation – Element Visibility – Append – Prepend.

*** 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 / Flipped Class

TEXT BOOKS

1. C. Xavier (2008), **World Wide Web Design with HTML**, Tata Mc Graw Hill, 12th Reprint (Units 1 and II).
2. Deitel & Deitel, GoldBerg (2005), **Internet and World Wide Web - How to Program?** Prentice Hall of India Pvt.Ltd, 3rd Edition (Units II and III).
3. Scott Dutty (2006), **Javascript A Beginner Guide**, Dream Tech Press (Unit III).
4. **jQuery notes for Professionals** – GoalKicker.com (Units IV and V).

REFERENCE BOOKS

1. Thomas A. Powell (2004), **The Complete Reference HTML and XHTML**, Tata Mc Graw Hill Publication, 4th Edition.
2. John Pollock (2014), JQuery: **A Beginner's Guide**, Fourth Edition, Mc Graw Hill Publication.

MAPPING

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

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

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Elective Paper - Cloud Computing**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

1. To understand the basic knowledge about the cloud computing techniques and architecture.
2. To gain knowledge of cloud services and cloud security.
3. To be able to understand Cloud Segment, Cloud Deployment models and key cloud companies.

Course Outcomes (CO)

K1 to K5	CO1	Identify the architecture and infrastructure of cloud computing including SaaS, PaaS, IaaS, public cloud, private cloud, and hybrid cloud.
	CO2	Understand the core issues of cloud computing, security, privacy, and interoperability.
	CO3	Apply the appropriate technologies and approaches for the related issues in Cloud Computing.
	CO4	Analyze the suitable cloud computing solutions and recommendations according to the applications used.
	CO5	Evaluate the usage of security tools in clouds.

Syllabus

UNIT I **15 Hours**

Introduction - cloud computing at a glance – Historical development – Building cloud computing environment.

UNIT II **15 Hours**

Principles of parallel and distributed computing – Eras of computing – parallel vs distributed computing – Elements of parallel computing – Elements of distributed computing – **Technologies for distributed computing***.

UNIT III **15 Hours**

Cloud computing architecture: Introduction – Cloud reference model – Types of clouds – Organizational aspects.

UNIT IV **15 Hours**

Cloud Applications: Scientific applications: Healthcare – Business and Consumer Applications: CRM and ERP – Media Applications – **Multiplayer Online gaming*.**

UNIT V **15 Hours**

Cloud Security – Cloud Computing Concept – Cloud Risk – Cloud Security Tools and Techniques – Data Production in Cloud – Cloud Storage – Data Loss Prevention – Cloud Application Security – Security Assertion Markup Language.

*** 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 / Flipped Class

TEXT BOOKS

1. Rajkumar Buyya, Christian Vecchiola , Thamarai selvi, (2013), **Mastering Cloud Computing**, Mc Graw Hill Publication. (Units I to IV)
2. Charles P.Pfleeger, Shari Lawrence Pfleeger, Deven N.Shan, (2007), **Security in Computing**, Fourth Edition, Prentice Hall Publication. (Unit V)

REFERENCE BOOK

1. Judith Hurwitz, Robin Bloon, (2009), **Cloud Computing for Dummies**

MAPPING

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

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

Programme Code: 11	**B. Sc Computer Technology**		
Title of the Paper **:** **Elective Paper - Mobile Application Development**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

1. To demonstrate their understanding of the fundamentals of Android operating systems
2. To demonstrate their skills of using Android software development tools.
3. To demonstrate their ability to develop software with reasonable complexity on mobile platform.

Course Outcomes (CO)

K1 to K5	CO1	Develop the basic Android App using Activity Lifecycle methods.
	CO2	Design Android User Interfaces & Event Handling mechanisms.
	CO3	Implement the different Intents and Notifications.
	CO4	Design and Implement back end Android App using SQLite database.
	CO5	Develop advanced Android App using location based services.

Syllabus

UNIT I **15 Hours**

Android Programming**:** What Is Android? Obtaining the Required Tools, Creating Your First Android Application. Android studio for Application development: Exploring IDE, Using code completion, debugging your Application, Generating a signed APK.

UNIT II **15 Hours**

Android User Interface: Components of A Screen, Adapting To Display Orientation, Managing Changes To Screen Orientation, Utilizing The Action Bar, Creating The User Interface Programmatically, **Listening For UI Notifications***

UNIT III **15 Hours**

User Interface With Views**:** Using Basic Views, Using Picker Views, Using List Views To Display Long Lists, Understanding Specialized Fragments. Pictures and Menus with Views**:** Using Image Views To Display Pictures, Using Menus With Views, Using Web View.

