KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029

DEPARTMENT OF COMPUTER TECHNOLOGY

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2018 - 2019 onwards)

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

Coimbatore – 641029

Vision:

- ✓ Developing the total personality of each and every student in a holistic way by adhering to the principles of *Swami Vivekananda* and *Mahatma Gandhi.*

Mission:

- ✓ Imparting holistic and man-making education with emphasis on character, culture and values - moral and ethical.
- ✓ Designing the curriculum and other courses that transform its students into value added and skilled human resources.
- ✓ Constantly updating academic and management practices towards total quality management and promotion of quality in all spheres.
- ✓ Extending the best student support services by making them comprehensive and by evolving a curriculum relevant to student community and society at large.
- ✓ Taking steps to make education affordable and accessible by extending scholarships to the meritorious and economically disadvantaged students.
- ✓ Motivating teachers in such a way that they become the role models in promoting Higher Education.

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.

KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]
COIMBATORE - 641 029
B.Sc COMPUTER TECHNOLOGY [B.Sc CT]

CURRICULUM & SCHEME OF EXAMINATION UNDER CBCS

[APPLICABLE TO STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2018-2019 & ONWARDS]

Semester	Part	Subject Code	Title of the Paper	Instruction Hours /	CIA	ESE	Total	Duration of Exam(Hours)	Credits
I	I	18TML1A1	Language I @	6	25	75	100	3	3
	II	18ENG101	English I	6	25	75	100	3	3
	III	18UCT101	C.P.1 C Programming	5	25	75	100	3	4
		18UCT1CL	C.Pr.1 C Programming Lab	5	40	60	100	3	2
		18UCT1A1	Allied 1 - Discrete Mathematics and Statistics	6	25	75	100	3	5
	IV	**18EVS101**	**Environmental Studies ****	**2**	**-**	**50**	**50**	**3**	**2**
			Total	**30**			**550**		**19**
II	I	18TML2A2	Language II @	6	25	75	100	3	3
	II	18ENG202	English II	6	25	75	100	3	3
	III	18UCT202	C.P.2 Digital Fundamentals and Computer Organization	4	25	75	100	3	4
		18UCT203	C.P.3 Object Oriented Programming with C++	3	25	75	100	3	4
		18UCT2CM	C.Pr.2 C++ Programming Lab	3	40	60	100	3	2
		18UCT2A2	Allied 2 – Operations Research	6	25	75	100	3	5
	IV	**18VED201**	**Value Based Education ** (Moral and Ethics)**	**2**	**-**	**50**	**50**	**3**	**2**
			Total	**30**			**650**		**23**
III	III	18UCT304	C.P.4 Operating Systems	5	25	75	100	3	4
		18UCT305	C.P.5 Data Structures and Analysis of Algorithms	5	25	75	100	3	4
		18UCT306	C.P.6 Java Programming	5	25	75	100	3	4
		18UCT3CN	C.Pr.3 Java Programming Lab	5	40	60	100	3	2
		18UCT3A3	Allied 3 – Business Accounting	6	25	75	100	3	5

	IV	**18UCT3S1**	**Skill Based Subject 1 -Computer Installation & Servicing**	**2**	**25**	**75**	**100**	**3**	**3**
		18TBT301/ 18TAT301/ 18UHR3N1	**Basic Tamil*/Advanced Tamil**/(or) Non Major Elective I ****	**2**	**-**	**75**	**75**	**3**	**2**
			Total	**30**			**675**		**24**
IV	III	18UCT407	C.P.7 Relational Database Management Systems	5	25	75	100	3	4
		18UCT408	C.P.8 .NET Framework	4	25	75	100	3	4
		18UCT409	C.P.9 Computer Networks	5	25	75	100	3	4
		18UCT4CO	C.Pr.4.NET Framework and Oracle Lab	6	40	60	100	3	2
		18UCT4A4	Allied 4 - Microprocessors, PC Hardware & Interfacing	6	25	75	100	3	5
	IV	**18UCT4SL**	**Skill Based Subject 2 -Computer Installation & Servicing Lab**	**2**	**40**	**60**	**100**	**3**	**3**
		18TBT402/ 18TAT402/ 18UWR4N2	**Basic Tamil*/Advanced Tamil**/(or) Non Major Elective II****	**2**	**-**	**75**	**75**	**3**	**2**
			Total	**30**			**675**		**24**
V	III	18UCT510	C.P.10 Software Engineering and Testing	5	25	75	100	3	5
		18UCT511	C.P.11 Mobile Computing	5	25	75	100	3	5
		18UCT512	C.P.12 Data Mining and Warehousing	6	25	75	100	3	5
		18UCT5E1	**Elective Paper - I**	**6**	**25**	**75**	**100**	**3**	**5**
		18UCT5CP	C.Pr.5 Software Testing Lab	6	40	60	100	3	2
	IV	**18UCT3S2**	Skill Based Subject 3 - **Open Source Technology - Linux**	**2**	**25**	**75**	**100**	**3**	**3**
		18UCT5SP	Aptitude and Logical Reasoning	**Grade ******					
			Total	**30**			**600**		**25**
VI	III	18UCT613	C.P.13 PHP	6	25	75	100	3	5
		18UCT614	C.P.14 Information Security	6	25	75	100	3	5
		18UCT6E2	**Elective Paper - II**	**6**	**25**	**75**	**100**	**3**	**5**
		18UCT6CQ	C.Pr.6 Programming Lab-PHP	6	40	60	100	3	2
		18UCT6Z1	Project Work & Viva – Voce***	4	20	80	100	3	4
	IV	**18UCT6SM**	Skill Based Subject 4 - **Shell Programming Lab**	**2**	**40**	**60**	**100**	**3**	**3**

	18NCC/NSS/	Extension Activities*						
V	YRC/ PYE101		-	50	-	50	-	1
		Total	30			650		25
		Grand Total				3800		140

@ Tamil/Hindi/French/Malayalam/Sanskrit

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

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

*** Project Report- 60 Marks; Viva-Voce-20 Marks; Internal-20 Marks.

**** 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

(Two papers are to be chosen from the following six papers)

1. Network Security
2. Cloud Computing
3. System Software
4. Client/Server Techniques
5. Artificial Intelligence
6. Analysis and Design of Information Systems

Non-Major Elective Papers

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

Tally Table:

S.No.	PART	SUBJECT	MARKS	TOTAL MARKS	CREDITS
1.	Part I	Language - Tamil/Hindi/French/Malayalam/Sanskrit	200	200	6
2.	Part II	English	200	200	6
3.	Part III	Core- Theory/Practical/Project	2100		77
		Allied	400		20
		Major Electives	200	2700	10
4.	Part IV	Basic Tamil / Advanced Tamil (or) Non Major Elective	150		4
		Skill Based Subjects	400		12
		Environmental Studies	50		2
		Value Education	50	650	2
5.	Part V	Extension Activities (NSS / NCC / YRC / PYE)	50	50	1
		TOTAL		**3800**	**140**

Note:

CBCS – Choice Based Credit System   **NCC** – National Cadet Corps .

NSS   – National Service Scheme   **YRC** – Youth Red Cross

ESE   – End Semester Examination   **CIA** – Continuous Internal

Assessment

25% CIA is applicable to all theory subjects except JOC and COP Courses, which are considered as extra credit courses.

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remember; **K2**-Understanding; **K3**-Apply; **K4**-Analyze; **K5**-Evaluate

1. **Theory Examination - Part I, II & III**

   (i)   **CIA I & II and ESE: 75 Marks**

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	
K2 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	75
K3 & K4 Q16 to 20	C (Either or pattern)	5 x 8 = 40	Descriptive / Detailed	

   (ii)   **CIA I & II and ESE: 55 Marks**

Knowledge Level	Section	Marks	Description	Total
K1 Q1 to 10	A (Answer all)	10 x 1 = 10	MCQ	
K2 Q11 to 15	B (Either or pattern)	5 x 3 = 15	Short Answers	55
K3 & K4 Q16 to 20	C (Either or pattern)	5 x 6 = 30	Descriptive / Detailed	

2. **Practical Examination:**

Knowledge Level	Section	Marks	Total
K3	Experiments	50	
K4		10	60
K5	Record Work		

3. **Project Viva Voce:**

Knowledge Level	Section	Marks	Total
K3	Project Report	60	
K4		20	80
K5	Viva voce		

Components of Continuous Internal Assessment (CIA)

CIA Theory (25 Marks)	Practical		Project	
	CIA Practical (40 Marks)	ESE Practical (60 Marks)	CIA (20 Marks)	ESE# (80 Marks)
CIA Exam -15	CIA Practical Exam -25	Experiment -50	Project Review -15	Project Report Present - 60
Assignment-5	Observation -10	Record -10	Attendance -5	Viva-Voce -20
Attendance-5	Attendance - 5			

 # Project Report and Viva-Voce will be evaluated jointly by both the project guide and an external examiner.

18UCT101

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT101	**Core Paper 1 – C Programming**			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	I	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. Familiarize the basic syntax and semantics of C Language.

