KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029.

DEPARTMENT OF INFORMATION TECHNOLOGY

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2019 - 2020 onwards)

KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

Coimbatore – 641029

Vision:

Developing the total personality of 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 value - moral and ethical.
- Designing the curriculum and offering courses that transform its students into value added 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.
- Moulding the teachers in such a way that they become the role models in promoting Higher Education.

DEPARTMENT OF INFORMATION TECHNOLOGY

Vision:

- To achieve excellent standards of quality education by keeping pace with rapidly changing technologies.
- To create technical manpower of global standards with capabilities of accepting new challenges in Information Technology.
- Integral Formation and Empowerment of students for social transformation through Information Technology.

Mission:

- To provide outstanding education and training to our graduate students for their productive careers in industry, academia, and government.
- To impart quality and value based education to raise satisfaction level of all stakeholders.
- To empower students with academic excellence, knowledge and training.
- To enable critical thinking among students towards development in IT with reference to social transformation.
- To apply new developments in Information Management and provide all possible support to promote research & development.
- To serve as a platform whereby the student enrich their personalities to assume greater responsibilities.

PROGRAMME OUTCOMES (PO)

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

PO2 Practice communication, problem solving and decision-making skills through the use of appropriate technology and with the understanding of the business environment.

PO3 Identify, design, and analyze complex computer systems and interpret the results from those systems.

PO4 Configure and administer database servers to support contemporary business environments.

PO5 Apply the knowledge of mathematics, science and computing in the core information technologies.

PO6 Analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.

PO7 Learn future technologies through acquired foundational skills and knowledge and employ them in new business environments.

PO8 Pursue higher education or practice as computing professionals to contribute to the economic development of the region, state and nation.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1 Apply the knowledge of computing and mathematics appropriate to the discipline.

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

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

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

PSO5 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 INFORMATION TECHNOLOGY [BSC IT]
CURRICULUM & SCHEME OF EXAMINATION UNDER CBCS
[APPLICABLE TO THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2019-2020]

Semester	Part	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks			Duration of Exam (hrs)	Credits
					CIA	ESE	Total		
I	I	19TML1A1	Language I@	6	25	75	100	3	3
	II	19ENG101	English - I	6	25	75	100	3	3
	III	19UIT101	Core Paper I – C Programming	5	25	75	100	3	5
	III	19UIT1CL	Core Practical I – Programming Lab - C	5	40	60	100	3	2
	III	19UIT1A1	Allied I - Mathematical Foundations for Computer Science	6	25	75	100	3	5
	IV	19EVS101	Environmental Studies **	2	-	50	50	3	2
			Total	**30**	**-**	**-**	**550**	**-**	**20**
II	I	19TML2A2	Language II@	6	25	75	100	3	3
	II	19ENG202	Language - English II	6	25	75	100	3	3
	III	19UIT202	Core Paper II - Computer Organization and Architecture	4	25	75	100	3	4
	III	19UIT203	Core Paper III - Object Oriented Programming with C++	3	25	75	100	3	5
	III	19UIT2CM	Core Practical II - Programming Lab -C++	3	40	60	100	3	2
	III	19UIT2A2	Allied II- Computer Oriented Numerical and Statistical Methods	6	25	75	100	3	5
	IV	19VED201	Value Education - Moral and Ethics **	2	-	50	50	3	2
			Total	**30**	**-**	**-**	**750**	**-**	**24**
III	III	19UIT304	Core Paper IV – Data Structures and Algorithms	5	25	75	100	3	4
	III	19UIT305	Core Paper V – Relational Database Management System and ORACLE	5	25	75	100	3	4
	III	19UIT306	Core Paper VI – Advanced JAVA Programming	5	25	75	100	3	5
	III	19UIT3CN	Core Practical III - Programming Lab – Advanced JAVA & ORACLE	5	40	60	100	3	2
	III	19UIT3A3	Allied III - Business Accounting	6	25	75	100	3	5
	IV	19UIT3S1	Skill Based Subject 1 – Web Programming (HTML,CSS,XML)	2	25	75	100	3	3
	IV	19TBT301/ 19TAT301/ 19UHR3N1	Basic Tamil * / Advanced Tamil **/ Non-Major Elective – I ** (Human Rights)	2	-	75	75	3	2
			Total	**30**	**-**	**-**	**675**	**-**	**25**

IV	III	19UIT407	Core Paper VII – Operating Systems	5	25	75	100	3	4
	III	19UIT408	Core Paper VIII –.NET Programming	5	25	75	100	3	4
	III	19UIT409	Core Paper IX –Computer Networks	5	25	75	100	3	4
	III	19UIT4CO	Core Practical IV – Programming Lab –.Net	5	40	60	100	3	2
	III	19UIT4A4	Allied IV – Microprocessors, PC Hardware and Interfacing	6	25	75	100	3	5
	IV	19UIT4SL	Skill Based Subject 2 (Practical) Web Programming Lab(HTML,CSS,XML)	2	40	60	100	3	3
	IV	19TBT402/ 19TAT402/ 19UWR4N2	Basic Tamil */ Advanced Tamil **/ Non-Major Elective – II ** (Women's Rights)	2	-	75	75	3	2
			Total	**30**	**-**	**-**	**675**	**-**	**24**
V	III	19UIT510	Core Paper X – Python Programming	5	25	75	100	3	4
	III	19UIT511	Core Paper XI – Software Engineering	6	25	75	100	3	4
	III	19UIT512	Core Paper XII – Mobile Computing	6	25	75	100	3	4
	III	19UIT5CP	Core Practical V - Programming Lab - Python	5	40	60	100	3	2
	III	19UIT5E1	Major Elective I	6	25	75	100	3	5
	IV		**EDC**	**2**	**40**	**60**	**100**	**3**	**3**
	-	**19UIT5IT**	**Internship Training** ****	**Grade**					
			Total	**30**	**-**	**-**	**600**	**-**	**22**
VI	III	19UIT613	Core Paper XIII – Open Source Tools	6	25	75	100	3	5
	III	19UIT614	Core Paper XIV **-** Information Security	6	25	75	100	3	4
	III	19UIT6CQ	Core Practical VI – Programming Lab Open Source Tools	6	40	60	100	3	2
	III	19UIT6E2	Major Elective II	6	25	75	100	3	5
	III	19UIT6Z1	Project***	4	20	80	100	3	5
	IV	19UIT6SM	Skill Based Subject 3 (Practical) Software Testing Lab	2	40	60	100	3	3
			Total	**30**	**-**	**-**	**600**	**-**	**24**
	V	**19NCC/NSS / YRC/PYE/ ECC/RRC/ WEC101#**	**Extension Activities***	**-**	**50**	**-**	**50**	**-**	**1**
			Grand Total	**-**	**-**	**-**	**3800**	**-**	**140**

Note:

CBCS - Choice Based Credit System
CIA - Continuous Internal Assessment
ESE - End of Semester Examinations

@ Hindi/Malayalam/ French/ Sanskrit – 19HIN/MLM/FRN/SAN101-202

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

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

*** Project Report – 60 marks; Viva voce – 20 marks; Internal-20 marks

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

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

Major Elective Papers

(2 papers are to be chosen from the following 6 papers)

1. Artificial Intelligence
2. Big Data Analytics
3. Data Mining
4. Cloud Computing
5. Software Project Management
6. Internet of Things

Non - Major Elective Papers

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

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

19UIT5X1 - Designing Through Multimedia - GIMP

 # List of Extension Activities:

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

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

Tally Table:

S.NO	PART	SUBJECT	MARKS	CREDITS
1.	I	Language – Tamil/Hindi/French/Malayalam/Sanskrit	200	6
2.	II	English	200	6
3.	III	Core – Theory / Practical	2000	72
		Allied	400	20
		Electives/Project	300	15
4.	IV	Basic Tamil / Advanced Tamil / Non – Major elective	150	4
		Skill Based Subject	300	9
		EDC	100	3
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Extension Activities	50	1
		Total	**3800**	**140**

- 25% CIA is applicable to all subjects except JOC, COP and SWAYAM Courses, which are considered as extra credit courses.
- The students are advised to complete a **SWAYAM-MOOC** before the completion of the 5th semester and the course completed certificate should be submitted to the HoD. Two credits will be given to the candidates who have successfully completed.
- A **Field Trip** preferably relevant to the course should be undertaken every year.

