KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE – 641 029.

DEPARTMENT OF INFORMATION TECHNOLOGY

CURRICULUM AND SCHEME OF EXAMINATIONS (CBCS)

(2018 - 2019 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.

UIT - 1

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 2018-2019 & ONWARDS]

Semester	Part	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks			Duration of Exam (hrs)	Credits
					CIA	ESE	Total		
I	I	18TML1A1	Language I@	6	25	75	100	3	3
	II	18ENG101	English - I	6	25	75	100	3	3
	III	18UIT101	Core Paper I – C Programming	5	25	75	100	3	5
		18UIT1CL	Core Practical I – Programming Lab - C	5	40	60	100	3	2
		18UIT1A1	Allied I - Mathematical Foundations for Computer Science	6	25	75	100	3	5
	IV	**18EVS101**	**Environmental Studies ****	**2**	**-**	**50**	**50**	**3**	**2**
			Total	**30**			**550**		**20**
II	I	18TML2A2	Language II@	6	25	75	100	3	3
	II	18ENG202	Language - English II	6	25	75	100	3	3
	III	18UIT202	Core Paper II - Computer Organization and Architecture	4	25	75	100	3	4
		18UIT203	Core Paper III - Object Oriented Programming with C++	3	25	75	100	3	5
		18UIT2CM	Core Practical II - Programming Lab - C++	3	40	60	100	3	2
		18UIT2A2	Allied II- Computer Oriented Numerical and Statistical Methods	6	25	75	100	3	5
	IV	**18VED201**	**Value Education - Moral and Ethics ****	**2**	**-**	**50**	**50**	**3**	**2**
			Total	**30**			**650**		**24**
III	III	18UIT304	Core Paper IV – Data Structures and Algorithms	5	25	75	100	3	4
		18UIT305	Core Paper V – Relational Database Management System and ORACLE	5	25	75	100	3	4
		18UIT306	Core Paper VI – JAVA Programming	5	25	75	100	3	5
		18UIT3CN	Core Practical III - Programming Lab – JAVA & ORACLE	5	40	60	100	3	2
		18UIT3A3	Allied III - Business Accounting	6	25	75	100	3	5
	IV	**18UIT3S1**	**Skill Based Subject 1 – Python Programming I**	**2**	**25**	**75**	**100**	**3**	**3**

		18TBT301/ 18TAT301/ 18UHR3N1	**Basic Tamil * / Advanced Tamil **/ Non-Major Elective – I ** (Human Rights)**	**2**	**-**	**75**	**75**	**3**	**2**
			Total	**30**			**675**		**25**
IV	III	18UIT407	Core Paper VII – Operating Systems	5	25	75	100	3	4
		18UIT408	Core Paper VIII – Visual Basic .NET	5	25	75	100	3	5
		18UIT409	Core Paper IX – Principles of Data Communications and Network	5	25	75	100	3	4
		18UIT4CO	Core Practical IV – Programming Lab – VB.Net	5	40	60	100	3	2
		18UIT4A4	Allied IV – Microprocessors, PC Hardware and Interfacing	6	25	75	100	3	5
	IV	**18UIT4SL**	**Skill Based Subject 2 (Practical) Python Programming Lab I**	**2**	**40**	**60**	**100**	**3**	**3**
		18TBT402/ 18TAT402/ 18UWR4N2	**Basic Tamil */ Advanced Tamil **/ Non-Major Elective – II ** (Women's Rights)**	**2**	**-**	**75**	**75**	**3**	**2**
			Total	**30**			**675**		**25**
V	III	18UIT510	Core Paper X – Client/Server Computing	6	25	75	100	3	4
		18UIT511	Core Paper XI – Software Engineering	6	25	75	100	3	4
		18UIT512	Core Paper XII – Mobile Computing	6	25	75	100	3	4
		18UIT5CP	Core Practical V – Software Testing Lab	5	40	60	100	3	2
		18UIT5E1	**Major Elective I**	**5**	**25**	**75**	**100**	**3**	**5**
	IV	**18UIT5S2**	**Skill Based Subject 3- Python Programming II**	**2**	**25**	**75**	**100**	**3**	**3**
			Total	**30**			**600**		**22**
VI	III	187UIT613	Core Paper XIII – Open Source Tools	6	25	75	100	3	5
		18UIT614	Core Paper XIV - Information Security	6	25	75	100	3	4
		18UIT6CQ	Core Practical VI – Programming Lab PHP	5	40	60	100	3	2
		18UIT6E2	**Major Elective II**	**5**	**25**	**75**	**100**	**3**	**5**
		18UIT6Z1	**Project*** **	**6**	**20**	**80**	**100**	**3**	**4**
	IV	**18UIT6SM**	**Skill Based Subject 4 (Practical) Python Programming Lab-II**	**2**	**40**	**60**	**100**	**3**	**3**
	V	**$$**	**Extension Activities ***	**-**	**50**	**-**	**50**	**-**	**1**
			Total	**30**			**650**		**24**
			Grand Total				**3800**	**-**	**140**

UIT - 3

@ Hindi/Malayalam/ French/ Sanskrit – 15HIN/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

Major Elective Papers

Elective I

1. **Embedded Systems**
2. **Network Security & Administration**
3. **Object Oriented Analysis And Design(using UML)**

Elective II

1. **E-Commerce**
2. **Cloud Computing**
3. **Data Mining**

Non - Major Elective Papers

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

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 / Project	2100	77
		Allied	400	20
		Electives	200	10
4.	IV	Basic Tamil / Advanced Tamil / Non – Major elective	150	4
		Skill Based Subject	400	12
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Extension Activities (NSS/NCC/Sports/YRC)	50	1
		Total	**3800**	**140**

Note :

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

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

UIT - 4

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	Record Work	10	
K5			

3. Project Viva Voce:

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

Components of Continuous Internal Assessment

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

UIT - 5

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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18UIT101

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT101		**Core Paper I – C Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	I	5	75	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.

