B.Sc. INFORMATION TECHNOLOGY
Syllabus

(Academic year 2018 onwards)

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), COIMBATORE - 641 018
DEPARTMENT OF INFORMATION TECHNOLOGY
B. Sc., Information Technology Syllabi and Scheme of Examinations for the Students Admitted from 2018-2019 Academic year onwards

Part	Sub Code	Title of the Paper	Hours (week)	Internal (CIA) Marks	External Marks	Total Marks	Ext – Min.	Total Pass Marks	Credits
Semester - 1									
I	18TAM11L	**Part – I:** Language: Tamil I	6	25	75	100	30	40	3
II	18ENG12L	**Part –II:** English I	6	25	75	100	30	40	3
III	18BIT13C	**Core :** Computer Fundamentals and C Programming	5	25	75	100	30	40	3
III	18BIT14A	**Allied:1- Mathematics:1** Mathematical Foundations for Information Technology	6	25	75	100	30	40	5
III	18BIT15P	**Practical 1:** C Programming Lab	5	40	60	100	24	40	2
IV	18ENV19E	**Environmental Studies**	2	25	75	100	30	40	2
Semester – 1I									
I	18TAM21L	**Part – I:** Language: Tamil II	6	25	75	100	30	40	3
II	18ENG22L	**Part –II:** English II	6	25	75	100	30	40	3
III	18BIT23C	**Core:** Object Oriented Programming with C++	5	25	75	100	30	40	3
III	18BIT24A	**Allied:2- Mathematics:2** Computer Oriented Numerical and Statistical Methods	6	25	75	100	30	40	5
III	18BIT25P	**Practical 2:** C++ Programming Lab	5	40	60	100	24	40	2
IV	18VAL24E	**Value Education Gandhian Thoughts**	2	25	75	100	30	40	2
Semester – III									
III	18BIT31C	**Core :** Operating Systems	5	25	75	100	30	40	3
III	18BIT32C	**Core :** Data Structures	5	25	75	100	30	40	3
III	18BIT33C	**Core :** Java Programming	5	25	75	100	30	40	3
III	18BIT34A	**Allied - 3:** Digital Computer Fundamentals	6	25	75	100	30	40	5
III	18BIT35P	**Practical 3:** Java Programming Lab	5	40	60	100	24	40	2
IV	18BIT36S	**Skill Based Subject-I:** Web Technology	4	25	75	100	30	40	3

Semester – IV									
III	**18BIT41C**	**Core :** Software Engineering	5	25	75	100	30	40	5
III	**18BIT42C**	**Core :** Computer Networks	5	25	75	100	30	40	5
III	**18BIT43C**	**Core :** Visual Basic Programming	5	25	75	100	30	40	5
III	**18BIT44A**	**Allied – 4:** Computer System Architecture	6	25	75	100	30	40	5
III	**18BIT45P**	**Practical 4:** VB Programming Lab	5	40	60	100	24	40	2
IV	**18BIT46S**	**Skill Based Subject – II:** Microprocessor & Assembly Language Programming	4	25	75	100	30	40	3
V	**18EXA44E**	**@Extension Activities: NCC/NSS/SPORTS//YRC**	-	-	100	100	40	40	1
Semester – V									
III	**18BIT51C**	**Core :** Client Server Computing	5	25	75	100	30	40	5
III	**18BIT52C**	**Core :** Relational Database Management System	6	25	75	100	30	40	5
III	**18BIT53C**	**Core :** Computer Graphics	6	25	75	100	30	40	5
III	**18BIT54P**	**Practical 5:** Relational Database Management System Lab	5	40	60	100	24	40	5
IV	**18BIT55S**	**Skill Based Subject – III:** Data Mining & Warehousing	5	25	75	100	30	40	3
IV	**18BIT5EL**	**Non-Major Elective Paper – I:** Information Technology (Fundamentals of Computers)	3	25	75	100	30	40	2
Semester – VI									
III	**18BIT61C**	**Core :** Programming in PHP	6	25	75	100	30	40	4
III	**18BIT62C**	**Core :** Mobile Computing	5	25	75	100	30	40	5
III	**18BIT63P**	**Practical 6:** PHP Programming Lab	5	40	60	100	24	40	5
III	**18BIT64V**	**Mini Project**	6	20	80	100	32	40	15
IV	**18BIT65S**	**Skill Based Subject – IV:** Software Project Management	5	25	75	100	30	40	3
IV	**18BIT6EL**	**Non-Major Elective Paper – II:** Information Technology 2 (Office Automation)	3	25	75	100	30	40	2
		Total / Credits	**180**			**3600**			**140**

Exam : 3 hours
*Courses offered with Two semester Language Papers.
@ N o External Examinations. Only Continuous Internal Assessment (CIA).
Includes 25/40 continuous internal assessment marks for theory and practical papers respectively.
Project evalution done by both Internal and External examiner for 80 Marks.

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CBCS PATTERN GUIDELINES FOR PROJECT WORK

- The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.

- Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.

- The project work should be compulsorily done under the supervision of the department staff concerned.

Viva-Voce
- Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the Annexure Report available in the College.

- Out of 100 marks, 80 marks for project report and 20 marks for Viva-Voce.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: COMPUTER FUNDAMENTALS AND C PROGRAMMING**	**I**	**18BIT13C**

Objectives:

- To enable the students to know about the fundamentals of computer types of software and operating system.
- To learn about of the programming language.
- To enable the students to learn the C programs using Arrays, Strings, Functions, Structures, Pointers and files.

UNITI: Fundamentals of Computers: Introduction – History of Computers-Generations of Computers - Classification of Computers-Basic Anatomy of a Computer System-Input Devices Processor-Output Devices-Memory Management – Types of Software- Overview of Operating System- Programming Languages-Translator Programs-Problem Solving Techniques.

UNIT II: Overview of C: Introduction - Character set - C tokens - keyword & Identifiers -Constants - Variables - Data types - Declaration of variables - Assigning values to variables -Defining Symbolic Constants - Reading & Writing a character - Formatted input and output - Arithmetic, Relational, Logical, Assignment, Increment and Decrement operators, Conditional, Bitwise, Special Operators - Arithmetic Expressions - Evaluation of expressions -precedence of arithmetic operators - Type conversion in expressions – operator precedence &associatively - Mathematical functions.

UNITIII: 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. Arrays - Character Arrays and Strings.

UNIT IV: User-Defined Functions: Introduction – Need and Elements of User-Defined Functions-Definition Return Values and their types - Function Calls – Function Declaration– Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - Structures and Unions.

UNIT V: Pointers: Understanding pointers - Accessing the address of a variable - Declaring and initializing pointers - Accessing a variable through its pointer - Pointer expressions -Pointers and arrays -Pointers and character strings - Pointers to functions - Pointers and structures.
File Management in C- Defining and opening a file -Closing a file - Input/Output operations on files - Error handling during I/O operations -Random access to files - Command line arguments.

TEXT BOOK
1. E Balagurusamy," Computing Fundamentals & C Programming" - TataMcGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.

REFERENCE BOOK:
1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
2. Henry Mullish&HuubertL.Cooper: The Spirit of C, Jaico Pub. House, 1996.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Allied:1- Mathematics:1 -MATHEMATICAL FOUNDATION FOR INFORMATION TECHNOLOGY	I	18BIT14A

Objectives:
- To get basic ideas of some basic Discrete Mathematical Structures.
- To enhance the knowledge of applying the properties of Discrete Mathematical Structures to Computer Science.

UNIT I: MATRICES: Introduction – Matrix Operations – Inverse of a square matrix – Elementary operations and Rank of a matrix – Simultaneous equations – Inverse by partitioning - eigenvalues and eigenvectors.(Chapter VI – Sections: 6.1 to 6.7)

UNIT II: SET THEORY: Introduction – Sets – Notation and descriptions of sets – Sub sets- Venn - Euler Diagram -Operations on sets - Properties of set operations - Verification of the basic laws of algebra by Venn diagram. (Chapter I - Sections 1.1 to 1.8)

UNIT III: MATHEMATICAL LOGIC: Statements and notations- Connectives - Normal forms - Theory of inference for statement calculus.(Chapter I - Sections 1.1 to 1.4)

UNIT IV: RELATIONS: Cartesian product of two sets – Relations - Representation of Relation - Operations on relations - Equivalence Relations - Closures and Warshall's Algorithm. (Chapter II – Sections: 2.1 to 2.6)

UNIT V: GRAPH THEORY: Basic Concepts - Matrix representations of graphs – Trees - Spanning trees.(Chapter XI – Sections: 11.1 to 11.4)

TEXT BOOKS
1. "Discrete Mathematical Structures With Applications To Computer Science" - J.P.Tremblay and R.Manohar, Mcgraw Hill International Edition. (For Unit III)
2. "Discrete Mathematics"- Dr.M.K.Venkatraman, Dr.N.Sridharan, N.Chandra Sekaran - Npc, Chennai.(For Units I, II, IV And V)

REFERENCE BOOKS
1. Engineering Mathematics Vol II – Dr. M.K. Venkatraman - NPC
2. Discrete Mathematics - J. K. Sharma, Second Edition, Macmillan India Ltd., 2005.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Practical 1: C PROGRAMMING LAB**	I	**18BIT15P**

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 print magic square of order n where n > 3 and n is odd.

5. Write a C program to sort the given set of numbers in ascending order.

6. Write a C program to check whether the given string is a palindrome or not using pointers.

7. Write a C program to count the number of Vowels in the given sentence.

8. Write a C program to find the factorial of a given number using recursive function.

9. Write a C program to print the students 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.

10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.

11. 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.