UIT - 5

Components of Continuous Internal Assessment

Components		Marks	Total
Theory			
CIA 1	75	(75+75 = 150/10)	25
CIA 2	75	15	
Assignment/Seminar		5	
Attendance		5	
Practical			40
Practical CIA Practical		25	
Observation Notebook		10	
Attendance		5	
Project			20
Project Review		15	
Regularity		5	

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	75
K2 Q11 to 15	B (Either or pattern)	5 x 5 = 25	Short Answers	
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	55
K2 Q11 to 15	B (Either or pattern)	5 x 3 = 15	Short Answers	
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	60
K4		10	
K5	Record Work		

3. Project Viva Voce:

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

UIT - 6

QUESTION PAPER PATTERN for CIA and ESE
B.Sc Information Technology

Theory

Max Marks: 75 **Time: 3Hrs**

Section A (10 x 1 = 10 marks)

Q.No. 1 to 10 : Multiple choice type alone with four distractors each.

Section B (5 x 5 = 25 marks)

Q.No. 11 to 15 : Either or / short notes type questions (one question 'a' or 'b' from each unit).

Section C (5 x 8 = 40 marks)

Q.No. 16 to 20 : Either or / essay type questions (one question 'a' or 'b' from each unit).

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19UIT101

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT101		**Core Paper I – C Programming**		
Batch 2019-2020	Semester I	Hours / Week 5	Total Hours 75	Credits 5

Course Objectives

1. To impart adequate knowledge on the need of programming languages and problem solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To provide exposure to problem-solving through C programming.
4. To familiarize with 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. Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators – Type conversion in expression – operator precedence & associativity – Mathematical functions - Reading & Writing a character - Formatted input and output.

19UIT101

Unit II **(15 Hours)**

Decision Making and Branching: Introduction – If, If.…Else, nesting of If …Else statements- Else If ladder – The Switch statement, The ?: Operator – The GoTo Statement. Decision Making and Looping: Introduction- The While statement- the do statement – the for statement-jumps in loops.

Unit III **(16 Hours)**

Arrays – Character Arrays and Strings. User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - **The Scope, Visibility and Lifetime of Variables ***

Unit IV **(13 Hours)**

Pointers: Introduction-Understanding pointers-Accessing the address of a variable-Declaration and Initialization of pointer Variable – Accessing a variable through its pointer-Chain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function Arguments-Functions returning pointers.

Unit V **(16 Hours)**

Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Structure Initialization –Array of Structures-Arrays within Structures-Structures within Structures- Pointers and Structures - Unions. File Management in C: Defining and Opening a File – Closing a File – Input/output Operations on Files – Command Line Arguments. The Preprocessor: Macro Substitution – File Inclusion - **Compiler Control Directives ***.

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

Teaching Methods:

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

19UIT101

Text Book:

1. E.Balagurusamy, (2011), **Programming in ANSI C**, Fifth Edition, and Tata McGraw-Hill Publications.

Reference Books:

1. Ashok N Kamthane, (2009), **Programming With ANSI and Turbo C**, Sixth Edition, Pearson Education India Publications.
2. Henry Mullish & Herbert L Cooper, (1998**), "The Spirit of C",** First Edition,Jaico Publication House.

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

19UIT1CL

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT1CL		**Core Practical I – Programming Lab - C**		
Batch 2019-2020	Semester I	Hours / Week 5	Total Hours 75	Credits 2

Course Objectives

1. To introduce the field of programming using C language.
2. To learn problem solving techniques using C
3. To enhance the analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3	CO1	Understand basic Structure of the C-Programming, declaration and usage of variable
K3	CO2	Develop programs using the control statements, Arrays and Strings
K4	CO3	Apply arrays, structures, functions and pointers for problem solving
K5	CO4	Implement files and command line arguments.

List of Practical Programs

1. Write a C program to find the sum, average, standard deviation for a given set of numbers
2. Write a C program to generate —n prime numbers.
3. Write a C program to generate Fibonacci series.
4. Write a C program to convert temperature from Fahrenheit to Celsius and vice versa.
5. Write a C program to print magic square of order n where n > 3 and n is odd.
6. Write a C program to sort the given set of numbers in ascending order.
7. Write a C program to perform matrix multiplication.
8. Write a C program to check whether the given string is a palindrome or not using pointers.
9. Write a C program to count the number of Vowels in the given sentence.
10. Write a function to perform (a) String copy (b) String concatenation and (c) Reversing the string.

19UIT1CL

11. Write a C program to find the factorial of a given number using recursive function.
12. Write a C program to print the student‘s Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.
13. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.
14. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.
15. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i) Number of characters ii) Number of words and iii) 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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	S	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

19UIT202

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT202		**Core Paper II - Computer Organization and Architecture**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	II	4	60	4

Course Objectives

1. To gain an in-depth knowledge about the different types of number systems and number conversions.
2. To learn the concepts of Multiplexers, Flip-Flops and Registers.
3. To impart the knowledge about Input/ Output devices, Interrupt handling and Priority Interrupt.

Course Outcomes (CO)

K1	CO1	Remember the circuits of various flip flops.
K2	CO2	Understand the organization of various units such as control unit, arithmetic and logic unit, memory unit and I/O unit in a digital computer.
K3	CO3	Apply the rules of Karnaugh map in simplifying the expressions.
K4	CO4	Analyze the concept of mapping techniques.

Syllabus

Unit I **(12 Hours)**

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

Unit- II **(13 Hours)**

Arithmetic Circuits: Binary Addition - Binary Subtraction - Binary Multiplication and Division. Combinational Logic Circuits: Boolean Laws and Theorems – Sum-of-products Method - Truth Table to Karnaugh Map – Pairs, Quads and Octets – Karnaugh Simplifications - Don't- care Conditions- Product-of-sums Method.

Unit III **(11 Hours)**

Data-Processing Circuits: Multiplexers - Demultiplexers – 1-of-16 Decoder – BCD-to-decimal Decoders – Encoders. Flip-Flops: RS Flip-flops - Edge-triggered RS Flip-flops - Edge-triggered D Flip-flops - Edge-triggered JK Flip-flops.

Unit IV **(12 Hours)**

Central Processing Unit: General Register Organization - Stack Organization – Instruction Formats – Addressing Modes. Input–Output Organization: **Peripheral Devices *** - Input-Output Interface – Asynchronous Data Transfer: Strobe Control and Handshaking – Priority Interrupt – Direct Memory Access – Input – Output Processor – Serial Communication.

Unit V **(12 Hours)**

Memory Organization**:** Memory Hierarchy – Main Memory – Cache Memory – Virtual Memory. Multiprocessors: **Characteristics of Multiprocessors * -** Interconnection Structures.

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

Teaching Methods:

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

Text Books:

1. Donald P.Leach, Albert Paul Malvino, Goutam Saha (2006), **Digital Principles and Applications**, Sixth Edition, Tata McGraw-Hill Publishing Company Limited. (Unit I, II, III)
2. M. Morris Mano, (2007), **Computer System Architecture**, Third Edition, Pearson Education. (Unit IV, Unit V)

Reference Books:

1. T.C .Bartee, (2003), **Digital Computer Fundamentals**, Sixth Edition, Tata McGraw Hill Publications.
2. Salivaganan & S.Arivazhagan, (2001), **Digital Circuits and Design,** Third Edition, Vikas Publications.

3. John P.Hayes, (1998) , **Computer Architecture and Organization**, Third Edition Tata McGraw Hill Publishers Private Limited.
4. Miles J.Murdocca, Vincent, P.Heuring, (2007), **Computer Architecture and Organization,** First Edition, Wiley India Pvt.Ltd.

Mapping

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

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

19UIT203

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT203		**Core Paper III – Object Oriented Programming with C++**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	II	3	45	5

Course Objectives

1. To develop a greater understanding of the issues involved in programming language design and object oriented paradigms.
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	Analyze 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)**

Introduction to C++ - Key Concepts of OOP – Advantages – OO Languages – I/O in C++ - C++ Declarations - Control Structures– Decision Making Statements - If…Else – Jump – GOTO – Break – Continue – Switch Case Statements – Loops in C++ - For – While – Do…While loops – Functions in C++, In line Functions – Function Overloading.

Unit II **(9 Hours)**

Class and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions – **Bit fields and Class** *– Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static member.

19UIT203

Unit III **(9 Hours)**

Operator Overloading: Overloading unary, Binary operators – Overloading friend functions – Type conversion - Inheritance: Types of inheritance: Single, Multilevel, Multiple, Hierarchical, Hybrid and Multi path inheritance – Virtual Base classes – Abstract Classes.

Unit IV **(9 Hours)**

Pointers: Declaration – Pointer to class, object – THIS pointer – Pointer to derived classes and base classes – Arrays – Characteristics – Arrays of classes – Memory models – New and delete operators – Dynamic objects – Binding, Polymorphisms and Virtual functions.

Unit V **(9 Hours)**

Files: File stream classes – File Modes – Sequential read/write operations – Binary and ASCII files – Random access operation – Templates – Exception handling – Strings – Declaring and initializing string objects – String attributes – **Miscellaneous functions ***.