18UIT101

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

18UIT101

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

18UIT1CL

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT1CL		**Core Practical I – Programming Lab - C**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	I	5	75	2

Course Objectives

1. To introduce the field of programming using C language.
2. To 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.

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

18UIT202

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT202		**Core Paper II - Computer Organization and Architecture**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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 Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Digital Logic: The Basic Gates – NOR, NAND, XOR Gates .

Unit- II **(13 Hours)**

Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Halfsubtractor, Full subtractor, Parallel binary subtractor. **Boolean algebra ***–Karnaugh map – Canonical form 1 – Construction and properties – Don't care combinations - Product of sum, Sum of products, simplifications.

Unit III **(11 Hours)**

Sequential circuits: Flip-Flops: RS, D, JK, and T -Multiplexers – Demultiplexers. Decoder - Encoder – Counters. Central processing Unit – General register organization – Stack organization - Input – Output Organization: Input – output interface – Asynchronous data transfer: Strobe Control and Handshaking. Priority Interrupt.

18UIT202

Unit IV **(12 Hours)**

Input – Output Processor: CPU-IOP Communication. Memory Organization: **Memory Hierarchy*** – Main Memory- Associative memory, Hardware Organization, Match Logic, Read Operation, Write Operation.

Unit V **(12 Hours)**

Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement

* 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. Albert Malvino, Donald P.Leach, (1995), **Digital Principles And Applications**, Third Edition , McGraw Hill Company.(Unit I, II)
2. M. Morris Mano, (1999) , **Computer System Architecture**, First Edition, PHI Publications.(Unit III, 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 Pvt Ltd.,
4. Miles J.Murdocca, Vincent, P.Heuring, (2007), **Computer Architecture and Organization,** First Edition, Wiley India Pvt.Ltd.

18UIT202

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

18UIT203

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT203		**Core Paper III – Object Oriented Programming with C++**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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.

18UIT203

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, (2004), **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.

18UIT203

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

18UIT2CM

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT2CM		**Core Practical II – Programming Lab - C++**		
Batch 2018-2019	Semester II	Hours / Week 3	Total Hours 45	Credits 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 an 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

18UIT2CM

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

18UIT304

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT304		**Core Paper IV – Data Structures and Algorithms**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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-Representation of Arrays-Stacks and Queues-Fundamentals- Evaluation Expression-**Multiple Stacks and Queues** *.

Unit II **(15 Hours)**

Linked Lists-Singly Linked List-Linked Stacks and Queues-Storage pool-Polynomial Addition-More On Linked List-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 *.**

18UIT304

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, (1983), **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

18UIT305

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT305		**Core Paper V – Relational Database Management System and Oracle**		
Batch 2018-2019	Semester III	Hours / Week 5	Total Hours 75	Credits 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

18UIT305

*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

18UIT305

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

18UIT306

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT306		**Core Paper VI - Java Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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 Method Overloading.
K4	CO4	Analyze the concepts of Threads, applets and Files.

Syllabus

Unit I **(16 Hours)**

Introduction to Object-Oriented Programming – The Java language – Variable Declarations and Arrays – Operators in Java. Control Statements: An Introduction –Selection Constructs – Iteration Constructs – Jump Constructs. Introduction to Classes: Instance variables – Class variables – Instance Methods – Constructors –Class Methods – Declaring Objects – Garbage Collection.

Unit II **(15 Hours)**

Classes and Methods in Detail: Method Overloading – Constructor Overloading –The this Reference – Using Objects in Method – Recursion – Access Modifiers –Inner Classes – Command Line Arguments. Inheritance: Basics of Inheritance –Super Class Variable and Subclass Object – The super reference – Constructor chaining – Method Overriding – The

final Keyword. Abstract Classes and Interfaces: The abstract Classes and Methods – Defining Interface – Implementing Interfaces –Extending Interface – Interface Reference. Exception Handling: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – **User Defined Exceptions** *

Unit III **(15 Hours)**

Multithreaded Programming: Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock – Inter-thread Communication. Packages and Access Modifiers: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages. Handling Strings: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods.

Unit IV **(14 Hours)**

Input Output Classes: Input and Output Operations – Hierarchy of classes in java.io Package – File class – Input Stream and Output Stream Classes – FileInputStream and FilterOutputStream Classes – Reader and Writer Classes – RandomAccessFile Class-StreamTokenizer. Applets: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class – Font Class – **Font Metrics Class *.**

Unit V **(15 Hours)**

Abstract Windowing Toolkit – AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus. Layout Management and Event Handling: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarchy of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes.

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

18UIT306

Teaching Methods:

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

Text Book:

1. Instructional Software Research and Development (ISRD) Group, (2007), **Introduction to Object Oriented Programming Through Java**, Tata McGraw-Hill Publishing Company Limited, New Delhi.

Reference Books:

1. E.BalaGurusamy, (2008), **Programming with Java – a Primer**, First Edition, Tata McGraw-Hill Publishing Company Limited.
2. John R. Hubbard, (2007), **Schaum's Outline of Programming with Java**, Second Edition, Tata McGraw- Hill Publishing Company Limited.