Course Outcomes (CO)

K1	CO1	Recollect various programming constructs and to develop C programs.
K2	CO2	Understand the fundamentals of C programming.
K3	CO3	Choose the right data representation formats based on the requirements of the problem.
K4	CO4	Implement different Operations on arrays, functions, pointers, 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.

18UCT101

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 a File – Input/Output Operations on Files – Command Line Arguments.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Discussion and Assignment

TEXT BOOK:

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

MAPPING

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

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

UCT -10

Programme Code : 11		**B.Sc Computer Technology**		
Course Code: 18UCT1CL		**Core Practical 1 – C Programming Lab**		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	I	5	75	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	CO1	Develop logical and programming skills using the fundamentals and basics of C Language.
K3	CO2	Develop programs using the control statements, Arrays and Strings
K4	CO3	Apply effective usage of arrays, structures, functions and pointers.
K5	CO4	Implement files and command line arguments.

LIST OF PRACTICAL PROGRAMS

1. Write a Program to find the roots of a Quadratic Equation.

2. Write a program to find the greatest and smallest number from set of numbers.

3. Write a program to find the sum, average, standard deviation from set of numbers.

4. Write a program to find the given string is a palindrome or not.

5. Write a program to perform String functions

6. 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 to perform following operation
   - ✓ Read two integer arrays with unsorted elements
   - ✓ Sort them into ascending order
   - ✓ Merge the sorted arrays and print the elements

   Using function to carry out above tasks.

9. Write a generalized program to perform matrix operation.

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 remove vowels in a given string using pointers.

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/60 marks)
Record: 10 Marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Program Coding & Execution	15	15
Modifications	5	5

TEACHING METHODS:

Presentation and Program demonstration through Projector

UCT -12

MAPPING

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

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

18UCT202

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT202	Core Paper 2 – Digital Fundamentals and Computer Organization			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	II	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 Multiplexers, Flip-Flops and Registers.
4. To be familiar with the concepts of Computer Languages and Instruction Formats.
5. Familiarize the Memory Hierarchy and Peripheral Devices.

Course Outcomes (CO)

K1	CO1	Retain the information about the Computer Number systems and conversions in Digital Computer System
K2	CO2	Understand the concepts of Boolean expressions, Logic Gates and to apply the methods to simplifying the Boolean expression.
K3	CO3	Apply the knowledge to perform arithmetical operations using various logical circuits and to design various Synchronous and Asynchronous.
K4	CO4	Investigate the function of various parts of the Computer systems and Memories.

SYLLABUS

UNIT I   **12 Hours**

Digital Computer And Digital Systems - Binary Numbers - Number Base Conversion - Octal and Hexa Decimal Numbers – Complements-1's and 2's complements- Binary subtraction - Code's- BCD, GRAY, Excess of 3 codes, Error Correcting Codes

18UCT202

UNIT II   **12 Hours**

Boolean Algebra And Logic Gates: Basic Definitions - Boolean Functions - Digital Logic Gates - simplifications - NAND and NOR implementation - Product of Sums - Sum of Products – The k-map – Don't Care conditions (up to four variables).

UNIT III   **12 Hours**

Introduction - Adders – **Subtractors***-Decoder-Encoder- Multiplexers – De- Multiplexers. Flip Flops: - Introduction – RS, JK, D - Flip Flops-Design counters – Ripple counters - Registers –Register with parallel Load- Shift Registers-Serial Transfer.

UNIT IV   **12 Hours**

Programming the Basic Computer: Introduction-Machine Language – Assembly Language.

Central Processing Unit(CPU) : Introduction – General Register Organization – Control Word– Instruction Format – Addressing Modes – Status Bit Condition.

UNIT V   **12 Hours**

Peripheral Devices - I/O interface - DMA – IOP- Communication.

Memory: **RAM and ROM*** -Associative Memory- Cache Memory – Virtual Memory.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion, Assignment

TEXT BOOKS:

1. Morris Mano, (2011), Digital Logic and Computer Design , Thirteenth impression ,Tata McGraw Hill Publication. (UNIT I, II and III)
2. Morris Mano, (2011), Computer System Architecture , Eighth Impression, Tata McGraw Hill Publication. (UNIT IV, V)

REFERENCE BOOKS:

1. Thomas C. Bartee, (2008), Digital Computer Fundamentals, Sixth Edition, Thirteenth reprint, McGraw Hill International Edition Publication.

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

3. Leach Malvnio, (2005), Digital Principles & Application , Fifth Edition, Tata McGraw Hill Publication.

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

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

18UCT203

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT203	Core Paper 3 – Object Oriented Programming with C++			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	II	3	45	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 programming languages.
3. To enhance problem solving and programming skills in C++ by implementing the object oriented concepts.

Course Outcomes (CO)

K1	CO1	Remember the characteristics of Procedure and Object Oriented Programming Languages
K2	CO2	Understand the fundamentals of C++ programming structure, function overloading and constructors.
K3	CO3	Using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.
K4	CO4	Apply the concepts in 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

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

18UCT203

UNIT II   **9 Hours**

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.

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

UNIT III   **9 Hours**

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 – **Manipulators*.**

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.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Discussion and Assignment

TEXT BOOK:

1. E.Balagurusamy, (2012), Object Oriented Programming with C++, Fifth Edition, Tata McGraw 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	PSO1	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

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

18UCT2CM

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT2CM	**Core Practical 2 – C++ PROGRAMMING LAB**			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	II	3	45	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	CO1	Implement the concepts of object oriented programming.
K3	CO2	Apply string functions to perform operator overloading.
K4	CO3	Analyze virtual functions and inheritance.
K5	CO4	Implement files and command line arguments.

LIST OF PRACTICAL PROGRAMS

1. Write a C++ program to perform Friend function concept.

2. Write a C++ program to perform arithmetical operations using Constructor.

3 .Write a C++ program to perform Banking operation using constructor.

4. Write a C++ program to perform function overloading and this pointer

5. Write a C++ program to perform Operator Overloading concept.

6. Write a C++ program to perform string manipulation operations

7. Write a C++ program to prepare employee pay slip using console I/O.

8. Write a C++ program to find Area and Perimeter using Virtual function ad Inheritance concept.

9 Write a program to perform file manipulations.

10. Write a program using Command Line Arguments.

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

Two Questions will be given for each student. (3 Hours/60 marks)

Record: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Program Coding & Execution	15	15
Modifications	5	5

TEACHING METHODS:

Presentation and Program demonstration through Projector.

MAPPING

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

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

18UCT304

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT304	Core Paper 4 – Operating Systems			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	III	5	75	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	CO1	Recollect the basic functionality of the salient features of operating systems like DOS history, Processing states, Interrupts and Switching concepts.
K2	CO2	Understand the concepts of storage management, paging and page replacement concepts.
K3	CO3	Apply various optimization techniques in operating systems.
K4	CO4	Analyze the functionalities of Android operating system.

SYLLABUS

UNIT I   **15 Hours**

Introduction & process Concept: Definition of DOS – Early History-History of DOS & UNIX OS-Definition of Process-Process states-process states transition -Interrupt processing –interrupt classes-context switching-semaphores-deadlock & indefinite postponement

UNIT II   **15 Hours**

Storage Management Real Storage: Real storage management strategies - Contiguous Vs non-contiguous storage allocation - Single User Contiguous Storage allocation-Fixed partition multiprogramming - Variable partition multiprogramming,

Multiprogramming with storage swapping. Virtual storage: Virtual storage management strategies- Page replacement strategies - Working sets - Demand paging - Page size.