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

Teaching Methods:

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

Text Book:

1. E. Balagurusamy, (2008), **Object Oriented Programming with C++**, Fourth Edition, TMH Publications.

Reference Books:

1. Ashok N. Kamthane, (2003), **Object Oriented Programming with ANSI And TURBO C++**, Pearson Education Publications.
2. Poornachandra Sarang, (2009), **Object Oriented Programming with C++,** Second Edition, PHI Publications.
3. John R Hubbard, (2006), **Programming with C++**, Second Edition, TMH Publication.

19UIT203

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

19UIT2CM

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT2CM		**Core Practical II – Programming Lab - C++**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	II	3	45	2

Course Objectives

1. To understand and Apply Object oriented features and C++ concepts
2. To apply the concept of polymorphism and inheritance.
3. To develop applications using Console I/O and File I/O.

Course Outcomes (CO)

K3	CO1	Apply the basic concepts of Object Oriented Programming
K4	CO3	Solve the programs using virtual functions and inheritance.
K5	CO4	Implement files and command line arguments.

List Of Practical Programs

1. Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function PUSH () and POP ( ) to insert and delete an element. Check for overflow and Underflow conditions.
2. Create a class ARITH which consists of a FLOAT and an INT Variable. Write member ADD ( ), SUB ( ), MUL ( ), DIV ( ), MOD ( ) to perform addition, multiplication, division and modulus respectively. Write member functions to get and display values.
3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix. Overload the operators +,-,* to add subtract and multiply two matrices. Write member functions to get and display MAT object values.
4. Create a class STRING. Write member function to initialize, get and display strings .Overload the operator + to concatenate two strings, = = to compare two strings and a member function to find the length of the string.
5. Create a class EMPLOYEE, which consists of details like eno, ename, dept, basic-salary and grade. Write member functions to get display them. Derive a class PAY

from the above class and write a member function to calculate da ,hra , pf depending on the grade and display the Pay slip in a neat format using console I/O.

6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area( ) and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three classes SQUARE,RECTANGLE and TRIANGLE from the class SHAPE and Calculate AREA and PERIMETER of each cass separately and Display the result.
7. Create two classes which consist of two private variables, one float and one integer variables in each class. Write member functions to get and display them. Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.
8. Write a user defined function USERFUN () which has the formatting commands like setw( ) , showpoint() , showpos() and precision( ). Write a program which prints a multiplication table and uses USERFUN ( ) for formatting.
9. Write a program to perform Insertion, Deletion and Updation using files.
10. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

19UIT2CM

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

19UIT304

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT304		**Core Paper IV – Data Structures and Algorithms**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	III	5	75	4

Course Objectives

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

Course Outcomes (CO)

K1	CO1	Remember the algorithms of various data structures.
K2	CO2	Understand the operations like searching, insertion, deletion and traversing mechanism on various data structures.
K3	CO3	Apply the data structure in real time problem solving.
K4	CO4	Analyze the complexity of different algorithms.

Syllabus

Unit I **(13 Hours)**

Introduction -Data structure-definition-How to create a program-How to analyze a program-Arrays-Order List –Sparse Matrices-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 - Sparse Matrices - Doubly Linked Lists and Dynamic Storage Management-Garbage Collection and Compaction.

Unit III **(16 Hours)**

Trees: Basic Terminology-Binary Trees-binary Tree representation-Binary Tree Traversal-Threaded binary tree - Counting Binary Trees. Graphs: Terminology and representation-Introduction –Definition and Terminology-Graph Representation – Traversals-Connected components and spanning Trees -Shortest path-**Transitive Closure *.**

19UIT304

Unit IV **(16 Hours)**

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

Unit V **(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.

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

Teaching Methods:

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

Text Book:

1. Ellis Horowitz, Sartaj Shani, (1994), **Fundamentals of Data Structures**, First Edition, Galgotia Publication.

Reference Book:

1. Robert Kruse, C.L, Jondo Bruce Leung, (2006), **Data Structures and Program Design in C**, Second Edition, Pearson Edition Asia.

Mapping

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

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

19UIT305

Programme Code : 12	**B.Sc Information Technology**
Course Code: 19UIT305	**Core Paper V – Relational Database Management**

UIT - 23

		System and Oracle		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	III	5	75	4

Course Objectives

1. To learn the basic concepts of database.
2. To understand the concepts of DDL and DML.
3. To gain an insight of basic concepts SQL and PL/SQL languages.

Course Outcomes (CO)

K1	CO1	Remembering the concept of Database
K2	CO2	Understanding the concept of data Integrity constraints
K3	CO3	Applying various DDL, DML statements, Joins, Queries and PL / SQL statements.
K4	CO4	Analyzing various types of database management systems

Syllabus

Unit I **(13 Hours)**

Database Concepts: A Relational approach: Database – **Relationships** * – DBMS– Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling –Dependency – Database Design – Normal forms – Dependency Diagrams -Denormalization – Another Example of Normalization.

Unit II **(17 Hours)**

Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus – SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL

19UIT305

*Plus. Oracle Tables. DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

Unit III **(16 Hours)**

Working with Table: Data Management and Retrieval**:** DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – **Arithmetic Operations *** – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

Unit IV **(17 Hours)**

A Programming Language: History – Fundamentals – Block Structure –Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks –SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions**:** Cursors – Implicit & Explicit Cursors and Attributes –Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

Unit V **(12 Hours)**

PL/SQL Composite Data Types: Records – Tables –Varrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.

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

Teaching Methods:

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

19UIT305

Text Book:

1. Nilesh Shah, (2007), **Database Systems using Oracle**, Second edition, PHI Publication.

Reference Books:

1. Arun Majumdar & Pritimoy Bhattacharya, (2007)**, Database Management Systems**, First Edition, TMH Publication.
2. Gerald V. Post**, (**2009), **Database Management Systems,** Third edition, TMH Publication.

Mapping

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

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

19UIT306

Programme Code : 12		B.Sc Information Technology		
Course Code: 19UIT306		Core Paper VI - Advanced Java Programming		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	III	5	75	5

Course Objectives

1. To learn the basic features of Java Programming
2. To gain the knowledge about the concepts of Packages, Inheritance, Interfaces and Multithreading.
3. To develop the ability to create and run java programs using Applets and AWT.

Course Outcomes (CO)

K1	CO1	Remember the keywords, data types and Control Structures in Java.
K2	CO2	Understand the concept of Creating Classes, Functions and Objects.
K3	CO3	Apply the concepts of Constructors, Inheritance, Exception handling and AWT
K4	CO4	Analyze the concepts of Threads, applets and Files and Swings

Syllabus

Unit I **(15 Hours)**

JAVA Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and WWW . Overview of Java Language: Introduction – Simple Java program – Structure – Java tokens – Statements.

Unit II **(15 Hours)**

Constants – Variables – Data types – Operators and expressions -Decision making and Branching: Simple If Statement, The IF…Else statement, The Else... If ladder, The Switch Statement, The? : Operator, Decision making and looping: The While statement, The do Statement- The for Statement – Jumps in loops – labelled loops – Classes, Objects and Methods

Unit III **(15 Hours)**

Arrays- Strings- Interfaces- Multiple Inheritance – Packages: Putting classes together – Multi Threaded Programming- Managing Errors and Exceptions – Applet Programming.

Unit IV **(15 Hours)**

Managing I/O Files in Java: Introduction – concept of streams – Stream classes – Using stream – I/O classes – File class – I/O Exceptions – creation of files – Reading / Writing characters / Bytes – Handling primitive data types – Random Access Files.

Unit V **(15 Hours)**

Using AWT Controls:Control Fundamentals-Labels-Buttons – CheckBoxes – CheckboxGroup- Choice Control – List – Scrollbars-TextField -TextArea - MenuBar and Menus. Event Handling- ActionEvent - KeyEvent- MouseEvent – MouseWheelEvent - Item Event.Swing:JApplet- TextField- Buttons- Checkboxes - RadioButtons – ComboBoxes - tabbed panes-Scrollpanes-Trees.

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

Teaching Methods:

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

Text Book:

1. E. Balagurusamy **Programming with Java – A primer** Tata McGraw Hill, 5th Edition, 2015 (Units I,II,III,IV)
2. Herbert Schildt (2018), **The Complete Reference Java 2**, 10th Edition, TATA McGraw Hill.(Unit V)

Reference Books:

1. Instructional Software Research and Development (ISRD) Group, (2007), **Introduction to Object Oriented Programming Through Java**, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. C.Muthu, "**Programming With Java**" ,Tata McGraw Hill, Second Edition,2008.