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

18UIT3CN

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT3CN		**Core Practical III – Programming Lab – Java and Oracle**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	III	5	75	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 to generate a Pascal Triangle.
2. Write a program for Multithreading.
3. Write a program for preparing mark list using inheritance.
4. Write a program for multiple inheritances.
5. Write a program for creating your own package.
6. Write a program that right-justifies a text file.
7. Write a program that displays a digital clock using applet.
8. Create an applet program to generate a human face.
9. Create an applet containing three buttons labeled red, green and blue, change the background color of the applet based on the button pressed.

18UIT3CN

ORACLE

10. 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.
11. Create a table employee with required fields and insert values to it.
    i) Generate a report for an individual employee.
    ii) Group rows based on department column
    iii) Create a View to include all employee information excluding salary.
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 Get input for student Id - If valid retrieve the related information and print the same otherwise raise an error.
14. 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.
15. Create a Database trigger for not allowing marks greater than 75 to be inserted in student table.
16. 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

18UIT3CN

Teaching Methods:

Presentation and Program Demonstration using Projector

Mapping

CO \ PSO	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

18UIT407

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT407		**Core Paper VII - Operating Systems**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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.

18UIT407

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 –Disk management –**Swap Space management ***.

File systems: File concepts-Access methods- Directory structure–File system structure- File system implementation: Overview - Directory implementation - Allocation methods-Free space management : Bit vector-Linked list - 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.

18UIT407

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

18UIT408

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT408		**Core Paper VIII - Visual Basic.Net**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	IV	5	75	5

Course Objectives

1. To describe the basic structure of a Visual Basic.NET project and the features of Integrated development environment (IDE).
2. To integrate variables and functions in developing vb.net applications
3. To build Windows applications using structured and object-based 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 CLR – Building VB.Net Applications-The Visual Basic Language: Operators – Conditionals and Loops – Procedures, Scope and Exception Handling.

Unit II **(15 Hours)**

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

Unit III **(15 Hours)**

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

18UIT408

Unit IV **(15 Hours)**

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

Unit V **(16 Hours)**

Creating User Controls, Web User Controls and Multithreading. Data Access with ADO.Net – Binding Controls to Database – Database Access with Web 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, (2005), **Visual Basic.NET Black Book,** First Edition, Dream Tech Publication.

Reference Books:

1. Evangelos Petroustes, (2002), **Mastering Visual Basic.NET**, First Edition, BPB Publications.
2. Bill Evjen Beres et al.,(2002), **Visual Basic.NET programming Bible**, First Edition, Wiley – Dream Tech Publications.

18UIT408

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

18UIT409

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT409		**Core Paper IX - Principles of Data Communications and Network**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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 motivate the need for network security practices in organizational units.

Course Outcomes (CO)

K1	CO1	Remember the basic structure of ISO/OSI reference model.
K2	CO2	Understand the concept of error detection and correction.
K3	CO3	Apply the concept of routing algorithms.
K4	CO4	Analyze the electrical interface and the basics of digital data transmission.

Syllabus

Unit I **(15 Hours)**

Introduction to Data Communications and Networking: Introduction-Fundamental Concepts - Data Communication – Protocols – **Standards *** – Signal Propagation – Analog and Digital Signals. Information Encoding: Representing Different Symbols – Minimizing Errors - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing. Transmission Errors: Detection and Correction.

Unit II **(15 Hours)**

Transmission Media: Guided Media - Unguided Media. Network Topologies: Mesh, Star, Tree, Ring, Bus – Switching: Circuit switching, Message switching, Packet switching.

18UIT409

Routing Algorithms: Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing – Network Protocols and OSI Model.

Unit III **(16 Hours)**

Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN): LAN – Ethernet – MAN – Switched Multimegabit Data Services (SMDS) - WAN – WAN Architecture - WAN Transmission Mechanism - WAN Addressing – Packet Forwarding – Aloha - Integrated Services Digital Network (ISDN) – X.25 Protocol – Frame Relay.

Unit IV **(14 Hours)**

Asynchronous Transfer Mode (ATM) - Internetworking Concepts, Devices, Internet Basics, History and Architecture – An Introduction to TCP / IP, IP, ARP, RARP, ICMP.

Unit V **(15 Hours)**

TCP: Features of TCP**, Relationship between TCP and IP ***, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format – User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP).

* - 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. Achyut S. Godbole, (2007), **Data Communications and Networks**, Ninth reprint, Tata McGraw-Hill Publishing Company Limited.

18UIT409

Reference Books:

1. Behrouz A. Forouzan, (2007), **Data Communications and Networking**, Second Edition Update, Nineteenth reprint, Tata McGraw-Hill Publishing Company Limited.
2. Andrew S. Tanenbaum, (2001), **Computer Networks**, Third Edition, Prentice Hall of India.

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

18UIT4CO

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT4CO		**Core Practical IV – Programming Lab – Vb.Net**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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. Program to perform arithmetic operations using interface.
2. Write a program to display the Exam results for given number.
3. Program for various font applications.
4. Program to simulate a simple calculator.
5. Program to simulate a digital clock with reset option.
6. Program for a notepad application.
7. Program to maintain Student details.
8. Program to maintain Employee details.
9. Program to maintain Sales details.
10. Program for Hotel Management.

18UIT4CO

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

18UIT4A4

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT4A4		**Allied Paper 1V – Microprocessors, PC Hardware and Interfacing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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.

18UIT4A4

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,ShrmaC.R , (2007), **The Intel Microprocessors,** First Edition , PHI Publications.

18UIT4A4

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

18UIT510

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT510		**Core Paper X - Client / Server Computing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	V	6	90	4

Course Objectives

1. To gain knowledge about different types of servers and its functions.
2. To familiarize the concept of Network Operating Systems.
3. To introduce the concept of DCOM architecture and CORBA architecture.