UNIT III   **15 Hours**

Processor Management Job and Processor Scheduling: Preemptive Vs Non-preemptive scheduling - Priorities - Deadline scheduling – **FIFO*** - RR - Quantum size – **SJF*** - SRT. Distributed computing: Classification of sequential and parallel processing - Array processors - Dataflow computers -Multiprocessing - Fault Tolerance.

UNIT IV   **15 Hours**

Device and Information Management Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek Optimization – FCFS – SSTF – SCAN – RAM Disks – Optical Disks. File and database systems: File System – Functions – Organization – Allocating and freeing space – File descriptor – Access control matrix.

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

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOKS:

1. H.M.Deitel, (2003), Operating Systems, Second Edition, Pearson Education Publication. (Unit I to Unit IV)
2. Lauren Darcey, Shane Conder, (2012), Android–Wireless Application Development(Volume-I, Third Edition, Pearson Publication. (Unit V)

18UCT304

REFERENCE BOOKS:

1. Achyut S Godbole, (2006), Operating Systems, Tata MCGraw Hill Publication.

2. Jorg H.Kloss, (2013), Android Apps with APP Inventor ,Pearson Publication.

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MAPPING

PSO CO	PSO1	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	M	M

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

18UCT305

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT305	Core Paper 5 – Data Structures and Analysis of Algorithms			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	III	5	75	4

Course Objectives

1. Describe and implement the advanced data structures and demonstrate Knowledge in different methods for representing a graph and tree.

2. Apply important algorithmic design paradigms and methods of analysis.

3. Analyze the asymptotic performance of algorithms.

Course Outcomes (CO)

K1	CO1	Remember the data structures algorithms and programs.
K2	CO2	Understand data structures and the concepts of algorithms for searching, sorting and dynamic programming
K3	CO3	Apply appropriate algorithms and data structures for various applications
K4	CO4	Analyze the computational complexity of various algorithms

SYLLABUS

UNIT I   **15 Hours**

Introduction-Data structure-definition-How to create a program-How to analyze a program-Arrays-Order List –Sparse Matrices-Representation of Arrays-Stacks and Queues-Fundamentals- Evaluation Expression-Multiple Stacks and Queues.

UNIT II   **15 Hours**

Linked Lists-Singly Linked List-Linked Stacks and Queues-Storage pool-Polynomial Addition-Doubly Linked Lists Tress: Basic Terminology-Binary Trees-binary Tree representation-Binary Tree Traversal.

18UCT305

UNIT III   **15 Hours**

Graphs: Terminology and representation-Introduction –Definition and Terminology-Graph Representation – Traversals-Connected components and spanning Trees -Shortest path-Transitive Closure

Internal Sorting- Insertion sort - Quick sort - Merge sort - Heap sort –Radix sort. External Sorting-sorting with Tapes, Sorting with Disks.

UNIT IV   **15 Hours**

Symbol Tables-Static tree tables-Dynamic tree tables-Hash tables- Hashing Functions-Overflow Handling.

Files: Files-Queries– Sequential organization - Index Techniques – File organization

UNIT V   **15 Hours**

Introduction: Algorithms – Analysis of algorithms – Best case and worst case complexities, Analysis of some algorithms using simple data structures, amortized time complexity. Dynamic programming: The General Method – Traveling sales Person problem.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOKS:

1. Ellis Horowitz, Sartaj Shani, (1994) , Fundamentals of Data Structures, First Edition. Galgotia Publication. (Unit I to Unit IV)

2. Ellis Horowitz), Sartaj Sahni and Sanguthevar Rajasekaran, (2008) , Fundamentals of Computer Algorithms, Second Edition, Hyderabad Universities Press (India) Private Limited Publication. (Unit V)

REFERENCE BOOK:

1. Robert Kruse, C.L. Jondo Bruce Leung, (1999), Data Structures and Program Design in C, Second Edition, Pearson Edition Asia Publication.

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

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

18UCT306

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT306	Core Paper 6 – Java Programming			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	III	5	75	5

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 alone java applications and Web based applications.
3. To provide the advanced concepts in java programming like Package, Multi Thread, Applet, interface and AWT Components
4. Ability to improve their programming skills using self programs.

Course Outcomes (CO)

K1	CO1	Remember the basic concepts of OOPs, Data Types, Control Statements and Tokens.
K2	CO2	Realize the knowledge about the java statements.
K3	CO3	Implement the concept of Package, Thread , Applet, Interfaces and AWT Components
K4	CO4	Inspect the java concepts and get the new innovative ideas.

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-Java virtual Machine- Constants- variables – Data types – Operators and Expressions.

UNIT II   **15 Hours**

Flow Control : Branching – Looping*. Classes : Introduction – Object References- Instance Variables – the New Operator – Dot Operator – Method Declaration – Method Calling – Constructor- Method Overloading – this keyword – Final – Finalize – Static.

UNIT III   **15 Hours**

Arrays- Strings – String Tokenizer.

Inheritance: Introduction-Types of Inheritance. Interfaces: Multiple Inheritances. Packages:

Putting classes together – Multi Threaded Programming- Managing Errors and Exceptions

UNIT IV   **15 Hours**

Applet programming–Graphics programming-Color-Font.

Files: Introduction – Concept of Streams – Stream classes –I/O classes- File class – I/O

Exceptions – Reading/Writing characters /Bytes- Handling primitive data types – Random

Access Files.

UNIT V   **15 Hours**

AWT – Introduction – AWTClasses – Container – Panel – Frame - Canvas-Labels –

PushButtons – CheckBoxs – ChoiceList – List – ScrollBar - TextArea-TextField-MenuBar.

Event Handling-ActionEvent-KeyEvent-MouseEvent-MouseWheelEvent-Item Event.

Interface-ItemListener-KeyListener-MouseListener-MouseMotionListener-ActionListener-

MouseWheelListener.

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

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOKS:

1. E.Balagurusamy, (2010), Programming with Java – A Primer, Fourth Edition, Tata

McGrawHill Publication. (Unit I, III and IV)

2. Patrick Naughton, (2006), Java Hand Book, Tata MCGraw Hill Publication. (Unit II and

V)

18UCT306

REFERENCE BOOKS:

1. Patrick Naughton, Herbert Schildt, (2008), The Complete Reference Java 2, Fifth Edition,

Tata MCGraw Hill Publication.

2. C.Xavier, (2006), Programming with Java 2, First Edition, Scitech Publication.

MAPPING

PSO CO	PSO1	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

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

UCT -30

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT3CN	Core Practical 3 – Java Programming Lab			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	III	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. On successful completion of practical they will able to get the overall idea about java programming structure.

Course Outcomes (CO)

K3	CO1	Practice the concepts of OOPs, java control statements, data types and Tokens.
K4	CO2	Review the java package, interface, applet and AWT Components.
K5	CO3	Work out all the java unique statements through the programs.

LIST OF PRACTICAL PROGRAMS

1. Write a java program to perform string functions using constructor and user defined package.

2. Write a java program to illustrate multiple inheritances.

3. Write a program to perform thread concept.

4. Write a java program to illustrate String Tokenizer concept

5. Write a program to perform Stack Operation.

6. Write a program to perform Queue Operation.

7. Write a program to implement binary search concepts.

8. Write a program to illustrate exception concepts.

9. Write a program to illustrate Applet concepts.

10. Write a program to perform inventory control using AWT components.

11. Write a java program illustrates file concepts.

12. Write a java program to perform MouseEvent operations

13. Write a Java program to demonstrate the multiple selection list box.

14. Write Java program to create a menu bar and pull down menus.

15. Write a program to illustrate KeyEvent operations.

Guidelines to the distribution of marks for practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Program Coding & Execution	15	15
Modifications	5	5

TEACHING METHODS

Presentation and Program demonstration through Projector.

MAPPING

PSO / CO	PSO1	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

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

18UCT407

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT407	Core Paper 7 – Relational Database Management Systems			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	IV	5	75	4

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	CO1	Remember the basic concepts of database management systems and database techniques
K2	CO2	Understand Data constraints and CODDs rules, DML and DDL statements of ORACLE,
K3	CO3	Apply various DDL and DML statements, joins queries, PL / SQL statements.
K4	CO4	Analyze the granting and revoking permissions , cursors

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 minus clause-Granting permissions- Revoking permissions- Codd's Rules.