19UIT306

Mapping

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

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

19UIT3CN

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT3CN		**Core Practical III – Programming Lab – Advanced Java and Oracle**		
Batch 2019-2020	Semester III	Hours / Week 5	Total Hours 75	Credits 2

Course Objectives

1. To develop the ability to build web based applications using applets and AWT.
2. To create tables and triggers using PL/SQL.
3. To apply the concepts of Multithreading, Inheritance and Packages.

Course Outcomes (CO)

K3	CO1	Recollect the concepts of control structures, inheritance, method overriding in Java
K4	CO2	Implement the concept of interface, packages, multithreading and applets
K5	CO3	Apply manipulation operations using PL/SQL statements and validate the database using triggers

LIST OF PRACTICAL PROGRAMS

JAVA

1. Write a program for Multithreading.
2. Write a program for preparing mark list using inheritance.
3. Write a program for multiple inheritances.
4. Write a program for creating your own package.
5. Write a program that displays a digital clock using applet.
6. Create an applet program to generate a human face.
7. Create an applet containing three buttons labeled red, green and blue, change the background color of the applet based on the button pressed.
8. Develop a Java program to perform Mouse Event operations
9. Develop a Java program to create a Menu Bar and Pull down Menus using Frames.
10. Write a program to implement Tree viewer using Swings.

19UIT3CN

ORACLE

11. Write queries for the following
    i) Create a table student with required fields and insert values to it (use constraints while creating).
    ii) Alter table student to add a new column.
    iii) Display only distinct mark from the Student table in descending manner.
12. Write a PL/SQL to split the student table into two tables based on result (One table for "Pass" and another for "Fail"). Use cursor for handling records of student table.
13. Write a PL/SQL block to update the rate field by 20% more than the current rate in inventory table with fields Prono, ProName and Rate.
14. Create a Database trigger for not allowing marks greater than 75 to be inserted in student table.
15. Create a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table student.

Guidelines to the distribution of marks for Practical Examinations:

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

Record : 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

19UIT3CN

Mapping

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

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

19UIT407

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT407		**Core Paper VII - Operating Systems**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	IV	5	75	4

Course Objectives

1. To gain an insight of the fundamentals of Operating System.
2. To enrich the knowledge on process management, CPU Scheduling and Memory management.
3. To provide the design principles of operating system with a case study of Linux and UNIX.

Course Outcomes (CO)

K1	CO1	Remember the fundamentals of operating system
K2	CO2	Understand the basic concepts of Process & Scheduling
K3	CO3	Implement CPU scheduling algorithms for Process Scheduling and to deploy the memory management Concepts
K4	CO4	Analyze the problem of deadlock and File System Concepts

Syllabus

Unit I **(16 Hours)**

Introduction—what is an OS—Mainframe systems—Desktop Systems—multiprocessor systems—Distributed systems—Clustered systems—**Real—Time systems***. Operating system structures: System components—OS services—System calls.

Unit II **(13 Hours)**

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

19UIT407

Unit III **(I3 Hours)**

Deadlocks: Deadlock characterization—Methods for handling Deadlocks- Deadlocks prevention—Deadlock avoidance—deadlock detection –Recovery from Deadlock.

Memory management: Background-Swapping-Contiguous memory allocation-Paging –Segmentation—Segmentation with Paging.

Unit IV **(16 Hours)**

Virtual memory: Demand paging—Process creation –Page replacement-Thrashing. I/O Systems: Disk structure—Disk scheduling: FCFS-SSTF-SCAN-C-SCAN-LOOK Scheduling –Disk management –**Swap Space management ***.

File systems: File concepts-Access methods- Directory structure–File system structure- File system implementation: Overview - Directory Implementation - Allocation methods: Contiguous-Linked Allocation-Indexed Allocation-Free Space Management-Recovery.

Unit V **(17 Hours)**

Unix BSD: History-Design Principles-Programmer Interface-User Interface-Interprocess Communication. The Linux Systems: History-Design principles-Kernel modules-Process Management-Scheduling-Memory management-IPC.

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

Teaching Methods:

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

Text Book:

1. Abraham Silberschatz, Galvin, Gagne, (2004), **Operating Systems Concepts,** Sixth Edition, John Wiley & Sons.

19UIT407

Reference Books:

1. Andrew S.Tanenbaum, (2006), **Modern Operating System,** Third Edition Prentice Hall of India pvt. Ltd., Delhi.
2. H.M.Deitel, (2009), **"Operating Systems",** Third Edition, Pearson Education Publication.
3. Achyut S Godbole, (2006), **Operating Systems,** Third Edition, TMH Publication.

Mapping

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

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

19UIT408

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT408		**Core Paper VIII - .Net Programming**		
Batch 2019-2020	Semester IV	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

1. To understand the .Net Framework components.
2. To integrate variables and functions in developing .Net applications
3. To build applications using Vb.Net and Asp.Net programming techniques.

Course Outcomes (CO)

K1	CO1	Remember the structure and syntax of .NET
K2	CO2	Understand the properties and methods of the various tools.
K3	CO3	Apply the concept of .NET in developing windows and web applications.
K4	CO4	Analyze the database connectivity using ADO.NET.

Syllabus

Unit I **(14 Hours)**

Essential Visual Basic .NET: Putting Visual Basic to Work - The .Net Frame work and the Common Language Runtime - Building VB.Net Applications - The VB.Net IDE - The Visual Basic Language: Operators - Conditionals and Loops.

Unit II **(15 Hours)**

Procedures, Scope and Exception Handling - Windows Forms - Windows MDI Forms - Adding Controls to Forms - Handling Events - Textboxes, Rich Text boxes, Labels - Buttons, Check boxes, Radio buttons, panels and Group boxes.

Unit III **(15 Hours)**

Windows Forms - List boxes, **Checked list box***, Combo boxes ,Picture boxes ,Scroll bars, Splitters, Track Bars, Pickers, Notify Icons, Tool tips and Timers. Menus - Built in Dialog Boxes – Image Lists, Trees and List Views, Toolbars, Status and Progress Bars and Tab Controls.

Unit IV **(15 Hours)**

Data Access with ADO.NET using VB.NET - Binding controls to database - Handling Database in Code - Binding with Data - Creating User Controls - Creating Web User Controls - Multithreading.

Unit V **(16 Hours)**

Introduction to ASP.NET - Page Framework - Web Controls - HTML Server Controls- Validation Controls - ASP.NET Applications.

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

Teaching Methods:

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

Text Book:

1. Steven Holzner, (2008), **Visual Basic.NET Black Book,** First Edition, Dream Tech Publication.
2. Bill Evjen Beres, et al., (2002), **"Visual Basic.NET programming Bible"**, First Edition, Wiley – Dream Tech Publications

Reference Books:

1. Evangelos Petroustes, (2002), **"Mastering Visual Basic.NET"**, First Edition, BPB Publications.
2. Anne Boehm, Murach's , **"ASP.NET 4 web programming with VB 2010"**, Fourth Edition, Shroff Publishers and Distributors Pvt. Ltd.

19UIT408

Mapping

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

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

19UIT409

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT409		**Core Paper IX - Computer Networks**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	IV	5	75	4

Course Objectives

1. To learn the terminology and concepts of the OSI reference model and TCP/IP reference model.
2. To Identify the key issues for the realization of the LAN/WAN/MAN network architectures
3. To understand a basic knowledge of the use of cryptography and different techniques keys used for Encryption and Decryption.

Course Outcomes (CO)

K1	CO1	Remember the basic structure of ISO/OSI reference model.
K2	CO2	Understanding the knowledge of the use of Cryptography..
K3	CO3	Apply the concept of routing algorithms.
K4	CO4	Analyzing 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: The OSI Reference Model – The TCP/IP Reference Model – A Comparison of the OSI and TCP 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, ADSL and Wireless Local Loops - Switching. Cable Television: Community Antenna Television - Internet over Cable - Cable Modems.

19UIT409

Unit III **(16 Hours)**

The Data Link Layer: Data Link Layer Design Issues - **Error Detection and Correction*.** The Medium Access Control Sublayer: The Channel Allocation Problem – Multiple Access Protocols: ALOHA – CSMA 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: Shortest Path Routing, Distance Vector Routing, Link State Routing, Routing for Mobile Hosts, 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: Connection Establishment, Connection Release, Crash Recovery

Unit V **(16 Hours)**

The Internet Transport Protocols: UDP - Introduction to UDP - RPC - TCP – Introduction to TCP – The TCP Service Model – The TCP Protocol – TCP Connection Establishment – TCP Connection Release.