Course Outcomes (CO)

K1	CO1	Remember the building blocks and anatomy of client /server.
K2	CO2	Understand the concept of DSS, EIS, OLTP and OLAP.
K3	CO3	Apply the concept of HTML in developing web forms.
K4	CO4	Implement the concept of stored procedures, rules and triggers in databases.

Syllabus

Unit I **(17 Hours)**

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

Unit II **(19 Hours)**

Client / Servers and operating systems – The Anatomy of a server program –Needs of Client / Server from an OS – server scalability – Client anatomy –Client and server OS trends – Client OS and Server OS. NOS: Creating the single system image – Remote Procedure Calls (RPC) – Messaging and Queuing: The MOM Middleware.

Unit III **(18 Hours)**

SQL Database Servers: What does SQL do? – The ISO standards – What does a database server do? – Stored procedures, Triggers and Rules. Data warehouses – OLTP (Online Transaction Processing) – Decision Support Systems (DSS) – Executive Information

18UIT510

System (EIS) – comparing Decision Support and OLTP systems – Production vs Information Databases – The data warehouse.

Unit IV **(17 Hours)**

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

Unit V **(19 Hours)**

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

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

Teaching Methods:

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

Text Book:

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

Reference Books:

1. Dawna Travis Dewire, (2007), **Client / Server Computing,** First Edition, TataMcGraw-Hill, INC publications**.**
2. Patrick Smith, Steve Guengerich, (2002), **Client / Server Computing**, Second Edition, PHI Pub.,
3. Steven M. Bobrowski, (1996)**, Mastering Oracle 7 and Client/Server Computing,** Second Edition**,** BPB Publications.

18UIT510

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

18UIT511

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT511		**Core Paper XI – Software Engineering**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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.
3. 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 – **S/W Crisis *** – S/W Myths – S/W engineering technology – the S/W Process – S/W Process models – the prototyping model. Requirements engineering – System modeling – requirements analysis and elicitation for s/w – s/w prototyping – specification.

Unit II **(19 Hours)**

Mechanics of structured analysis – data dictionary –elements of analysis model- data modeling – functional modeling and information flow. Mapping requirements into a s/w architecture – transform mapping – transaction mapping – user interface design – Interface design activities.

18UIT511

Unit III **(18 Hours)**

Object oriented design – design for object-oriented systems-the system design process – s/w design and s/w engineering – the design process- design principles-design concepts – effective modular design – design heuristics for effective modularity.

Unit IV **(17 Hours)**

S/w testing techniques: S/w testing fundamentals – White box testing – Basis path testing – control structure testing – Black Box testing.

Unit V **(19 Hours)**

Testing strategies – A strategic approach to s/w testing – validation testing – system testing – the art of debugging – s/w quality – s/w reengineering – reverse engineering – Building blocks of CASE – **a taxonomy of CASE tools** *

* - 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**, Fifth 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.

18UIT511

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

18UIT512

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT512		**Core Paper XII – Mobile Computing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	V	6	90	4

Course Objectives

1. To teach the basics concepts and various techniques in Mobile Computing.
2. To provide the basics for various techniques in Mobile content services.
3. It provides the basics for portable computers and wireless networks, addressing the convergence of mobility, computing, and information organization.

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 is it necessary – Standard bodies. Mobile Computing Architecture: **History of computers and Internet** * – Architecture for mobile computing – Three-tier architecture – Design considerations for mobile computing – Mobile computing through Internet – Making exiting applications mobile enabled.

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.

18UIT512

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 – Authentications and Security. SMS.

Unit IV **(18 Hours)**

GPRS: GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- Limitations – Billing and Charging. 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 – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks – Wireless LAN Security – **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.

18UIT512

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

18UIT5CP

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT5CP		**Core Practical V–Software Testing Lab**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	V	5	75	2

Course Objectives

1. To gain knowledge about recording the test case in different modes.
2. To design and construct the test cases using Test Script Language.
3. To learn about GUI objects and bitmap objects

Course Outcomes (CO)

K3	CO1	Apply validation and verification in sample applications.
K4	CO2	Analyze the fields of the database and text area of the applications.
K5	CO3	Implement the concepts of checkpoints.

LIST OF PRACTICAL PROGRAMS

1. Perform windows calculator validation.
2. Perform windows paint verification.
3. Display user entered data on an Ms-Excel application for default.
4. Display user entered data on an Ms-Excel application for specific fields.
5. Perform database verification.
6. Test Bitmap objects in an application.
7. Perform properties check for graphical objects.
8. Verify text area of an application.
9. Perform synchronization check for a vbapplication.
10. Generate user report message for a vb application.

18UIT5CP

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

18UIT613

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT613		**Core Paper XIII - Open Source Tools**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	VI	6	90	5

Course Objectives

1. To learn the basic programming techniques using JavaScript and PHP.
2. To gain an insight of creating classes and using functions in PHP.
3. To learn the process of developing a PHP application and to work with files and directories.

Course Outcomes (CO)

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

Syllabus

Unit I **(18 Hours)**

Introduction to open sources – Need of open sources – advantages of open sources – application of open sources. Introduction to JavaScript-Advantages of JavaScript-Basic Programming Techniques-Operators and Expressions in JavaScript JavaScript Programming Constructs-Conditional checking-Super-controlled endless loops-functions in JavaScript-Placing Text in a browser-Dialog boxes.

Unit II **(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.