18UCT407

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:

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, (2006), Database System Concepts, Fifth Edition, Tata McGraw Hill Publication. (Unit I, IV, V)

2. Ivan Bayross, (2007), Commercial application development using ORACLE developer 2000, First Edition. (Unit II, III)

REFERENCE BOOKS:

1. Bipin.C.Desai, (2000), An Introduction to database systems, First Edition, Galgotia Publication.

2. Ivan Bay Ross, Oracle 7 The Complete Reference, First Edition, BPB Publications, Chennai.

MAPPING

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

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

18UCT408

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT408	**Core Paper 8 – .NET Framework**			

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	IV	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	CO1	Remember the basic Visual basic concepts and advanced features of VB.Net.
K2	CO2	Understand the concepts of .Net framework Technology and summarize the advantages and disadvantages of .Net framework.
K3	CO3	Apply the web applications using VB.Net.
K4	CO4	Analyze the distributed event driven programming using .Net framework

SYLLABUS

UNIT I 18 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 18 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.

18UCT408

UNIT III   **18 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   **18 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   **18 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:

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

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, BPB Publication.
2. Bill Evjen Beres, (2002), Visual Basic.NET programming Bible, Wiley – DreamTech Publication.

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

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

18UCT409

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT409	**Core Paper 9 – Computer Networks**			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	IV	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	CO1	Understand OSI reference Model and knowledge of using different Layers in the networking model.
K2	CO2	Understand the knowledge of the use of cryptography
K3	CO3	Apply the techniques used in routing algorithms
K4	CO4	Analyze Digital Signatures Symmetric-Key Signatures and Public-Key signatures.

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.

18UCT409

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 Protoclos: UDP-Introduction to UDP-Remote Procedure Calls-TCP-Introduction to TCP- TCP Service Model – TCP Segment Header.

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

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOK:

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

REFERENCE BOOKS:

1. Behrouz A. Forouzan, (2003), Data Communications And Network, Second Edition, Tata MCGraw Hill Publication.

2. William A shay, (2001), Understanding data communications and networks, Second Edition, Vikas Publication.

MAPPING

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

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

18UCT4CO

Programme Code : 11		B.Sc Computer Technology		
Course Code: 18UCT4CO		Core Practical 4 – .Net Framework and Oracle Lab		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	IV	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	CO3	Apply the decision and control structures in .NET and apply the concepts of queries and creation of console applications.
K4	CO4	Analyze the concept of windows application and project creation and Oracle functions
K5	CO4	Execute the console, window application, crystal report, PL/SQL triggers.

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.

ORACLE

9. Create a student mark list and do the following

   a) Alter the table to add total and average fields with required size.

   b) Modify to increase the total field size.

   c) Calculate the total and average.

10. Create two tables in the name Employee_Personal and   Employee_Salary using Primary and Foreign key concept and perform necessary operations.

   a)Display the employee details who are all getting salary above 15000.

   b)   Display the employee name and address who are all coming from city

      "Coimbatore" or "Chennai".

   c) Display the employee name ,who are all coming from city "Coimbatore" and pin

      code 641029 or 641001.

   d) Display the employee details in descending order based on name.

11. Create an item table with the necessary fields and do the following
   a) Display the itemname strats with 'm'

   b) Creation of reports using Column format.

   c) Find the Maximum and minimum cost of an item.

   d) To display the itemnames in upper case.

12. Write a necessary queries to perform oracle built-in functions.

13. Write PL/SQL block to prepare electricity bill.

14. Write PL/SQL block:

   a) Find the sum of individual number.

   b).Find the given number is Armstrong number or not.

15. Create a Data base Triggers to check the validity of records.

Guidelines to the distribution of marks for practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Program Coding & Execution	15	15
Modifications	5	5

TEACHING METHODS

Presentation, Program demonstration through Projector.

MAPPING

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

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

18UCT4A4

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT4A4	Allied Paper 4 – Micro Processors, PC Hardware and Interfacing			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	IV	6	90	5

Course Objectives

1. To understand the basic architecture of 16 bit and 32 bit microprocessors.

2. To understand the interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.

3. To be aware of the techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.

Course Outcomes (CO)

K1	CO1	Remember the basic architecture of 16 and 32 bit microprocessors
K2	CO2	Understand the 16 bit memory and peripheral devices.
K3	CO3	Apply the concepts of advanced microprocessors like Pentium pro , MMX technologies.
K4	CO4	Analyze the development tools , I/O devices.

SYLLABUS

UNIT I   **18 Hours**

8086 Microprocessor: Introduction – general organization of a Microcomputer - 8086 internal Architecture- **Addressing modes** * – Instructions- Data Transfer, Arithmetic, Bit Manipulation, String. The 8086 based system design: Pins and Signals-Pin Configuration, Signals, Interfacing memory-Memory Devices, Memory Banks- Interrupts.

UNIT II   **18 Hours**

Peripheral Devices: Introduction- Programmable Peripheral Interface (8255A)-Internal blocks of 8255A ,Operating Modes-Priority Interrupt Controller (8259A)-Internal Block Diagram ,Operations-Direct Memory Access Controller (8237)-Organization of 8237-The Programmable Interval Timer (8254)-Internal Block Diagram-Universal Asynchronous Receiver Transmitter(UART)- Internal Block Diagram, Internal Registers.

18UCT4A4

UNIT III   **18 Hours**

Advanced Microprocessors: 80386-Internal Block Diagram , Internal Registers, Modes of Operation , 80486-Internal Blocks and signals , Internal Registers, Pentium - Internal Blocks and Signals, Pentium MMX, Pentium Pro, Pentium-II Microprocessor.

UNIT IV   **18 Hours**

Introduction to bit Slice processor, Signal processing processor and transputers. Introduction to development tools, MDS, **logic analyzer***, in-circuit emulator.

UNIT V   **18 Hours**

Input devices -Output devices -Memory and I/O addressing - Programmable I/O Ports – Introduction to USB.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOKS:
1. N. Mathivanan, (2005), Microprocessors, PC Hardware and Interfacing, PHI Publication. (Unit I, II & III)
2. Badri Ram, (2007), Advanced Microprocessors and Interfacing Fourteenth Edition, Tata McGraw Hill Publication. (Unit IV & V)

REFERENCE BOOKS:
1. AdityaP.Marthur, (2002), Introduction to Microprocessors, Third Edition, TMH Publication.
2. Brey.Barry.B, Shrma C.R, (2007), The Intel Microprocessors, First Edition, PHI Publication.

MAPPING

PSO CO	PSO1	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	S	S	H	H

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

18UCT510

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT510	Core Paper 10 – Software Engineering and Testing			

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	V	5	75	5

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	CO1	Remember the steps involved in developing the software.
K2	CO2	Understand the roles and responsibilities of various persons involved in development cycle.
K3	CO3	Implement the methods and techniques to develop a small project.
K4	CO4	Analyze the problems that may occur in each and every phase of software development cycle.

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.

18UCT510

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:

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOKS:

1. Roger S Pressman, (2005), Software Engineering, Sixth Edition, TMH Publication. (UNIT I to UNIT III)

2. Srinivasan Desikan, Gopalaswamy Ramesh, (2008), Software Testing Principles and practices, Dorling Kindersely Publication. (UNIT IV , UNIT 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 Education Publication.

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

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

18UCT511

Programme Code : 11		B.Sc Computer Technology		
Course Code: 18UCT511		Core Paper 11 – Mobile Computing		
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	V	5	75	5

Course Objectives

1. To introduce the basic concepts and principles in mobile computing.

2. To include the major techniques involved in networks & systems issues for the design and implementation of mobile computing systems and applications.

3. To Provide an opportunity for students to understand the key components and technologies involved and to gain hands-on experiences in building mobile applications.

Course Outcomes (CO)

K1	CO1	Understand the concept of Wireless LANs, PAN, Mobile Networks.
K2	CO2	Understand positioning techniques and location-based services and applications.
K3	CO3	Apply the techniques used in the GSM and GPRS.
K4	CO4	Analyze CDMA and wireless LANs.

SYLLABUS

UNIT I **15 Hours**

Introduction: Mobility of bits and bytes, wireless- The beginning, mobile computing – Networks – Middleware and Gateways – Application and Services – Developing Mobile computing Applications – Security in Mobile Computing.