UNIT IV **15 Hours**

Content Providers: Using a Content Provider, Creating Your Own Content Providers.

Messaging : SMS Messaging, Sending E-Mail.

UNIT V **15 Hours**

Developing Android Services: Creating Your Own Services, Establishing Communication Between A Service And An Activity, Binding Activities To Services, **Understanding Threading***

*** 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 / Flipped Class

TEXT BOOK

1. J.F.Di Marzio, **Beginning Android Programming with Android Studio**, Wiley India (Wrox), 2017.

REFERENCE BOOKS

1. Wei-Meng Lee, **Beginning Android 4 Application Development**, Wiley India (Wrox),2012.
2. Reto Meier, **Professional Android 4 Application Development**, Wiley India, (Wrox), 2012.
3. James C Sheusi, **Android Application Development for Java Programmers**, Cengage Learning, 2013.

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	H	H	S

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

Programme Code: 11	**B. Sc Computer Technology**		
Title of the Paper : **Elective Paper – Internet of Things**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	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 **15 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 **15 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 **15 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 - BasedProtocols - IoT Application Layer Protocols - CoAP.

UNIT V **15 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.

*** Self Study and questions for examinations may be taken from the self study portionsalso.**

TEACHING METHODS

Smart Class Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOK

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry (2017), **IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of 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	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	H	S

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

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Elective Paper - Big Data Analytics and Data Science**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

1. To provide the fundamental concepts in Big data & Data Science.
2. To understand Data Classification, Sources of Data, Data Science user- roles and skills.
3. To get the knowledge in basics of R and statistical measures.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamental concepts and techniques of Big data and data science in 360 view of Customer.
	CO2	Understand data and its types.
	CO3	Apply the methodologies of data science.
	CO4	Analyse the basics of R tool and data visualization using R.
	CO5	Evaluate data Visualization in Big Data.

Syllabus

UNIT I **15 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.

UNIT II **15 Hours**

Big Data Adoption and Planning Considerations**:** Organization Prerequisites – Data Procurement Privacy - Security - Provenance - Limited Real-time Support - Big Data Analytics Lifecycle.

UNIT III **15 Hours**

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 - Big Data BI- Traditional Data Visualization - **Data Visualization for Big Data *.**

UNIT IV **15 Hours**

Data Science: Data Science-A Discipline – Data Science vs Statistics, Data Science vs Mathematics, Data Science vs Programming Language, Data Science vs Database, Data Science vs Machine Learning. Data Analytics – Relation: Data Science, Analytics, Big Data Analytics.

UNIT V **15 Hours**

Exploring R Basics: Introduction – Getting started – R Features – R Studio – Packages and Library – Installing and Loading Packages – Starting R – **R Basic Data types*** - **R Basic operators*** – R Objects – R File formats - Importing and Exporting files.

*** 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 / Flipped Class

TEXT BOOKS

1. Thomas Erl, Wajid Khattak, and Paul Buhler, **Big Data Fundamentals. Concepts**, **Drivers & Techniques,** Pearson Publications , (2016). (Units I & II).
2. V. Bhuvaneswari, T. Devi (2016), **Big Data Analytics: A Practitioner's Approach** (Units III & IV).
3. V. Bhuvaneswari (2018), " **Data Analytics with R Programming**", Scitech Publications. (Unit V).

REFERENCE BOOKS

1. Seema Acharya and Subhashini C, (2015), **Big Data and Analytics**, Wiley Publications.
2. Nina Zumal, John Mount (2014), **Practical Data Science in R**, Managing Publication Company.

MAPPING

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

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

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Elective Paper - Artificial Intelligence**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	5	75	5

Course Objectives

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

Course Outcomes (CO)

K1 to K5	CO1	Recollect various AI techniques.
	CO2	Understand the nature of AI problems and task domains of AI.
	CO3	Apply the appropriate search procedures to solve the problems by using best algorithms.
	CO4	Analyze and select the suitable knowledge representation method.
	CO5	Manipulate the acquired knowledge and infer new knowledge.

` Syllabus

UNIT I **15 Hours**

Introduction: AI Problems - AI techniques - Criteria for success. Problems, Problem Spaces, Search: State space search - Production Systems - Problem Characteristics - Issues in design of Search.

UNIT II **15 Hours**

Heuristic Search techniques: Generate and Test - Hill Climbing - Best-First Search – OR Graphs – A* Algorithm - Problem Reduction – AND-OR Graph – AO* Algorithm, Constraint Satisfaction, Means-ends analysis.

UNIT III **15 Hours**

Knowledge representation issues: Representations and mappings -Approaches to Knowledgerepresentations - Issues in Knowledge representations - Frame Problem.