18UIT613

Unit III **(18 Hours)**

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

Unit IV **(18 Hours)**

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

Unit V **(18 Hours)**

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

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

Teaching Methods:

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

Text Books:

1. Vikram Vaswani, (2008), **PHP – A Beginner's Guide**, First Edition, Tata McGraw–Hill publications.
2. Ivan Bayross, (2002), **Web enabled commercial application development using HTML, DHTML, JavaScript, Perl CGI**, Second edition, BPB publications.

Reference Books:

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

18UIT613

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

18UIT614

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT614		**Core Paper XIV – Information Security**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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.

18UIT614

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.

18UIT614

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

18UIT6CQ

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT6CQ		**Core Practical VI – Programming Lab – PHP**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	VI	5	75	2

Course Objectives

1. To develop the ability to build efficient web based applications using PHP.
2. To learn the basic constructs in PHP and JavaScript.
3. To utilize the concepts of strings and Array functions in PHP applications.

Course Outcomes (CO)

K3	CO1	Recollect the concepts of creating a web page using HTML and validate it using JavaScript
K4	CO2	Understand the concept of String functions and Arrays
K5	CO3	Validate the file system functions and Date & time functions

List of Practical Programs

1. Develop a PHP program using controls and functions
2. Develop a PHP program and check message passing mechanism between pages.
3. Develop a PHP program using String function and Arrays.
4. Design a form to display student information and validate it using JavaScript.
5. Design a college application form and validate it using JavaScript.
6. Develop a PHP program using parsing functions (use Tokenizing)
7. Develop a PHP program using the concept of Classes.
8. Develop a PHP program and check Regular Expression, HTML functions.
9. Develop a PHP program and check File System functions, date and time functions.
10. Develop a PHP program using session.

18UIT6CQ

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

18UIT6Z1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT6Z1		**Core Project – Project Work & Viva - Voce *** **		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	VI	6	90	4

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

Note: Out of 90 Hours , 30 Hours is allotted as lab session.

*** 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 - Embedded Systems			
Batch 2018-2019	Hours / Week 5	Total Hours 75	Credits 5

Course Objectives

1. To teach all aspects of design and development of an embedded System.
2. To understand hardware and software of development system.
3. To earn the basic concepts of operating systems and embedded system project management.

Course Outcomes (CO)

K1	CO1	Acquire knowledge about microcontrollers embedded processors and their applications.
K2	CO2	Understand the internal architecture and interfacing of different peripheral devices with Microcontrollers.
K3	CO3	Apply key concepts of embedded systems like interrupts interaction, drivers, and ports with peripheral devices.
K4	CO4	Analyze the design concept of embedded systems.

Syllabus

Unit I **(15 Hours)**

Introduction to Embedded System: An Embedded System – Processor in the System– Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit. Processor and Memory organization: Structural units in a processor – Processor selection – **Memory devices**,**Memory selection** *- Allocation of memory – DMA.

Unit II **(14 Hours)**

Devices and buses for device networks: I/O devices – Device drivers and Interrupts servicing mechanism: Device drivers – Parallel port device drivers – Serial port device drivers– Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency.

Unit III **(16 Hours)**

Program modeling concepts in single and multiprocessor systems: Modeling process for software analysis before software implementation – Programming models for event controlled or response time constrained real time programs. Inter-process communication and synchronization of processes, tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter-process communication.

Unit IV **(15 Hours)**

Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling.

Unit V **(15 Hours)**

Embedded system project management – embedded system design and code design issues in system development process – Uses of target system or its emulator and In circuit emulator – Uses of scopes and logic analysers for system h/w tests – **Issues in embedded system design***.

* - 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. RajKamal,(2007), **Embedded Systems – Architecture, Programming And Design**, Second Edition, TMH publications.

Reference Books:

1. David E Simon, (1999), **An Embedded Software Primer,** Thirteenth Reprint, Addison Wesley, Pearson Education Asia.
2. Tammy Noergaard, (2013), **Embedded System Architecture**, Second Edition, Elsevier.

Mapping

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

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

Programme Code : 12	**B.Sc Information Technology**		
Elective - Network Security and Administration			
Batch 2018-2019	Hours / Week 5	Total Hours 75	Credits 5

Course Objectives

1. To learn the need for network security and security approaches.
2. To inculcate the concept of transferring authentic data along the network with several methods and algorithms.
3. To enrich the knowledge on different types of Internet Security Protocols.

Course Outcomes (CO)

K1	CO1	Remember the basic concept of Cryptography and various types of attacks.
K2	CO2	Understand about various types of protocols for Internet Security.
K3	CO3	Implement various algorithms for Cryptography
K4	CO4	Review Firewall and IP security

Syllabus

Unit I **(15 Hours)**

Attacks on computers and computer security: Introduction –Need for security – **Security approaches** *- Principles of security –Types of attacks. Cryptography**:** Concepts and techniques - Introduction – Plain text and Cipher text – Encryption and Decryption – Symmetric and Asymmetric key Cryptography – Possible types of attacks.

Unit II **(15 Hours)**

Symmetric Key Algorithms and AES**:** Introduction - Algorithm Types and modes – An overview of symmetric key cryptography – Data encryption Standard (DES): How DES works –International Data Encryption Algorithm (IDEA): How IDEA Works – Advanced Encryption Standard (AES) . Asymmetric Key Algorithms: Digital Signature and RSA : Introduction – Brief history of Asymmetric Key cryptography – An Overview of Asymmetric Cryptography - The RSA algorithm – Symmetric and Asymmetric cryptography together – Digital signatures

Unit III **(15 Hours)**

Digital certificate and Public Key Infrastructure (PKI): Introduction – Digital certificates - the PKIX model – XML, PKI and Security – Creating digital certificates using JAVA. Internet Security Protocols **:** Introduction – Basic concepts – Secure Socket Layer – (SSL) – Transport Layer Security(TLS) – Secure HyperText Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – Secure Electronic Transaction (SET) – SSL Versus SET – 3-D secure Protocol – Electronic Money - Email Security : PEM – PGP.