Mobile Computing Architecture: History of Computers – History of Internet – Internet – The ubiquitous network – Architecture for Mobile Computing– Three Tire Architecture - Design consideration for Mobile Computing - Mobile Computing through Internet – Making existing Applications Mobile - Enabled.

UNIT II **15 Hours**

Mobile Computing through Telephony: Evolution of Telephony – Multiple Access Procedures - Mobile Computing through Telephone – Developing an IVR application – Voice XML – Telephony Application Programming Interface (TAPI)

Emerging Technologies: Introduction – Bluetooth- Radio Frequency Identification – Wireless broadband – Mobile IP- Internet Protocol Version 6(IPV6)- Java Card.

UNIT III   **15 Hours**

Global system for Mobile Communication (GSM): Global system for Mobile Communication- GSM Architecture – GSM entities – Call routing in GSM, PLMN Interface – GSM Address Identifiers – Network aspects in GSM- GSM frequency allocation – Authentication and Security.

Short Message Service (SMS) : Mobile Computing over SMS - **Short Message Service***- Value added services through SMS – Accessing the SMS bearer.

UNIT IV   **15 Hours**

General Packet Radio Service (GPRS) : Introduction – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Applications for GPRS- limitations of GPRS – Billing and Charging in GPRS.

Wireless Application Protocol (WAP): Introduction – WAP – MMS- GPRS application.

UNIT V   **15 Hours**

CDMA and 3G : Introduction – Spread spectrum technology – IS 95- CDMA versus GSM – Wireless data – Third generation network – Application on 3G.

Wireless LAN : Introduction – Wireless LAN advantages – IEEE 802.11 standards – Wireless LAN architectures – Mobility in Wireless LAN – Deploying Wireless LAN – Mobile Ad-hoc network and sensor network – Wireless LAN Security – WiFi versus 3G.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

18UCT511

TEXT BOOK:

1. Ashok K Talukder, Roopa R Yavagal, (2005), Mobile Computing, Tata McGraw Hill Publication.

REFERENCE BOOKS:

1. Jochen Schiller, (2003), Mobile Communication, Second Edition, Addision Wesely Publication.

2. Hansmann, Lothar Merk, Martin, Nicklous, Thomos stober, (2006), Principles of mobile computing, Second Edition, springer international edition.

MAPPING

PSO CO	PSO1	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	M	M

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

18UCT512

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT512	Core Paper 12 – Data Mining and Warehousing			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	V	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	CO1	Remember the basic concepts in database management system and understand the discovery of knowledge in databases.
K2	CO2	Understand the techniques of genetic algorithms, neural networks and decision trees.
K3	CO3	Apply clustering and classification algorithms in data mining.
K4	CO4	Analyze typical 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.

18UCT512

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:

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOKS :

1.Margaret H.Dunbam, (2003), Data Mining Introductory and Advanced Topics, Pearson Education Publication. (UNIT I to UNIT IV)

2. Sam Anahory, Dennis murray, (2007), Data warehouse in the real world – practical guide for building decision support system, Second Impression, (UNIT V)

18UCT512

REFERENCE BOOK:

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

MAPPING

PSO / CO	PSO1	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

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

18UCT5CP

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT5CP	**Core Practical 5 – Software Testing Lab**			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	V	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	CO1	Apply the principles of system and component testing.
K4	CO2	Analyze the strategies for generating system test cases.
K5	CO3	Evaluate the tools used in automation testing.

SYLLABUS

1. Perform windows calculator validation.

2. Perform windows paint validation

3. Display the user entered data on MS Excel application for default.

4. Display the user entered data for a specific field.

5. Perform database verification.

6. Test Bitmap objects in an application.

7. Perform properties check for graphical objects.

8. Verify the text area application for an application.

9. Perform the synchronization checkpoint for an application.

10. Generate user report message for an application.

TEACHING METHODS:

Presentation and Program demonstration through Projector.

Guidelines to the distribution of marks for practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Test Case	5	5
Test Result	10	10
Modifications	5	5

MAPPING

CO \ PSO	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

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

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT613	Core Paper 13 – PHP			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	VI	6	90	5

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. After the completion of this course, Students will get the overall idea about PHP and SQL and able to get the knowledge about Web site development.

Course Outcomes (CO)

K1	CO1	Remember the basic web development requirements and PHP concepts.
K2	CO2	Grasp the PHP program flow, arrays, string and functions.
K3	CO3	Implement classes, Cookies, Sessions, OOPs and File concepts.
K4	CO4	Review the concepts of SQLite and PHP Statements.

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 Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

18UCT613

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

Lecture, Presentation, Seminar, Discussion & Assignment

TEXT BOOK:

1. Vikram Vaswani, (2008), PHP – A Beginner's Guide, Tata McGraw–Hill Publication.

REFERENCE BOOKS:

1. Steven Holzner, (2007), The PHP Complete Reference, Tata McGraw–Hill Publication.

2. Steven Holzer (2005), Spring into PHP5, Addison Wesley Publication.

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	H	S	H	H

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

18UCT614

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT614	Core Paper 14 – Information Security			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	VI	6	90	5

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 in security.

Course Outcomes (CO)

K1	CO1	Recollect the basic security concepts of the digital computer system.
K2	CO2	Understand the malicious codes and virus attachments of a file.
K3	CO3	Apply the security mechanisms, firewalls and intrusion detection systems in the computer field.
K4	CO4	Analyze different types of security flaws , Legal and Ethical issues in computer security.

SYLLABUS

UNIT I   **15 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   **15 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.

18UCT614

UNIT III   **15 Hours**

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

UNIT IV   **15 Hours**

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

UNIT V   **15 Hours**

Legal and Ethical Issues in Computer Security: Protecting Programs and Data- Information and the Law-Computer Crime- Ethical Issues in Computer Security.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

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.

MAPPING

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

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

UCT -64

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT6CQ	Core Practical 6 – Programming Lab-PHP			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	VI	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 SQL connectivity concepts.
3. To be able to design their own website.

Course Outcomes (CO)

K3	CO1	Execute array functions, file and directory functions, date and time functions in PHP Script.
K4	CO2	Inspect PHP expressions, Cookies and Sessions.
K5	CO3	Evaluate the database using PHP's MySQLite extensions

LIST OF PRACTICAL PROGRAMMES

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 MYSQL table.
5. Develop a PHP program to design a college application form using MYSQL table.
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, date and time functions.
9. Develop a PHP program using session.
10. Develop a PHP program using cookie and session.

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 60 Marks)

Record Work - 10 Marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Program Coding & Execution	15	15
Modifications	5	5

TEACHING METHODS

Presentation and Program demonstration through 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

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

18UCT6Z1

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT6Z1	**Core Project – Project Work & Viva - Voce *****			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	VI	4	60	4

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.
4. After completing their project they get the confident for solving the real time problems.

Course Outcomes (CO)

K3	CO1	Apply the programming skill for solving the project.
K4	CO2	Analyze the task and to collect the necessary information and software.
K5	CO3	Evaluate the task based on the software.

Guidelines to the Distribution of Marks:

CIA	Project Review	15	**20**
	Regularity	5	
ESE	Project Report Present	60	**80**
	Viva – Voce	20	
Grand Total			**100**

B.Sc Computer Technology 2018-2019 onwards

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

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

Programme Code : 11	B.Sc Computer Technology

Elective Paper: Network Security			
Batch	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	6	90	5

Course Objectives

1. To be familiar with network security awareness and its importance.

2. To understand, how the security concept is executed in the network area?

3. To master the fundamentals of secret and public cryptography.

4. To gain the knowledge from various network security procedures.

Course Outcomes (CO)

K1	CO1	Memorize the basic concept about security, virus, Worm, Trojan and types of attacks.
K2	CO2	Understand the idea about cryptography, encryption and decryption.
K3	CO3	Implement various security procedures like DES, RSA, TSP,WAP
K4	CO4	Evaluate internet protocols and computer system authentications (i.e.) Password concepts

SYLLABUS

UNIT I   **17 Hours**

Attacks on Computers and Computer Security: Introduction – The Need for security – Security Approaches – Principles of Security – Types of Attacks: A General View – A Technical View - The Practical side of Attacks – Programs that Attack: Virus, Worms, Trojan Horse.