UNIT IV **15 Hours**

Using Predicate logic: Representing simple facts in logic - Representing Instance and Isarelationships - Computable functions and predicates - Resolution - Natural deduction.

UNIT V **15 Hours**

Representing knowledge using rules: Procedural Vs Declarative knowledge – **Logic programming* – Forward Vs Backward reasoning** * – Matching – Control knowledge.

*** 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 / Flipped Class

TEXT BOOK

1. Elaine Rich, Kelvin Knight and Shivashankar B Nair (2009), **Artificial Intelligence**,Tata McGraw Hill , New Delhi, Third Edition.

REFERENCE BOOK

1 Dan W. Patterson, (2007), **Introduction to Artificial Intelligence & Expert System**, Fourth Edition, Pearson, Prentice Hall.

MAPPING

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

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

Sub. Code : **22UHR3N1**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Part IV - Non Major Elective - 1 Human Rights**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	2

Course Objectives

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

K1 to K5	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.

Syllabus

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

Sub. Code : **22UHR3N1**

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

Teaching Methods

Smart Class Room / Power Point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOK

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

REFERENCE BOOK

1. **Human Rights** (2018), Jaganathan,MA.,MBA.,MMM.,ML.,ML., Humanitarian Law andRefugee Law, J.P. Arjun Proprietor, Usha Jaganathan law series, 1st floor, Armatha Nanthi Street, Magathma Gandhi Nagar, Madurai - 625014.

Question Paper Pattern

Sub. Code : **22UHR3N1**

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

Answer ALL Questions

Section A (5x5=25)

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

Section B (5X10=50)

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

Sub. Code : **22UWR4N2**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Part IV - Non Major Elective - 2 Women's Rights**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	2

Course Objectives

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

Course Outcomes (CO)

After Completion of the Course the student will be able to

K1 to K5	CO1	Understand the importance of Women's Studies and incorporate Women's Studies with other fields.
	CO2	Analyze the realities of Women Empowerment, Portrayal of Women in Media, Development and Communication.
	CO3	Interpret the laws pertaining to violence against Women and legal consequences.
	CO4	Study the important elements in the Indian Constitution, Indian Laws for Protection of Women.
	CO5	To be Aware of Government Developmental schemes for women and to create Awareness on modernization and impact of technology on Women.

Syllabus

UNIT I **6 Hours**

Women's 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.

Sub. Code : **22UWR4N2**

UNIT II **6 Hours**

Socio-economic Development of Women's

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**

Womens' 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 / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

TEXT BOOK

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

Sub. Code : **22UWR4N2**

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.

Question Paper Pattern

Sub. Code : **22UWR4N2**

Duration: 3 hrs **Max: 75 marks**

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 : 11	**B. Sc Computer Technology**		
Title of the Paper : **Part IV- Non Major Elective – Consumer Affairs**			
Batch 2022 - 2023	**Hours / Week** 2	**Total Hours** 30	**Credits** 2

Course Objectives

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

Course Outcomes (CO)

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

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, 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 Room / Power point presentation / Seminar / Quiz / Discussion / Flipped Class

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 PvtLtd.
3. G. Ganesan and M. Sumathy. (2012). Globalisation and Consumerism: Issues and Challenges, Regal Publications
4. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, NewDelhi
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 (5x5=25)

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

Section B (5X10=50)

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

Sub. Code : **22UCT5XL**

Programme Code : 11	**B. Sc Computer Technology**		
Title of the Paper : **Extra Departmental Course - Web Development and Google App Lab**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2022 - 2023	2	30	3

Course Objectives

1. To understand the knowledge about web development languages.
2. To gain knowledge about Website creation.
3. To get knowledge about various Google Applications.

Course Outcomes (CO)

K3 to K5	CO1	Implement various HTML tags and develop web pages.
	CO2	Review different HTML tags and its usages.
	CO3	Assess the functionality of Google Doc and Google Sheet.
	CO4	Review the functionality of Google Slide and Forms.
	CO5	Explore the usage of Google Apps.

LIST OF PRACTICAL PROGRAMS

2. Design a small webpage using formatting tags.
3. Design a webpage and display images.
4. Create a web page and display your Qualification using Tables.
5. Create User authentication page.
6. Design a Webpage and display the Biodata.
7. Create your department website.
8. To perform various operations using Google Doc.
9. To perform various operations using Google Sheet.
10. To prepare slide using Google Slides.
11. To prepare online Feedback using Google forms.

Sub. Code : **22UCT5XL**

Guidelines to the distribution of marks for practical examinations

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

- ✓ Record Work : 05 Marks
- ✓ 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

Presentation and Program demonstration using Projector.

MAPPING

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

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