Unit IV **(15 Hours)**

User Authentication and Kerberos **:** Introduction – **Authentication basics***- Passwords – Authentication Tokens – Kerberos – Key distribution center –Single sign on (SSO) Approaches – Cryptographic Toolkits – Security and Operating Systems – Database Security .

Unit V **(15 Hours)**

Network Security Firewalls and Virtual Private Networks(VPN) : Introduction – Brief Introduction to TCP/IP – Fire walls – IP security – Virtual Private networks (VPN) –Case Studies on Cryptography and Security: Introduction – Cryptographic Solutions a Case Study – DOS Attacks – IP Spoofing Attacks – Cross Site Scripting Vulnerability (CSSV) – Contract signing – secret Splitting - virtual elections – secure multiparty calculations .

* - 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. Atul Kahate, (2008), **Cryptograpy and Network Security**, Second Edition, McGraw Hill Education Pvt., Limited.

Reference Book:

1. Charlie Kaufman, Radia Pearlman, Mike Speciner,(2006), **Network Security Private Communication in Public World**, Second Edition, IEEE Publications.

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

Programme Code : 12	**B.Sc Information Technology**		
Elective - Object Oriented Analysis and Design(using UML)			
Batch 2018-2019	Hours / Week 5	Total Hours 75	Credits 5

Course Objectives

1. To learn the essential modeling elements of Unified Modeling Language.
2. To teach the various components of UML.
3. To teach Documenting user requirements using the UML notation.

Course Outcomes (CO)

K1	CO1	Remember and modeling software specifications.
K2	CO2	Understand object-oriented concepts and methodology
K3	CO3	Apply object-oriented method for analysis and design
K4	CO4	Analyze the usage of UML notations.

Syllabus

Unit I **(15 Hours)**

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, **Software Development Life Cycle***.

Unit II **(16 Hours)**

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modeling: Interfaces, Types and Roles, **Packages***.

Unit III **(14 Hours)**

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

Unit IV **(15 Hours)**

Basic Behavioral Modeling-I: Interactions, Interaction diagrams. BasicBehavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

Unit V **(15 Hours)**

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads. Architectural Modeling: **Deployment***

* - 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. Grady Booch, JamesRumbaugh, Ivar Jacobson (2005), **The Unified Modeling Language User Guide**, Second Edition, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado (2009),**UML 2 Toolkit,** WILEY-Dreamtech India Pvt. Ltd.

Reference Books:

1. Pascal Roques, (2008), **Modeling Software Systems Using UML2,** First Edition, WILEY-Dreamtech India Pvt. Ltd.
2. Craig Larman, (2008), **Applying UML And Patterns: An Introduction To Object –Oriented Analysis And Design And Unified Process**, Third Edition, Pearson Education.

.**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 - 73

Programme Code : 12	**B.Sc Information Technology**		
Elective - E - Commerce			
Batch 2018-2019	Hours / Week 5	Total Hours 75	Credits 5

Course Objectives

1. To teach the basic E-commerce functions.
2. To explain the security issues and the measures used to protect against security threats.
3. To introduce about E-commerce Payment system.

Course Outcomes (CO)

K1	CO1	Remember the basic concepts and technologies used in the field of management information systems.
K2	CO2	Understand the processes of developing and implementing information systems.
K3	CO3	Apply ethical, social, and security issues of information systems.
K4	CO4	Analyze the importance of managing organizational change associated with information systems.

Syllabus

Unit I **(15 Hours)**

What is e-commerce? – E-Commerce is not E-Business – the drivers – Myths You should know – Advantages and Issues in E-Commerce – Benefits and Limitations of the Internet – Role of EStrategy – Integrating E-commerce – E-Commerce Business Models – Management Implications.

Unit II **(15 Hours)**

Mobile-Commerce-The Business of Time**:** What is M-Commerce? – Why wireless? – How wireless Technology is employed? – Wireless LAN – Wireless application Protocol - **Implications for Management ***.

Unit III **(15 Hours)**

Business-to-Business E-Commerce**:** What is B2B E-Commerce? – Supply chain Management and B2B – B2B Models – B2B Tools-EDI.

Unit IV **(15 Hours)**

E-Security**:** Security in Cyberspace – Designing for Security – How much risk you afford?– The VIRUS – Security Protection and Recovery – Role of Biometrics - How to secure your system? – Security and Terrorism.

Unit V **(15 Hours)**

Getting the money**:** Real World Cash – Electronic Money – **Requirements for Internet*** -Based Payments – How would you like to pay? – B2B and E-Payment – M-Commerce and M-Payment – General Guide to E-Payment.

* - 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. Elias M. Awad,(2006),**Electronic Commerce from Vision to Fulfillment,** Third Edition, PHI.(Chapters: 1, 6, 11, 13 &15)

Reference Books:

1. Charles Trapper,(2001),**E-Commerce Strategies,** PHI Publication.
2. Agarwal & Others,(2000), **An Introduction to the What's and How's of E-Commerce,** First Edition, MacMillan India Ltd.

Mapping

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

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

Programme Code : 12	**B.Sc Information Technology**		
Elective – Cloud Computing			
Batch 2018-2019	Hours / Week 5	Total Hours 75	Credits 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	Uderstand 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 **(15 Hours)**

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

Unit II **(15 Hours)**

Cloud Computing Architecture**:** Introduction - Cloud Reference Model – Types of Clouds – Organizational aspects.