Cryptography: Introduction – Plain Text and Cipher Text – Substitution Techniques – Transposition Techniques - Encryption and Decryption – Steganography.

UNIT II   **19 Hours**

Symmetric Key Algorithms and AES: Introduction – Algorithm Types and Modes – An Overview of Symmetric Key Cryptography - DES – IDEA.

Asymmetric Key Algorithms, Digital Signatures and RSA: Introduction – The RSA Algorithm – An Overview of Asymmetric Key Algorithms - Digital Signatures

UNIT III   **18 Hours**

Digital Certificates and Public Key Infrastructure (PKI): Introduction – Digital Certificates – Private Key Management – The PKIX model – PKCS .

UNIT IV   **18 Hours**

Internet Security Protocols: Introduction – Basic Concepts – SSL – TLS – SHTTP – TSP – SET – Email Security – WAP – * Security in GSM.

UNIT V   **18 Hours**

User Authentication and Kerberos: Introduction – Authentication Basics – Passwords – Certificate based Authentication – Biometric Authentication – Kerberos – KDC – Security Handshake pitfalls. SSO – DOS Attacks **– CSSV*.**

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

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOK:

1. Atul Kahate, (2003), Cryptography and Network Security, Tata MC Graw Hill Publication.

REFERENCE BOOKS:

1. Charlie Kaufman, Radia Perlman, Mike Speciner, (2005), Network Security Private Communication in a Public World, Second Edition, EEE Publication.
2. Nitesh dhanjani, Justin Clarke, (2005), Network Security Tools, Shroff Publications and Distributions Pvt Ltd Publication.

MAPPING

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

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

Programme Code : 11	B.Sc Computer Technology		
Elective Paper: Cloud Computing			
Batch	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	6	90	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	CO1	Identify the architecture and infrastructure of cloud computing including SaaS, PaaS, IaaS, public cloud, private cloud, and hybrid cloud.
K2	CO2	Understand the core issues of cloud computing, security, privacy, and interoperability.
K3	CO3	Apply the appropriate technologies and approaches for the related issues in Cloud Computing.
K4	CO4	Analyze the suitable cloud computing solutions and recommendations according to the applications used.

SYLLABUS

UNIT I **18 Hours**

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

UNIT II **18 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   **18 Hours**

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

UNIT IV   **18 Hours**

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

UNIT V   **18 Hours**

Cloud computing for everyone – cloud computing for community – cloud computing for
corporation.

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

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOKS:

1. Rajkumar Buyya, Christian vecchiola , Thamarai selvi, (2013), Mastering Cloud
computing, Mc Gram Hill Publication. (UNIT – I to UNIT – IV)

2. Michael Miller, (2009), Cloud computing – Web based application, First Edition, Pearson
Edu Inc Publication. (UNIT – V)

REFERENCE BOOK:

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

UCT -73

MAPPING

PSO / CO	PSO1	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	M	M

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

Programme Code : 11	B.Sc Computer Technology		
Elective Paper: System Software			
Batch	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	6	90	5

Course Objectives

1. To understand the relationship between system software and machine architecture.
2. To know the design and implementation of assemblers.

Course Outcomes (CO)

K1	CO1	Remember the basics of assemblers and various loader functions
K2	CO2	Understand the data and instruction formats, dynamic linking and bootstrap loaders.
K3	CO3	Apply the concepts of text editing processes.
K4	CO4	Analyze the debugging functions

SYLLABUS

UNIT I   **18 Hours**

System Software and machine architecture-The simplified instructional computer(SIC)-machine architecture-Data and instruction formats-addressing modes-instruction sets-input/output and programming.

UNIT II   **18 Hours**

Basics assembler functions-A simple SIC assembler-assembler algorithms and Data structures-machine dependent assembler features-instruction formats and addressing modes-program relocation-machine independent assembler features-**literals*-**symbol-defining statements-expression –one pass assemblers and multi pass assemblers-implementation example-MASM assembler.

UNIT-III   **18 Hours**

Basic loader functions-design of absolute loader-A simple bootstrap loader-machine dependent loader features-relocation-program linking-algorthim and data struture for linking

loader-machine independent loader features-automatic library search-loader options-loader design options-linkage editors-dynamic linking-bootstrap loader-implementation example-MS-DOS linker.

UNIT IV   18 Hours

Basic macro processor functions-macro definition and expansion-macro processor algorithm and data structure-machine independent macro processor features-concatenation of macro processor parameters-generation of unique labels-conditional macro expansion-keyword parameters-macro within macro-implementation example-MASM macro processor-**ANSI C macro language***

UNIT V   18 Hours

Text editors-overview of the editing process-user interface-editor structure-interactive debugging systems-debugging functions and capabilities-relationship with other parts of the system-user interface criteria.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOK:

1. D.Thenmozhi, V.Deepa lakshmi, (2007), System Software, First edition Nagus Publication.

REFERENCE BOOKS:

1. D.M.Dhamdhere, (1999), System programming and Operating System, Revised Edition, Tata mc Gram Publication.
2. Leland L.Beck, (2000), System Software- A introduction to system programming, Third Edition, Pearson Education Publication.

MAPPING

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

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

Programme Code : 11	B.Sc Computer Technology		
Elective Paper: Client/Server Techniques			
Batch	Hours/Week	Total Hours	Credits
2018-2019	6	90	5

Course Objectives

1. To gain Exposure on clients and servers.
2. To understand the concept of client-server development and learn problem solving skills through design scenarios for network environment.
3. To develop client–server based application.

Course Outcomes (CO)

K1	CO1	Remember the concepts of client server techniques.
K2	CO2	Understand client and server operating systems and middleware.
K3	CO3	Apply SQL database server queries and relational databases.
K4	CO4	Analyze about the internet and intranet DCOM, OLE and CORBA object web.

SYLLABUS

UNIT I   **18 Hours**

Client − Server computing − What is Client / Server? − File servers, database servers, Transaction servers, Groupware servers, Object servers, Web servers –FAT servers or client / server * − Client / Server building blocks.

UNIT II   **18 Hours**

Client / Servers and Operating Systems − The Anatomy of a server program − Needs of Client / Server from an OS − Server Scalability − Client anatomy − Client and server OS trends − Client OS and Server OS. NOS: Creating the single system image − Peer-to-Peer Communication-Remote Procedure Calls (RPC) − Messaging and Queuing: The MOM Middleware- **MOM vs RPC***

UNIT III   **18 Hours**

SQL Database Servers: Fundamentals of SQL and Relational Databases-What does SQL do? –Stored procedures, Triggers and Rules. Data warehouses – OTP (Online Transaction Processing) – Decision Support Systems (DSS) – Executive Information System (EIS) – The

UNIT IV   **18 Hours**

Client / Server Transaction Processing – The ACID properties – Transaction Models – TP monitors – Client / Server groupware – Importance of Groupware– What is Groupware – The components of Groupware. Distributed Objects, CORBA Style Object management architecture – Compound Documents –The compound document framework.

UNIT V   **18 Hours**

Web client / server – What is URL? – Shortest HTML tutorial – HTTP – 3 tier client / server – HTML web based forms – CGI : The server slide of the web –web security – The internet and the intranets – **Java and Hot Java***- Applet Components- Compound documents and the object web – The DCOM / OLE Object Web – The CORBA object web.

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

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOK:

1. Robert Orfali, Dan Harkey , Jeri Edwards, (2002), The Essential Client / Server Survival Guide, Second Edition, Galgotia Publication.

REFERENCE BOOKS:

1. Dawna Travis Dewire, (2007), Client / Server Computing, First Edition Tata McGraw-Hill Publication.
2. Patrick Smith, Steve Guengerich, (2002), Client / Server Computing, Second Edition, PHI Publication.

3. Steven M. Bobrowski, Mastering Oracle 7 And Client/Server Computing, BPB Publication.

MAPPING

PSO / CO	PSO1	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	M	M

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

Programme Code : 11	B.Sc Computer Technology		
Elective Paper: Artificial Intelligence			
Batch	Hours/Week	Total Hours	Credits
2018-2019	6	90	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	CO1	Understand the nature of AI problems and task domains of AI.
K2	CO2	Apply the appropriate search procedures to solve the problems by using best algorithms.
K3	CO3	Analyze and select the suitable knowledge representation method.
K4	CO4	Manipulate the acquired knowledge and infer new knowledge.