The Application Layer: DNS – Electronic Mail - Network Security: Cryptography: Introduction to Cryptography. Symmetric-Key Algorithms: DES - AES. Public-Key Algorithms: 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, Quiz, Discussion & Assignment

19UIT409

Text Book:

1. Andrew S. Tanenbaum, "**Computer Networks**", Pearson Education, Fourth Edition, 2009.

Reference Books:

1. Behrouz A. Forouzan, "**Data Communications and Network**", Tata MCGraw Hill, Second Edition, 2003.
2. William A.shay, "**Understanding Data Communications and Networks**", Vikas Publishers, Second Edition, 2001.

Mapping

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

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

19UIT4CO

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT4CO		**Core Practical IV – Programming Lab – .NET**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	IV	5	75	2

Course Objectives

1. To become familiar with the tools and operations of VB.Net
2. To get a simple understanding of windows- based programming.
3. To gain knowledge in developing real time applications.

Course Outcomes (CO)

K3	CO1	Applying the appropriate tools, methods and events for developing the applications.
K4	CO2	Implementing the syntax and functions in developing the real time applications.
K5	CO3	Analyzing the database connectivity with vb.net applications.

LIST OF PRACTICAL PROGRAMS

1. Write a program for various font applications.
2. Write a program to simulate a simple calculator.
3. Write a program to simulate a digital clock with reset option.
4. Write a program for a notepad application.
5. Write a program to maintain Student details using ADO.NET.
6. Write a program to maintain Employee details using ADO.NET.
7. Write a program to generate student details using ASP.Net.
8. Write a program to create login page using ASP.net
9. Write a program to create online registration form using ASP.net.
10. Write a program to display your bio-data using ASP.net

19UIT4CO

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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

19UIT4A4

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT4A4		**Allied Paper 1V – Microprocessors, PC Hardware and Interfacing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	IV	6	90	5

Course Objectives

1. To teach the architecture and instruction set of different Microprocessors.
2. To learn the architecture of Microcontrollers, and Peripherals.
3. To understand the architectures of Serial and Parallel Ports.

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 80386, Pentium pro, MMX technologies on real time systems.
K4	CO4	Analyze the development tools , I/O devices, Drivers, Ports and USB

Syllabus

Unit I **(18 Hours)**

8086 Microprocessor: Introduction – general organization of a Microcomputer - 8086 internal Architecture- **Addressing modes** * – Instructions-DataTransfer,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) - Organisation of 8237-The Programmable Interval Timer (8254) - Internal Block Diagram - Universal Asynchronous Receiver Transmitter(UART) - Internal Block Diagram, Internal Registers.

19UIT4A4

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. Motherboard of IBM PC: Introduction, Motherboard Components.

Unit IV **(18 Hours)**

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

UNIT V **(18 Hours)**

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

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

Teaching Methods:

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

Text Book:

1. N.Mathivanan, (2005), **Microprocessors, PC Hardware and Interfacing,** Fourth Edition, PHI Publications, New Delhi.

Reference Books:

1. Aditya P.Marthur, (2002) ,**Introduction to Microprocessors**, Third Edition,TMH.
2. Brey.Barry.B, Shrama C.R , (2007), **The Intel Microprocessors,** First Edition , PHI Publications.

19UIT4A4

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

19UIT510

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT510		**Core Paper X - Python Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	V	6	75	4

Course Objectives

1. To introduce the fundamentals of Python Programming.
2. To teach about the concept of Functions in Python.
3. To impart the knowledge of Lists, Tuples, Files and Directories.
4. To learn about dictionaries in python.

Course Outcomes (CO)

K1	CO1	Remembering the concept of operators, data types, looping statements in python programming.
K2	CO2	Understanding the concepts of Input / Output operations in file.
K3	CO3	Applying the concept of functions and exception handling
K4	CO4	Analyzing the structures of list, tuples and maintaining dictionaries.

Syllabus

Unit I **(15 Hours)**

Introduction to Python: Introduction - Python Overview - Getting Started with Python – Comments - Python Identifiers - Reserved Keywords – Variables - Standard Data Types. Operators - Statement and Expressions - String Operations - Boolean Expressions - Control Statements - Iteration - While Statement - Input from Keyboard.

Unit II **(15 Hours)**

Built-in functions - Composition of functions - User defined functions - Parameters and Arguments - Function Calls - The Return Statement - Python Recursive Function- The Anonymous Functions– Writing Python Scripts. Strings - Compound Data Types - Len Function- String Slices - Strings are Immutable - Strings Traversal - Escape Characters - String Formatting Operators - String Formatting Functions.

Unit III **(15 Hours)**

Lists - Values and Accessing Elements - Lists and Mutable - Deleting Elements from List- Built-in list Operations - Built-in List Methods. Tuples - Creating Tuples – Accessing values in Tuples – Tuples are Immutable – Tuple Assignment- Tuples as Return Values - Variable Length Argument Tuples - Basic Tuple Operations. Built-in Tuple Functions.

Unit IV **(15 Hours)**

Dictionaries – Creating a Dictionary - Accessing values in a Dictionary – Updating Dictionary – Deleting elements from dictionary - Properties of dictionary keys – Operations in dictionary – Built-in dictionary methods. Classes and Objects: Overview of OOP - Class Definition - Creating Objects - Objects as arguments - Objects as Return Values - Built-in class attribute - Inheritance – Method Overriding - Data Encapsulation - Data Hiding.

Unit V **(15 Hours)**

Files: Text files: Opening a file – Closing a file – The file object attributes - Writing to a file – Reading from a file - Renaming a file – Deleting a file – Files related methods. Directories: mkdir() , chdir(). Exception: Built-in exceptions – Handling exceptions – Exception with arguments – User defined exceptions.

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

Teaching Methods:

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

Text Book:

1. E. Balagurusamy (2017), **"Problem Solving And Python Programming"**, McGraw-Hill, First Edition.

19UIT510

Reference Books:

1. Ashok Namdev Kamthane, Amit Ashok Kamthane (2017), **Programming And Problem Solving With Python"**, McGraw-Hill, First Edition.
2. Martin Jones (2015), **"Python for Complete Beginners"**, Createspace Independent Publisher, First Edition.

Mapping

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

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

19UIT511

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT511		**Core Paper XI – Software Engineering**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	V	6	90	4

Course Objectives

1. To assist the students in understanding the basic theory of software engineering.
2 To teach about various testing and debugging techniques.
2. To gain knowledge about quality control and to develop good quality software

Course Outcomes (CO)

K1	CO1	Remember the fundamentals of software engineering concepts.
K2	CO2	Understand common lifecycle processes such as waterfall model, spiral model, prototyping model and evolutionary models.
K3	CO3	Apply the principles and techniques of software engineering in the architectural design, detail design, and implementation of software applications.
K4	CO4	Analyze the developed software using different testing concepts.

Syllabus

Unit I **(17 Hours)**

Introduction: The evolving role of S/W - **Software *** - Software Myths - S/W engineering technology - A Process Framework - S/W Process models: The Waterfall Model - Incremental Process Models - Evolutionary Process Models.

Unit II **(19 Hours)**

Requirements engineering Tasks - Initiating the Requirements Engineering Process - Developing Use-Cases - Building the Analysis Model - Negotiating requirements - Validating requirements - Requirement analysis - Data modeling concepts - Flow oriented modeling.

19UIT511

Unit III **(18 Hours)**

Design engineering: Design concepts - The Design Model - Data Design - Performing user interface Design: The golden rules - User Interface Analysis and Design - Interface Analysis - Interface Design Steps - Design Evaluation.

Unit IV **(17 Hours)**

Testing Strategies : A strategic approach to software testing - Strategic Issues - Test Strategies for Conventional Software-validation testing - system testing - The Art of Debugging.

Unit V **(19 Hours)**

Testing Tactics: S/w testing fundamentals - White box testing - Basis path testing - control structure testing - Black Box testing - S/W quality - S/W Reengineering - Reverse engineering - Restructuring *.

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

Teaching Methods:

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

Text Book:

1. Roger S Pressman, (2005), **Software Engineering**, Sixth Edition, TMH Publishers.

Reference Books:

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

19UIT511

Mapping

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

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

19UIT512

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT512		**Core Paper XII – Mobile Computing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	V	6	90	4

Course Objectives

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

Course Outcomes (CO)

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

Syllabus

Unit I **(18 Hours)**

Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services- Developing Mobile computer Applications – Security in mobile computing – Standards - Why it is necessary – Standard bodies. Mobile Computing Architecture: **History of computers and Internet** * – Architecture for mobile computing – Three-tier architecture.

Unit II **(18 Hours)**

Mobile Computing Through Telephony: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI.Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.

19UIT512

Unit III **(18 Hours)**

GSM: Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentication and Security. SMS:Mobile Computing Over SMS-Short Message Service.

Unit IV **(18 Hours)**

GPRS: GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS. WAP: MMS – GPRS Applications.