Unit III **(15 Hours)**

Accessing the Cloud : Platforms – Web Applications – Web Browsers. Cloud Storage: Overview – Cloud Storage Providers.

UNIT IV **(15 Hours)**

Cloud Applications**:** Scientific Applications: Healthcare, Geosciences – Business and Consumer Applications: CRM and ERP, Media Applications, **Multiplayer Online Gaming*.**

UNIT V **(15 Hours)**

Standards: Application – Client – Infrastructure – Service. Software as a Service: Overview – Driving Forces - Industries – Healthcare, Banking.

* - 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. Anthony T.Velte ,Toby J.Velte, Robert Elsenpeter, (2010), **Cloud Computing – A Practical Approach**, TMH Publications.(Unit I, Unit III, Unit V)
2. RajkumarBuyya, Christian vecchiola ,Thamaraiselvi, (2013),**Mastering Cloud Computing**, Mc Graw Hill Education. (Unit II, Unit IV)

Reference Books:

1. Haley Beard (2008), **Cloud Computing Best Practices For Measuring Processes for On Demand Computing, Applications And Data Centers in the Cloud With Sla's .**
2. Judith Hurwitz, Robin Bloon, (2012), **Cloud Computing for Dummies**, IBM Limited Editon, John Wiley & Sons Inc.,
3. Michael Miller, (2009), **Cloud Computing – Web Based Application**, First Impression Pearson Edu Inc.,

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 - Data Mining			
Batch 2018-2019	Hours / Week 5	Total Hours 75	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 **(15 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 **(15 Hours)**

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

Unit III **(15 Hours)**

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

Unit IV **(15 Hours)**

Clustering : Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms - Partitional Algorithms.

Unit V **(15 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

18UIT3S1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UIT3S1		**Skill Based Subject 1 – Python Programming I**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	III	2	30	3

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 formatting and escape sequencing characters

Course Outcomes (CO)

K1	CO1	Remember the syntax of looping statements.
K2	CO2	Understand the concept of python scripts.
K3	CO3	Apply the concept of functions and user defined functions in programming.
K4	CO4	Analyze the concept of operators and looping statements in programming.

Syllabus

Unit I **(6 Hours)**

Introduction to Python: Introduction – Python Overview – Getting Started with Python – Comments – Python Identifiers – Reserved Keywords – Variables – Standard Data types.

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Unit II **(6 Hours)**

Operators - Statement and Expressions – String Operations – Boolean Expressions – Illustrative Programs : Square root of a number, Area of a Rectangle and Swap the values of two numbers.

Unit III **(6 Hours)**

Control Statements – Iteration - While Statement – Input from Keyboard – Illustrative Programs using Control and Iteration Statements :Find a number is Odd or Even, Largest of three numbers, Input year is leap or not, Fibonacci sequence of n terms.

18UIT3S1

Unit IV **(6 Hours)**

Functions: Introduction - Built-in Functions – Composition of Functions – Illustrative program using Functions and Built-in Functions : To get current Date and Time, To get Calendar for a month, To format date and Time and to demonstrate built-in functions.

Unit V **(6 Hours)**

User defined Functions – Parameters and Arguments – Python Recursive Functions – the return statement. Illustrative programs using User defined functions and Recursive functions : to find HCF of given numbers, to display factors of a given number, to convert decimal number to its binary, octal, hexadecimal equivalents, sum of natural numbers using recursion and factorial of a number.

Teaching Methods:

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

Text Book:

1. E. Balagurusamy, (2017), Problem Solving and Python Programming , First Edition McGraw-Hill Publication.

Reference Books:

1. Ashok Namdev Kamthane ,Amit Ashok Kamthane, (2017), Programming and Problem Solving with Python, First Edition.

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

18UIT4SL

Programmee: B.Sc.		**B.Sc Information Technology**		
Course Code: 18UIT4SL		**Skill Based Subject 2 (Practical)- Python Programming Lab I**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	IV	2	30	3

Course Objectives

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

Course Outcomes (CO)

K3	CO1	Apply different types of operators in programming.
K4	CO2	Implement the concepts of built-in functions in programming.
K5	CO3	Analyze the use control structures in programming.

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 display all the prime numbers within an interval.
4. Write a program to create a simple calculator using functions.
5. Write a program to multiply two matrices using nested loops.
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. Program to perform different set operations.
9. Program to perform linear and binary search.
10. Program to perform merge sort.

18UIT4SL

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

18UIT5S2

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 18UIT5S2		**Skill Based Subject 3 - Python Programming II**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	V	2	30	3

Course Objectives

1. To teach the concepts of Strings and Tuples and dictonaries.
2. To gain knowledge about files and directories in python.
3. To learn the concepts of dictionaries in python.

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Course Outcomes (CO)

K1	CO1	Remember the structures of Lists, Tuples and Dictionaries.
K2	CO2	Understand the concepts of Input / Output operations in file.
K3	CO3	Apply the concepts of exception handling in programs.
K4	CO4	Analyze the concepts of Files and Directories.

Syllabus

Unit I **(6 Hours)**

Strings : Compound Data type – len Function – String Slices – Strings are Immutable – String Traversal – Escape Characters – String Formatting Operators and Functions – Lists - values and accessing elements - Lists and mutable - Deleting elements from list- Built-in list operations - Built-in list methods.

Unit II **(6 Hours)**

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. 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.

18UIT5S2

Unit III **(6 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.

Unit IV **(6 Hours)**

Directories: mkdir() , chdir(), getcwd(), rmdir() .Illustrative programs to write data in a file for both write and append mode directories. Exception: Built-in exceptions – Handling exceptions – Exception with arguments – User defined exceptions.