SYLLABUS

UNIT I   **18 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   **18 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   **18 Hours**

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

UNIT IV   **18 Hours**

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

UNIT V   **18 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

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOK:

1. Elaine Rich and Kelvin Knight, (1991), Artificial Intelligence, Tata McGraw Hill

Publishers company Pvt Ltd, Second Edition, (chapters 1-6 only).

REFERENCE BOOKS:

1. George F Luger, (2002), Artificial Intelligence, Fourth Edition, Pearson Education Publ.
2. V.S.Janakiraman and K.Sarukesi, (2001), Foundations of AI and Expert System, Mac
Milan India Ltd.

MAPPING

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

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

Programme Code : 11	B.Sc Computer Technology

Elective Paper: Analysis and Design of Information Systems			
Batch	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	6	90	5

Course Objectives

1. To understand the basic concepts of system analysis, design and different types of information systems.

2. To understand the concepts of prototype, files and databases.

3. To understand the basic concepts of system implementation, maintenance and hardware, software requirements.

Course Outcomes (CO)

K1	CO1	To recollect the concepts of system analysis and design.
K2	CO2	To understand the system requirements, system development and prototype models.
K3	CO3	To apply various file, input and database concepts for system development.
K4	CO4	To analyze required hardware components and suitable software for system implementations.

` SYLLABUS

UNIT I   **18 Hours**

Introduction to Information Systems Development: What is Systems analysis & design - Business system concepts - Categories of information systems - System development strategies-Implementation & evaluation - Structured analysis development method –Tools for system development.

Application Development Portfolio: Reasons for project proposals (Tables only) – Managing project review & selection – Steering committee method – Information system committee method – User –group committee method – Preliminary investigations – Scope of study.

UNIT II   **19 Hours**

Tools for Determining System Requirements: What is requirement determination? – Basic requirements – User transaction requirements- User decision requirements.

Structured Analysis Development Strategy: Structured analysis – Data flow analysis – Tools for

Data Flow Strategy – General rule for drawing logical flow data diagrams – Describing data elements.

Prototype Development Strategy: Steps in prototype methods – Use of prototypes.

Computer Aided System Tools: Role of tools – Categories of automated tools.

UNIT III   **17 Hours**

Analysis to Design Transition: Objectives in designing an information system – What features must be designed?

Design of Input and Control: Objectives of input design – Input validation.

Design of Files: Basic file terminology – Data structure diagrams – **Types of files***.

Design of Database Interactions: Systems development in a database environment – Entity Relationships – Structuring the data.

UNIT IV   **18 Hours**

Design for data Communication: Requirements for communication networks – Distributed systems.

Systems Engineering & Quality Assurance – Design objective – Design of software.

Software Design & Documentation Tools – Managing quality assurance.

UNIT V   **18 Hours**

Managing System Implementation: Training – Training systems operators – User training – Training methods – Conversion – Conversion methods – Post implementation review – **Review questions*.**

Hardware Selection: Hardware selection – Determining size & capacity-Computer evaluation & measurement – Financial factors – Maintenance & support.

Software Selection – Evaluation of software – Software contracts.

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

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion & Assignment

TEXT BOOK:

1. James A.Senn (2010), Analysis & Design of Information Systems, Second Edition, Tata
   McGraw Hill, 4th Print.

REFERENCE BOOK:

1. V.Rajaraman (2006), Analysis & design of Information systems, Second Edition, Prentice Hal
   of India Pvt Ltd, New Delhi.

MAPPING

PSO CO	PSO1	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

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

18UCT3S1

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT3S1	Skill Based Subject 1 – Hardware Installation and Servicing			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	III	2	30	3

Course Objectives

1. To understand the knowledge about the hardware components and trouble shooting.
2. To able to get the knowledge about hardware assembling.

Course Outcomes (CO)

K1	CO1	Remember the basic components of a computer hardware.
K2	CO2	Understand the various parts of a computer.
K3	CO3	Apply the computer trouble shooting mechanism.
K4	CO4	Analyze the computer maintenance methods.

SYLLABUS

UNIT I   **6 Hours**

Introduction to Inside PC: Motherboard-BIOS-CMOS RAM-Motherboard types-Processors- Bus Standards-SMPS. On-Board Memory: PC's Memory Organization-Memory Packaging- I/O Ports.

UNIT II   **6 Hours**

Hard Disk Drive and Controller: Hard Disk Drive Sub-assemblies-Hard Disk Controller- Interface Types-Installation and configuration.

UNIT III   **6 Hours**

Input Devices: Keyboard-Mouse-Scanner-Monitors and Display Adapters: Display-Video Basics- - Digital Display Technology-CRT Controller-Graphics Cards.

18UCT3S1

UNIT IV **6 Hours**

Output Devices: Printer Controller-Laser Printer-Ink-Jet Printer. Computer Installation: **Room Preparation*-**Power supply- PC Installation

UNIT V **6 Hours**

Troubleshooting and servicing: Troubleshooting the motherboard- Troubleshooting the keyboard- Troubleshooting the hard disk Drives- Troubleshooting the Printer.

Working with Network Security: Security consideration – Security in NOS.

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

TEACHING METHODS:

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOKS:

1. D.Balasubramaninan, (2005), Computer Installation and Servicing**,** Second Edition, Tata McGraw Hill Publication.
2. Michael W.Graves, (2008), Handbook of Networking, Cengage Learning India (P) Ltd.

REFERENCE BOOKS:

1. Craig Zacker, John Rourke, (2001), The Complete reference: PC Hardware.

2. Singh, (1999), Computer Troubleshooting.

3. Stephen J. Bigelow, (2001), Trouble Shooting, Maintaining & Repairing PCs, McGraw Hill Publication.

MAPPING

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

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

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT4SL	**Skill Based Subject 2 – Hardware Installation and Servicing Lab**			
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	III	2	30	3

Course Objectives

1. To understand the knowledge about the hardware components and trouble shooting

2. To get the knowledge about hardware assembling.

3. To understand the knowledge about LAN connectivity and network file sharing.

Course Outcomes (CO)

K3	CO3	Apply the computer trouble shooting mechanism.
K4	CO4	Analyze the network file sharing, and LAN connectivity.
K5	C05	Execute the Disk defragmentation and various OS installation.

SYLLABUS

1. Study of different components of a PC assembly.

2. Study of troubleshooting.

3. Study of OS Installation, disk fragmentation and de-fragmentation.

4. Study of LAN connectivity in the environment.

5. Study on network file sharing.

Guidelines to the distribution of marks for Practical Examinations:

One Question will be given for each student. (3 Hours/60 marks)

Record : 10 marks

Particulars	Program1 (Marks)
Procedure	20
Assembling and Troubleshooting	30

18UCT4SL

TEACHING METHODS:

Presentation and Program demonstration through Projector.

MAPPING

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

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

18UCT5S2

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UCT5S2	Skill Based Subject 3 - Open Source Technology-Linux			

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	V	2	30	3

Course Objectives

1. To get the basic knowledge about Linux Operation system.
2. To understand the concept of Linux editor and Shell Script.
3. To be aware of shell scripting syntax, functions and file concepts and be able to create own programs using Linux.

Course Outcomes (CO)

K1	CO1	Recollect the Linux OS and Linux Distributors.
K2	CO2	Fathom text editor, compiler and shell syntax.
K3	CO3	Apply shell programming variables, input and output, pipes and Control statements.
K4	CO4	Analyze different Commands, File operations and Library concepts in Shell.

SYLLABUS

UNIT I **6 Hours**

Introduction: What Is UNIX?- What Is Linux?- The GNU Project and the Free Software Foundation - Linux Distribution.

Programming Linux: Linux Programs-Text Editors-The C Compiler-Development System Roadmap.

UNIT II **6 Hours**

Shell Programming : What Is a Shell? **-** Redirecting Output -Redirecting Input- Pipes.

The Shell as a Programming Language: Interactive Programs- Creating a Script-Making a Script Executable.

Shell Syntax: Variables- Conditions- Control Structures.

18UCT5S2

UNIT III   **6 Hours**

Functions- Commands-Command Execution- Debugging Scripts-   The dialog utility.