Unit V **(18 Hours)**

CDMA and 3G: Spread spectrum technology – IS 95 – CDMA vs GSM – Wireless Data – Third generation networks – Applications on 3G. WIRELESS LAN: Wireless LAN advantages – IEEE 802.11 standards – Architecture –**WiFi vs 3G ***.

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

Teaching Methods:

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

Text Book:

1. Asoke K. Talukder , Roopa R Yavagal, (2010), **Mobile Computing,** Second Edition, TMH.

Reference Books:

1. Jochen Schiller, (2004), **Mobile Communications**, Second Edition, AddisionWesely Publications.
2. UWE Hansmann, LotherMerk, Martin.S, (2006), **Principles of Mobile Computing,** Second Edition, Springer publications.

3 Jeyasri Arokiamary,(2005), **Mobile Communications**, First Edition, Anuradha Agencies.

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

19UIT5CP

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT5CP		**Core Practical V– Programming Lab - Python**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	V	5	75	2

Course Objectives

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

Course Outcomes (CO)

K1	CO1	Remember different types of operators in programming.
K2	CO2	Implement the concepts of built-in functions in programming.
K3	CO3	Analyze the use control structures in programming.
K4	CO4	Apply the concepts of exception handling in programs.

LIST OF PRACTICAL PROGRAMS

1. Write a program to solve quadratic equation.
2. Write a program to convert temperature in Celsius to Fahrenheit and Fahrenheit to Celsius.
3. Write a program to generate prime numbers up to a given number.
4. Write a program to multiply two matrices.
5. Write a program to create a simple calculator using functions.
6. Write a program to accept 5 subject marks and to calculate the total, average and grade of a student.
7. Write a program to generate an electricity bill.
8. Write a program to count the number of each vowel in a string.
9. Write a program to perform binary search for a given set of numbers.

10. Write a program to demonstrate tuples functions and operations
11. Write a program to demonstrate dictionaries functions and operations
12. Write a python program to demonstrate File Input and Output operations.
13. Write a program to demonstrate Multiple Inheritance.
14. Write a program to demonstrate Exception Handling
15. Write a program to demonstrate Classes and their Attributes.

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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

19UIT613

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT613		**Core Paper XIII - Open Source Tools**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	VI	6	90	5

Course Objectives

1. To learn the basic programming techniques using PHP and Linux.
2. To gain an insight of creating classes and using functions in PHP.
3. To learn the process of developing a PHP application and Shell Programming.

Course Outcomes (CO)

K1	CO1	Remember the basic syntax of PHP and Linux Programming
K2	CO2	Understand Arrays and Strings in PHP
K3	CO3	Implement the concepts of files and directories in PHP and Shell Programming in Linux
K4	CO4	Evaluate the database connectivity using PHP and SQLite.

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

Unit II **(18 Hours)**

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations –Using Arrays with Forms – Working with Array Functions. Using Functions and Classes: Creating User – Defined Functions. Working with Files and Directories: Reading Files – Writing Files – Processing Directories.

19UIT613

Unit III **(18 Hours)**

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 IV **(18 Hours)**

Linux Programming: Introduction- What Is UNIX?- What Is Linux?- Linux Distributions. Programming Linux: Linux Programs-Text Editors- Shell Programming : What Is a Shell? – Pipes and Redirection: Redirecting Output-Redirecting Input- Pipes. The Shell as a Programming Language: Interactive Programs- Creating a Script-Making a Script Executable.

Unit V **(18 Hours)**

Shell Syntax Variables-Conditions-ControlStructures.Functions-Commands-Command Execution- Debugging Scripts-The dialog utility.

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

Teaching Methods:

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

Text Books:

1. Vikram Vaswani, (2008), "**PHP – A Beginner's Guide"**, First Edition, TataMcGrawHill Publications
2. Neil Matthew and Richard Stones, **"Beginning Linux Programming"** 4th Edition, Wiley **India Pvt. Ltd.**

Reference Books:

1. Steven Holzner, (2007), **PHP- The Complete Reference**, First Edition, Tata McGraw–Hill publications.
2. Steven Holzner , (2005), Spring in to PHP5, Addison Wesley Publications.

19UIT613

3. Iresh A. Dhotre, "Linux Programming", A Comprehensive Approach, 1st Edition Technical Publications

Mapping

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

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

19UIT614

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT614		**Core Paper XIV – Information Security**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	VI	6	90	4

Course Objectives

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

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of security and how to avoid threats.
K2	CO2	Understanding the issues and technologies in information security.
K3	CO3	Applying various protection mechanisms.
K4	CO4	Analyzing various legal and ethical issues in security.

Syllabus

Unit I **(17 Hours)**

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

Unit II **(19 Hours)**

Program Security: Nonmalicious Program Errors – Viruses and other Malicious Code: Kinds of Malicious Code, How Viruses Attach, Home for 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.

19UIT614

Unit III **(18 Hours)**

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

Unit IV **(17 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 **(19 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, Quiz, 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 and Ross Anderson, (2001), **Security Engineering: A Guide to Building Dependable Distributed Systems**, Second Edition,Wiley Publication.
2. Debby Russell and Sr.G.T.Gangemi,(2006),**Computer Security Basics (Paperback)**, Second Edition, O'Reilly Media.
3. Thomas R. Peltier, Justin Peltier and John Blackley, (2010) Reprint **, Information Security Fundamentals**, Second Edition, Prentice Hall.

19UIT614

Mapping

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

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

19UIT6CQ

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT6CQ		**Core Practical VI – Programming Lab – Open Source Tools**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	VI	6	90	2

Course Objectives

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

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Course Outcomes (CO)

K3	CO1	Recollect the concepts of Shell Programming ,creating a web page using HTML and validate it using PHP
K4	CO2	Understand the concept of String functions and Arrays
K5	CO3	Validate the file system functions

List of Practical Programs

PHP

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 functions and Arrays.
4. Develop a PHP program using parsing functions (use Tokenizing)
5. Develop a PHP program to check File System Functions.
6. Develop a PHP program using Session.

LINUX

7. Write a Shell program to display your address.
8. Write a Program to perform Arithmetic Operations using Shell Arithmetic.
9. Write a Program to print different patterns using looping concept.
10. Write a Program to prepare Student mark statement using necessary controls

19UIT6CQ

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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

19UIT6Z1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT6Z1		**Core Project – Project Work & Viva - Voce *** **		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	VI	4	60	5

Course Objectives

On successful completion of all the above courses

1. 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 gain confidence for implementing the task.
4. To gain confidence for solving the real time problems.

Course Outcomes (CO)

K3	CO1	Applying the programming skill for solving the project.
K4	CO2	Analyzing the task and to collect the necessary information about the system.
K5	CO3	Evaluating the project based on the software.

Mark Distribution

Particulars		**Marks**
Cia	**Regularity**	15
	Attendance	05
Viva –voce *		20
Project record *		60

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

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 : 12	**B.Sc Information Technology**
Elective – Artificial Intelligence	

UIT - 66

Batch	Hours / Week	Total Hours	Credits
2019-2020	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	Remember the techniques of Artificial Intelligence in Problem Solving
K2	CO2	Understand the nature of AI problems and task domains of AI
K3	CO3	Apply the appropriate search procedures to solve the problems by using best algorithms.
K4	CO4	Analyze and select the suitable knowledge representation method.

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, Quiz, Discussion & Assignment

Text Book:

1. Elaine Rich and Kelvin Knight (1991), "**Artificial Intelligence**", Tata McGraw Hill Publishers company private Ltd, Second Edition, (chapters 1-6 only).

Reference Books:

1. George F Luger (2002), "**Artificial Intelligence**",4th Edition, Pearson Education Publ.
2. V.S.Janakiraman and K.Sarukesi (2001), "**Foundations Of AI And Expert System**", Mac Milan India Ltd.

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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	M	H	H
CO4	S	S	S	S	H

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

Programme Code : 12	**B.Sc Information Technology**		
Elective – Big Data Analytics			
Batch 2019-2020	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

1. To understand and apply scaling up machine learning techniques and associated computing techniques and technologies.
2. To identify the characteristics of datasets and compare the trivial data and big data for various applications.
3. To recognize and implement various ways of selecting suitable model parameters for different machine learning techniques.

Course Outcomes (CO)

K1	CO1	Understand the different dimensions of digital data.
K2	CO2	Apply the concept of data classification on different types of data
K3	CO3	Analyze the characteristics of different patterns of data
K4	CO4	Implement the concept of big data in different scenarios

Syllabus

Unit I **(18 Hours)**

Data Evolution: Data Development Time Line – ICT Advancement - a Perspective – Data Growth - a Perspective – IT Components - Business Process – Landscape - Data to Data Science – Understanding data: Introduction – Type of Data: Numeric – Categorical – Graphical – High Dimensional Data — Data Classification – Hot Data – Cold Data – Warm Data – Thick Data – Thin Data - Classification of digital Data: Structured, Semi-Structured and Un-Structured.