Unit V **(6 Hours)**

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.

Teaching Methods:

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

Text Book:

1. E. Balagurusamy, (2017), Problem Solving and Python Programming , First Edition McGraw-Hill Publication.

Reference Books:

1. Ashok Namdev Kamthane ,Amit Ashok Kamthane, (2017), Programming and Problem Solving with Python**,** First Edition.

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

18UIT6SM

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 18UIT6SM		**Skill based subject 4 (Practical):Python Programming Lab II**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	VI	2	30	3

Course Objectives

1. To gain knowledge about the usage of tuples in Programming.
2. To teach the concepts of using dictionaries programming.
3. To impart knowledge about the creation of files and directories.

Course Outcomes (CO)

K3	CO1	Apply the concepts of tuples in programming.
K4	CO2	Implement the concepts of files and directories in programming
K5	CO3	Analyze the concept of exception handling in programming.

LIST OF PRACTICAL PROGRAMS

1. Write a program to count the number of each vowel in a string.
2. Write a program to sort alphabetically the words form a string provided by the user.
3. Write a program to demonstrate tuples functions and operations.
4. Write a program to demonstrate dictionaries functions and operations.
5. Write a python program to demonstrate File Input and Output operations.
6. Write a program to demonstrate Exception Handling.
7. Write a program to demonstrate Classes and their Attributes.
8. Write a program to demonstrate inheritance and method overriding.
9. Write a program to demonstrate Multiple Inheritance.
10. Write program to generate a student mark sheet using Built-in Class attributes.

18UIT6SM

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

18EVS101

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 18EVS101		**Part IV – Environmental Studies**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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

18EVS101

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.

18VED201

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

18VED201

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.

18UHR3N1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: 18UHR3N1		**Non - Major Elective - I "Human Rights"**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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 dutie
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.

18UHR3N1

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

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

Text Books

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

Reference Book

1. **Human Rights Humanitarian Law and Refugee law,** Jaganathan, MA., MBA., MMM., ML.,ML., J.P.Arjun Proprietor, Usha Jaganathan, law series, 1st floor, Narmatha Nanthi Street, Magathma Gandhi Nagar, Madurai – 625014.
2. **Promoting Women's Rights As Human Rights**, (1999), Publisher : United Nations. NewYork.,

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

18UWR4N2

Programme Code: B.Sc.		**B.Sc Information Technology**		
Course Code: 18UWR4N2		**Non- Major Elective – II Women's Rights**		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2019	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)**

Laws, Legal Systems and Change:

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

Unit II **(6 Hours)**

Politics of land and gender in India:

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

Unit III **(6 Hours)**

Women's Rights: Access to Justice:

Introduction – Criminal Law – Crime Against Women – Domestic Violence –

18UWR4N2

Dowry Related Harassment and Dowry Deaths – Molestation – Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

Unit IV **(6 Hours)**

Women's Rights:

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

Unit V **(6 Hours)**

Special Women Welfare Laws:

Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment - Role of Rape Crisis Centers.

Reference Books:

1. Nitya Rao , (2008), **GOOD Women Do Not Inherit Land,** Social Science Press and Orient Blackswan
2. International Solidarity Network, (2006) ,**Knowing Our Rights,** An imprint of Kali for Women
3. P.D. Kaushik, (2007), **Women Rights,** Bookwell Publication
4. Aruna Goal, (2004), **Violence Protective Measures For Women Development And Empowerment,** Deep and Deep Publications Pvt.
5. Monica Chawla, (2006), **Gender Justice,** Deep and Deep Publications Pvt. Ltd.
6. Preeti Mishra,(2007), **Domestic Violence Against Women,**Deep and Deep Publications Pvt..
7. Clair M. Renzetti, Jeffrey L. Edleson, Raquel Kennedy Bergen, (2001), **Source Book on ,Violence Against Women,** Sage Publications.

18UWR4N2

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**
2018-2019	2	30	2

Course Objectives

1. To familiarize the students with their rights and responsibilities as a consumer.
2. To understand the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards.
3. To have a handle the business firms' interface with consumers and the consumer related regulatory and business environment.

Course Outcomes (CO)

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

Syllabus

Unit I **(6 Hours)**

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

Unit II **(6 Hours)**

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

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

Unit III **(6 Hours)**

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

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

Unit IV **(6 Hours)**

Role of Industry Regulators in Consumer Protection

i. Banking: RBI and Banking Ombudsman
ii. Insurance: IRDA and Insurance Ombudsman
iii. Telecommunication: TRAI
iv. Food Products: FSSAI
v. Electricity Supply: Electricity Regulatory Commission
vi. Real Estate Regulatory Authority

Unit V **(6 Hours)**

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

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

Note: Unit 2 and 3 refers to the Consumer Protection Act, 1986. Any change in law would be added appropriately after the new law is notified.

SUGGESTED READINGS:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) Consumer Affairs, Universities Press.
2. Choudhary, Ram Naresh Prasad (2005). Consumer Protection Law Provisions and Procedure, Deep and Deep Publications Pvt Ltd.
3. G. Ganesan and M. Sumathy. (2012). Globalisation and Consumerism: Issues and Challenges, Regal Publications
4. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, New Delhi
5. Rajyalaxmi Rao (2012), Consumer is King, Universal Law Publishing Company
6. Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
7. E-books :- www.consumereducation.in
8. Empowering Consumers e-book, www.consumeraffairs.nic.in
9. ebook, www.bis.org
10. The Consumer Protection Act, 1986 and its later versions.

UIT - 100

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