UNIT IV   **6 Hours**

Linux File Structure: Directories-Files and Devices- System Calls and Device Drivers.
Library Functions- Low-Level File Access-write-read-open-Initial Permissions.

UNIT V   **6 Hours**

The Standard I/O Library: fopen-fread-fwrite-fclose-fflush-fseek-fgetc-getc-getchar.

Formatted Input and Output: printf-fprintf-sprintf-scanf- fscanf- sscanf.

TEACHING METHODS

Chalk and Talk, Presentation, Seminar, Discussion and Assignment

TEXT BOOK:

1. Neil Matthew ,Richard Stones, (2008), Beginning Linux Programming, Fourth Edition, Wiley India Pvt. Ltd Publication.

REFERENCE BOOK:

1. Iresh A. Dhotre, Linux Programming A Comprehensive Approach, First Edition, Technical Publication.

MAPPING

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

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

Programme Code : 11	B.Sc Computer Technology
Course Code: 18UCT6SM	**Skill Based Subject 4 - Shell Programming Lab**

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	VI	2	30	3

Course Objectives

1. To able to gain the knowledge about shell Programming concepts
2. To recognize the difference between Windows and Linux platforms and do the programs in both platforms.
3. To understand shell syntax and create own programs.

Course Outcomes (CO)

K3	CO1	Implement various Shell concepts like read, write, Operators and array.
K4	CO2	Review shell control statements, basic calculators through various programs.
K5	CO3	Assess Shell utility dialog boxes and Color concepts in Shell Programs.

LIST OF PRACTICAL PROGRAMMES

1. Write a Shell program to display your address using special characters.

2. To perform mathematical operations using Shell concepts

3. Print the different patterns using looping concept and switch case.

4. To perform simple inventory control operation.

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

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

7. Write a shell program to perform user defined function and Command Line Arguments.

8. Write a shell program using dialog utility concept.

9. Write a program to perform file operations.

10. Write a shell script to change foreground and background colors.

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

Two questions will be given for each student (3 Hours/60 Marks)

Record – 10 Marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	5	5
Coding and Result	15	15
Modifications	5	5

TEACHING METHODS

Presentation and Program demonstration through 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

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

18EVS101

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18EVS101	Part – IV - Environmental Studies			
Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	I	2	30	2

Course Objectives

1. To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems.
2. To shape students into good "eco citizens" thereby catering to global environmental needs.

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

18EVS101

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

TEXT BOOK:

1. P.Arul, (2004), A Text Book of Environmental Studies, First Edition, Environmental Agency Publication.

18EVS101

REFERENCE BOOKS:

1. Purohit Shammi Agarwal, A text Book of Environmental Sciences, Saraswati Prohit Publication.

2. Dr.Suresh, K.Dhameja, Environmental Sciences and Engineering, S.K.Kataria & Sons Publication.

3. J.Glynn Henry, Gary W Heinke, Environmental Science and Engineering, Prentice Hall of India Private Ltd Publication.

<div align="center">

Question Paper Pattern
(External only)

</div>

Duration: 3 hours   Total Marks : 50

<div align="center">

Answer all Questions (5 x 10 = 50 Marks)

</div>

Essay type, either or type questions from each unit.

Programme Code : 11		B.Sc Computer Technology		
Course Code: 18VED201		Part – IV – Value Education -Moral and Ethics		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2018-2019	II	2	30	2

Course Objectives

1. To impart the value education in every walk of life.
2. To make them understand the relationship between Moral and Ethics.
3. To impart the right attitude by practicing self introspection.
4. To make them realize about their hidden power within them.
5. To develop a knowledge for the steps of upliftment.
6. To know about their goal of life.
7. To make them understand the importance of yoga and meditation.
8. To realize what is the real peace.
9. To understand what are the ways to contribute peace to the whole world.
10. To goad youth to reach excellence and reap success.

SYLLABUS

UNIT I   **6 Hours**

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

UNIT II   **6 Hours**

Swami Vivekananda – A Biography.

UNIT III   **6 Hours**

The Parliament of Religions – Teachings of Swami Vivekananda.

UNIT IV   **6 Hours**

Steps for Human Excellence.

UNIT V   **6 Hours**

Yoga & Meditation.

18VED201

TEXT BOOK:

1. Value Base Education, (2015), Moral and Ethics, First Edition, Published by Kongunadu Arts and Science College (Autonomous).

REFERENCE BOOK:

1. (2000), Easy steps to Yoga by Swami Vivekananda, A Divine Life Society Publication.

<u>**Question Paper Pattern**</u>

(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.

18UHR3N1

Programme Code : 11	B.Sc Computer Technology			
Course Code: 18UHR3N1	Non- Major Elective - I Human Rights			

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	III	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.

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

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.

UNIT V   **6 Hours**

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

TEXT BOOK:

1. Human Rights - Compiled by Dr.V.Sugantha, Dean (Unaided),   Kongunadu Arts and Science College, Coimbatore – 29.

REFERENCE BOOK:

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

2. (1999), Promoting Women's Rights As Human Rights - United Nations, New York Publication.

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

Programme Code : 11		B.Sc Computer Technology		
Course Code: 18UWR4N2		Non- Major Elective - II Women's Rights		

Batch	Semester	Hours/Week	Total Hours	Credits
2018-2019	III	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 health care services.

SYLLABUS

UNIT I   **6 Hours**

Laws, Legal Systems and Change

Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT II   **6 Hours**

Politics of land and gender in India

Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women's Claims to Land – Right to Property - Case Studies.

UNIT III   **6 Hours**

Women's Rights: Access to Justice

Introduction – Criminal Law – Crime Against Women – Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation –Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

UCT -103

18UWR4N2

UNIT IV **6 Hours**

Women's Rights

Violence Against Women – Domestic Violence - The Protection of Women from Domestic Violence Act, 2005 - The Marriage Validation Act, 1982 - The Hindu Widow Re-marriage Act, 1856 - The Dowry Prohibition Act, 1961

UNIT V **6 Hours**

Special Women Welfare Laws

Sexual harassment at work place-rape and indecent representation-the indecent representation act, 1956-acts enacted for women development and empowerment-role of rape crisis center.

BOOK FOR STUDY : Published by Kongunadu Arts & Science College, 2011.

REFERENCE BOOKS:

1. Nitya Rao, (2008), Good Women do not Inherit Land, Social Science Press and Orient Blackswan Publication.

2. International Solidarity Network, (2006), Knowing Our Rights, An imprint of Kali for Women.

3. P.D. Kaushik, (2007), Women Rights, Bookwell Publication.

4. Aruna Goal, (2004), Violence Protective Measures for Women Development and Empowerment, Deep and Deep Publication.

5. Monika Chawla, (2006), Gender Justice, Deep and Deep Publication.

6. Preeti Mishra, (2007), Domestic Violence Against Women, Deep and Deep   Publication.

7. Clair M. Renzetti, Jeffrey L. Edleson, Raquel Kennedy Bergen, (2001), Source Book on Violence Against Women, Sage Publication.

Question paper pattern

(External Only)

Duration: 3 hrs   **Max: 75 Marks**

Section A (5 x 5=25)

Short notes

Either – or / type – question from each unit.

Section B (5 x 10=50)

Essay type

Either – or / type – question from each unit.

Programme Code : 11	B.Sc Computer Technology
Non- Major Elective – Consumer Affairs	

Batch	Hours/Week	Total Hours	Credits
2018-2019	2	30	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, and the role of different agencies in establishing product and service standards.
3. To have a handle the business firms' interface with consumers and the consumer related regulatory and business environment.

Course Outcomes (CO)

K1	CO1	Able to know the rights and responsibility of consumers.
K2	CO2	Understanding the various procedure of redress.
K3	CO3	Applying the role of different agencies in establishing product and service standards.
K4	CO4	To enable them to handle the business firms' interface with consumers.

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 10000 suite

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, 1986. Any change in law would be added appropriately after the new law is notified.

SUGGESTED READINGS:

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

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

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

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

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

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

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

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

9. ebook, www.bis.org

10. The Consumer Protection Act, 1986 and its later versions.

MAPPING

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

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

Question paper pattern

(External Only)

Duration: 3 hrs   **Max: 75 Marks**

Section A (5 x 5=25)

Short notes

Either – or / type – question from each unit.

Section B (5 x 10=50)

Essay type

Either – or / type – question from each unit.