Unit II **(18 Hours)**

Sources of Data: Time Series – Transactional Data – Biological Data – Spatial Data – Social Network Data – Data Evolution – Data Sources.

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

Unit III **(18 Hours)**

Data Science Components: Data Engineering, Data Analytics-Methods and Algorithm, Data Visualization Big Data: Introduction to Big Data: - Evolution What is Big Data – Sources of Big Data. Characteristics of Big Data 6Vs – Big data- Challenges of Conventional Systems.

Unit IV **(18 Hours)**

Data Processing Models – Limitation of Conventional Data Processing Approaches – Big Data Myths - Data Discovery-Traditional Approach, Big Data Technology: Big Data Exploration - Data Augmentation – Operational Analysis – 360 View of Customers – Security and Intelligence.

Unit V **(18 Hours)**

Big Data Use cases – Big Data Technology Potentials – Limitations of Big Data and Challenges - Big Data Roles Data Scientist , Data Architect, Data Analyst – Skills – Case Study : Big Data – Customer Insights – Behavioral Analysis – Big Data Applications - Marketing – Retails – Insurance – Risk and Security – Health care.

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

Teaching Methods:

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

Text Book:

1. V. Bhuvaneswari, T. Devi, "**Big Data Analytics: A Practitioner"s Approach**" 2016.

Reference Books:

1. Han Hu, Yonggang Wen, Tat - Seng, Chua, XuelongLi, "**Toward Scalable Systems for Big**". SeemaAcharya, SubhashniChellappan, "Big Data Analytics", Wiley, 2015.

Mapping

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

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

UIT - 71

Programme Code : 12	**B.Sc Information Technology**		
Elective - Data Mining			
Batch 2019-2020	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

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

Course Outcomes (CO)

K1	CO1	Remembering the data mining principles and techniques.
K2	CO2	Understanding the concept of raw data processing using data mining algorithms.
K3	CO3	Applying data mining algorithms to build analytical applications.
K4	CO4	Analyzing large amount of data to extract patterns and to solve problems.

Syllabus

Unit I **(18 Hours)**

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – **Social Implications of Data Mining *** – Data Mining from Database Perspective.

Unit II **(18 Hours)**

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

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 - Partitional Algorithms.

Unit V **(18 Hours)**

Association Rules : Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – **Measuring the Quality of Rules ***.

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

Teaching Methods:

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

Text Book:

1. Margaret H.Dunbam, (2008), **Data Mining Introductory and Advanced Topics**, First Edition, Pearson Education.

Reference Book:

1. Jiawei Han & Micheline Kamber, (2006), **Data Mining Concepts & Techniques**, Third Edition, Academic Press.

Mapping

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

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

Programme Code : 12	**B.Sc Information Technology**
Elective – Cloud Computing	

UIT - 73

Batch	Hours / Week	Total Hours	Credits
2019-2020	6	90	5

Course Objectives

1. To teach the basics of cloud computing.
2. To understand the broad perspective of cloud architecture
3. To gain the knowledge of cloud services and cloud security.

Course Outcomes (CO)

K1	CO1	Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud.
K2	CO2	Understand the core issues of cloud computing such as security, privacy, and interoperability.
K3	CO3	Apply the appropriate technologies and approaches for the related issues.
K4	CO4	Analyze the appropriate 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 Onlinegaming**

UNIT V **(18 Hours)**

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

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

Teaching Methods:

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

Text Books:

1. Rajkumar Buyya, Christian vecchiola , Thamarai selvi, (2013), Mastering Cloud computing, Mc Gram Hill Publication. (UNIT – I to UNIT –IV)
2. Charles P.Pfleeger, Shari Lawrence Pfleeger, Deven N.Shan, (2007), Security in Computing, Fourth Edition, Prentice HallPublication. (UNIT –V)

Reference Book:

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

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 : 12	**B.Sc Information Technology**		
Elective – Software Project Management			
Batch 2019-2020	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

1. To understand the overview of Software Project Characteristics and software Management.
2. To familiarize with the different methods and techniques used in project management.
3. To understand and reduce the failure issues of software projects.
4. To learn how effectively the project scheduling, risk analysis, quality management and project cost estimation can be implemented using various techniques

Course Outcomes (CO)

K1	CO1	To remember various Life Cycle models in project development.
K2	CO2	Understand various concepts involved in project management, project planning and project scheduling.
K3	CO3	Analyze project risks, monitor and track project deadlines and produce a work plan and resource schedule.
K4	CO4	Apply the project management tools and techniques in a diversity of fields that include new product and process development, construction, information technology, and applied research.

Syllabus

UNIT I **(17 Hours)**

Product Life cycle: Introduction. Conventional Software Management: The waterfall model, Prototype Model, Rapid application development model and Spiral model. Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT II **(20 Hours)**

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections. The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT III **(17 Hours)**

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases. Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT IV **(17 Hours)**

Model based software architectures: A Management perspective and technical perspective. Work Flows of the process: Software process workflows, Iteration workflows*.

UNIT V **(19 Hours)**

Checkpoints of the process: Major mile stones, Minor milestones, Periodic status assessments. Iterative process planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning. Project control and Process instrumentation: The seven core Metrics*, pragmatic software Metrics, Metrics automation.

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

Teaching Methods:

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

Text Book:

1. Walker Royce (2005)**, "Software Project Management"**, Pearson Education.

Reference Books:

1. Bob Hughes and Mike Cotterell (2009), "**Software Project Management",** Tata McGraw-Hill 5th Edition.
2. Gobalswamy Ramesh (2003), "**Managing Global Software Projects",** Tata McGraw Hill Publishing Company.

Mapping

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

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

Programme Code : 12	**B.Sc Information Technology**		
Elective – Internet of Things			
Batch 2019-2020	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

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

Course Outcomes (CO)

K1	CO1	Remember IOT Architectures and Models.
K2	CO2	Understand the use of IOT in real time scenario.
K3	CO3	Apply the concept IOT in Networks..
K4	CO4	Analyze the use of various protocols in IOT

Syllabus

UNIT I **(18 Hours)**

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

UNIT II **(18 Hours)**

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

UNIT III **(18 Hours)**

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

UNIT IV **(18 Hours)**

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

UNIT V **(18 Hours)**

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

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

Teaching Methods:

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

Text Book:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, ―IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things, Cisco Press, 2017.

Reference Books:

1. Arshdeep Bahga, Vijay Madisetti, “Internet of Things – A hands-on approach”, Universities Press, 2015
2. Olivier Hersent, David Boswarthick, Omar Elloumi , ―The Internet of Things – Key applications and Protocols‖, Wiley, 2012 (for Unit 2).
3. Jan Holler, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence", Elsevier, 2014.

MAPPING

PSO / CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	H	S	S

CO2	H	H	S	S	M
CO3	S	H	M	H	S
CO4	S	M	H	S	S

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

19UIT3S1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UIT3S1		**Skill Based Subject 1 – Web Programming (HTML, CSS, XML)**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	III	2	30	3

Course Objectives

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

Course Outcomes (CO)

K1	CO1	To remember the internet related concepts that are vital in understanding web development.
K2	CO2	To understand the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.
K3	CO3	Design and develop web pages using CSS styles, internal and/or external style sheets.
K4	CO4	To develop interactive web applications through coding using HTML, CSS and XML.

Syllabus

Unit I **(5 Hours)**

Introduction to Internet: Features of Internet – World Wide Web – WWW Resources – Application of Web – Types of Browsers – Using the Browser –URL – Internet Addressing – Overview of Web Page and Home Page.

.

Unit II **(7 Hours)**

HTML : Introduction – Markup Language – Editing HTML – Common Tags – Headers – Meta Elements – Text Styling – Linking - Internal Linking - Images – Creating & Using Image Maps- Formatting Text with Special Characters – **Horizontal Rules and More Line Breaks***.

19UIT3S1

Unit III **(6 Hours)**

Intermediate HTML: Introduction – unordered list – nested and **ordered list*** – Basic HTML Tables – Intermediate HTML table and Formatting – basic HTML Forms and Formatting – More Complex HTML Forms – Frameset Element – Nested Framesets.

Unit IV **(5 Hours)**

Cascading Style Sheet (CSS): Creation Of CSS – Border, Margin, Text And Paragraph Style Sheet – Website Design and Management. Simple Applications of Web Site, Web Pages and Home Pages.

Unit V **(7 Hours)**

Active XML: Introduction – Structuring Data – XML Name Space – Dtds and Schemas – XML Vocabularies – Document Object Model (DOM) – DOM Methods – Simple API for XML – Extensible Style Sheet Language (XSL) – Simple Object Access Protocol (SOAP) – Web Services.

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

Teaching Methods:

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

Text Book:

1. Deitel, Neito, ″**Internet And World Wide Web – How to Program**″, Pearson Education Asia, 2003.

Reference Books:

1. Maureen Adams, Sherry Boneli, ″**Internet Complete**″, BPB Publication,First Edition , 1998
2. Thomas A.Powell, **″The Complete Reference HTML And XHTML″,** Fourth Edition, Tata McGraw Hill pub. Company Ltd, New Delhi, 2004

19UIT3S1

Mapping

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

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

19UIT4SL

Programme: B.Sc.		**B.Sc Information Technology**		
Course Code: 19UIT4SL		**Skill Based Subject 2 (Practical)- Web Programming Lab (HTML, CSS, XML)**		
Batch 2019-2020	Semester IV	Hours / Week 2	Total Hours 30	Credits 3

Course Objectives

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

Course Outcomes (CO)

K3	CO1	Apply HTML tags for designing static pages and separate design from content using Cascading Style sheet.
K4	CO2	Analyze the use of interactive web applications.
K5	CO3	Implement the concepts of CSS styles to design web pages.

LIST OF PRACTICAL PROGRAMS

1. Design a web page for a company using HTML Formatting Tags
2. Design a web page for library system using HTML Tags
3. Design a web page for your Department using HTML Tags
4. Design a web page with the following components
    a. Image b. Hyperlink
5. Design a web page which shows your resume using CSS
6. Design a web page to advertise a product using style sheets
7. Design a web page for a company using CSS
8. Create XML document to store information about books and create the DTD files
9. Use Microsoft DSO to connect HTML form or VB form with the book's XML document and display the information.

10. Create a web service for currency conversion (at five currencies) with the appropriate client program.

Guidelines to the distribution of marks for Practical Examinations:

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

Record Work: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

19UIT6SM

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 19UIT6SM		**Skill Based Subject 3 (Practical) - Software Testing Lab**		
Batch 2019-2020	Semester VI	Hours / Week 2	Total Hours 30	Credits 3

Course Objectives

1. To gain knowledge about recording the test case.
2. To design and construct the test cases.
3. To learn about the concepts of assert, verification, wait commands.

.

Course Outcomes (CO)

K3	CO1	Apply validation and verification in web applications.
K4	CO2	Analyze the fields of the text area in the applications.
K5	CO3	Implement the concepts of assert and verify.

LIST OF PRACTICAL PROGRAMS

1. Write a test case for performing the Calculator Operations using HTML and Validate using Selenium IDE.
2. Write a test case for a creating a link for a Paint Brush image using HTML and Validate using Selenium IDE
3. Write a test case for scrolling a text developed using HTML and Validate using Selenium IDE.
4. Write a test case for creating a Department webpage developed using HTML and Validate using Selenium IDE.
5. Write a test case for calculating the Student Mark list using Javascript and Validate using Selenium IDE.
6. Write a test case for designing an Employee form and calculating employee salary using Javascript and Validate using Selenium IDE.
7. Write a test case for developing a College application form using PHP and Validate using Selenium IDE.
8. Write a test case for developing the Customer Registration form using PHP and Validate using Selenium IDE.

19UIT6SM

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	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

Programme Code: B.Sc.		B.Sc Information Technology		
EDC – Designing through Multimedia - GIMP				
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	V	2	30	3

Course Objectives

1. To include the foundation theories of basic photo editing program.
2. To understand the features of filters, Bezier curves, layer masks, and an animation package.
3. To introduce the basic concepts and theories that is used as the foundation of Photo and texture editing.

Course Outcomes (CO)

K3	CO1	Apply the advanced features including filters, Bezier curves, layer masks, and animation package.
K4	CO2	Analyze the significance of good photo creation/manipulation and its overall impacts
K5	CO3	Implement the programs using noise reduction, cropping, automatic image enhancement tools, color adjustment tools, gradients, and customizable brushes.

LIST OF PRACTICAL PROGRAMS

1. Edit a Photo from Digital B&W using GIMP.
2. Design a Banner for Department Function using GIMP.
3. Design a Student ID Card using GIMP.
4. Adding and Assigning a color to Alpha channels (Background).
5. Editing an Image using Pseudo color Overlays.
6. Perform the following Transformation operation by Translation, Rotation and Scaling an Image.
7. Design a Visiting card for a Company with proper size using GIMP.
8. Design a college Logo with appropriate tools using GIMP.
9. Create a filter application and layer masking using GIMP.
10. Draw an image using Parametric Brushes.

Guidelines to the distribution of marks for Practical Examinations:

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

Record Work: 10 marks

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	10	10
Program Coding	10	10
Execution & Modifications	5	5

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

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

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

19EVS101

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 19EVS101		**Part IV – Environmental Studies**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	I	2	30	2

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.

Syllabus

Unit I **(6 hours)**

Multidisciplinary Nature of Environment

Definition : scope and importance – Need for public awareness - Natural resources – Types of resources – Forest Resources – Water Resources – Mineral Resources – Food Resources – Energy Resources – Land Resources.

Unit II **(6 hours)**

Ecosystems

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

Unit III **(6hours)**

Biodiversity and its Conservation

Introduction – Definition – Genetic – Species and ecosystem diversity- Bio geographical classification of India – Value of biodiversity – Biodiversity at global, national and local levels – India as a mega - diversity Nation - Hot spot of biodiversity – Threats to biodiversity - Endangered and endemic species of India – Conservation of Biodiversity – insitu Conservation of Biodiversity – exsitu Conservation of Biodiversity

19EVS101

Unit IV **(6 hours)**

Environmental Pollution

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

Unit V **(6 hours)**

Social Issues and the Environment

Sustainable Development – 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, "**A Text Book of Environmental Studies**", Environmental Agency, No 27, Nattarstreet, Velacherry main road, Velacheery, Chennai – 42, First Edition, Nov. 2004.

Reference Books

1. PurohitShammi Agarwal, **"A Text Book of Environmental Sciences"**, Publisher Mrs. SaraswatiProhit, Student Edition, Behind Naswan Cinema Chopansi Road, Jodhpur.

2. Dr.Suresh and K.Dhameja, "**Environmental Sciences and Engineering"**, Publisher S.K.Kataria& Sons, 424/6, Guru Nanak Street, Vaisarak, Delhi – 110 006.
3. J.Glynn Henry and Gary W Heinke, "**Environmental Science and Engineering"**, Prentice Hall of India Private Ltd., New Delhi – 110 001.

* Self Study (Questions may be asked from these portions also)

Question Paper Pattern

(External only)

Duration: 3 hours Total Marks : 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.

19VED201

Programme Code: B.Sc.		B.Sc Information Technology		
Course Code: 19VED201		Part IV – Value Education – Moral and Ethics		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	II	2	30	2

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.

Text Book:

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

19VED201

Reference Books :

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

Question Paper Pattern

(External only)

Duration: 3 hours Total Marks: 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 19UHR3N1		**Part IV - Non - Major Elective – I Human Rights**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	III	2	30	2

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 -Social Awareness and Responsibilities of Individuals.

Unit V: Human Rights **(6 Hours)**

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

Books for Study:

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

Book for Reference:

1.Human Rights, (2018) 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

Question Paper Pattern

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

19UWR4N2

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 19UWR4N2		**Part IV - Non- Major Elective – II Women's Rights**		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2020	IV	2	30	2

Objectives

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

Syllabus

Unit I **(6 Hours)**

Women Studies:

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

Unit II **(6 Hours)**

Socio-economic Development of Women:

Family welfare measures, role of women in economic development, representation of women in media status of women land rights, women entrepreneurs, National policy for the empowerment of women.

Unit III **(6 Hours)**

Womens' rights – Access to Justice:

Crime against women, domestic violence – physical abuse- verbal abuse – emotional abuse - economic abuse – minorities, dowry- harassment and death, code of conduct for work place, abetment of suicide.

19UWR4N2

Unit IV **(6 Hours)**

Women protective acts:

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

Unit V **(6 Hours)**

Women and Child welfare:

Safety provisions - various forms of mass media, radio, visual, internet, cyber space, texting, SMS and smart phone usage.

Healing measures for the affected women and child society by private and public sector, NGO and society.

Book for study :

1. Women's Rights (2019) Published by Kongunadu Arts & Science College, Coimbatore – 641 029.

References

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

Question Paper Pattern

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 : 12	B.Sc Information Technology		
Non- Major Elective – Consumer Affairs			
Batch	**Hours/Week**	**Total Hours**	**Credits**
2019-2020	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.

UIT - 102

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

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