12. 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 chars ii) number of words and iii) number of lines.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**ENVIRONMENTAL STUDIES** (For all UG courses)	I	18ENV1GE

UNIT I: Environment – Introduction – Nature- Scope – Content – Need for study. Natural resources - Forest and energy resources - Use and overexploitation- deforestation. Energy resources - renewable and non renewable energy resources.

UNIT II: Ecosystem – concept – types- Forest, Grassland, Desert and Aquatic(Pond)- Structure and function of an ecosystem – Producers- consumers and decomposers – Food chain – food web- ecological pyramids- energy flow. Biodiversity and its conservation- *in situ* and *ex situ* conservation- Mega biodiversity centres and hotspots.

UNIT III: Environmental pollution- definition- causes-effects and control measures of air, water, soil, thermal and nuclear pollutions. Waste management- Industrial and solid waste. Disaster management – earthquake, cyclone, flood and landslides.

UNIT IV: Social Issues and the environment- Urbanization-Urban problems related to energy and watershed management. Environmental Ethics- Issues and possible solutions- Wasteland reclamation- Climate change- Global warming- Acid rain- Ozone layer depletion- Public awareness. Environmental laws- Environment Protection Act, Wildlife Protection Act, Forest Conservation Act.

UNIT V: Human population and its impact on environment- Population growth- Resettlement and Rehabilitation of project affected persons- Case studies – Sardar Sarovar Project, Maharastra and Bandipur National Park- Project Tiger, Karnataka, NTPC, India. Role of Indian and Global religions and Cultures in environmental conservation- Case study: sacred groves in Western Ghats (kavu) & Chinese culture. Human and Wildlife Conflicts.

TEXT BOOKS
1. Bharucha. E, 2003. Text book of Environmental Studies, UGC New Delhi & Bharathi Vidyapeeth Institute of Environmental Education and Research, Pune- 361.
2. Arumugam. M &Kumaresan. V, 2016. Environmental Studies (Tamil version), Saras Publications, Nagerkoil.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Core: OBJECT ORIENTED PROGRAMMING WITH C++	II	18BIT23C

Objectives:
- Understand object oriented programming and advanced C++ concepts
- Be able to explain the difference between object oriented programming and procedural programming.
- Be able to apply object oriented or non-object oriented techniques to solve bigger computing problems.

UNIT I: Introduction to C++: Key concepts of OOPs – Advantages – object oriented languages – Input and output in C++: Streams in C++ - Pre- Defined Streams – Unformatted console I/O operation – Formatted console I/O operations – 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: Class and Object: Declaring objects – Defining Member Functions – Static Member Variables and Functions – Array of Object – Friend Functions – Overloading Member Functions – Bit Fields and Class. Constructor and Destructors: Characteristics – Calling Constructor and Destructors – Constructors and Destructors with Static Member.

UNIT III: 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: 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 Object – Binding – Polymorphisms and Virtual Functions.

UNIT V: Files: File Stream Classes – File Modes – Sequential Read/ Write Operations – Binary and ASCII Files – Random Access Operation – Command Line Arguments - Exception Handlings : Principles of Exception Handling – The Keywords try, Throws and Catch – Exception Handling Mechanism – Multiple Catch Statements – Catching Multiple Exceptions – Re-throwing Exception – Strings: Declaring and Initializing String Objects – Strings Attributes – Miscellaneous Functions.

TEXT BOOK
1. Ashok N Kamthane, "Object Oriented Programming with ANSI and Turbo C++", Pearson Education Publications, 2006.

REFERENCE BOOKS
1. Balagurusamy.E, Object Oriented Programming with C++ - TMH Pub 1998.
2. John R Hubbard, Programming with C++ - TMH Publ. II Edition 2002.

Year	Subject Title	Sem	Sub Code
2018–19 Onwards	Allied:2 - Mathematics:2 -COMPUTER ORIENTED NUMERICAL & STATISTICAL METHODS	II	18BIT24A

Objective:
- To improve the mathematical skills among the students.

UNIT I: The solution of Numerical Algebraic & Transcendental equations – Iteration method Bisection method – Newton – Raphson method. The solution of Simultaneous Linear Algebraic Equations – Gauss Elimination method – Gauss –Siedal method. (Simple Problems)

UNIT II: Interpolation for Equal Intervals – Newton's Forward and Backward Interpolation formulae – Interpolation for Unequal Intervals – Lagrange's formula. Numerical Differentiation: Newton Forward Difference -Newton Backward Difference. Numerical Integration – Trapezoidal rule – Simpson's one - third and three-eighth rules. (Simple Problems).

UNIT III: Measures of Central Tendency – Mean, Median and Mode – Relationship between Mean, Median and Mode – Measures of Dispersion – Range, Mean Deviation and Standard Deviation – Co-efficient of Variation.

UNIT IV: Skewness – Karl Pearson's measures of Skewness – Correlation - Meaning – Types of Correlation – Scatter Diagram – Karl Pearson's Co-efficient of Correlation – Rank Correlation (Simple Problems).

UNIT V: Linear Regression –Regression Equations for two variables – Regression co-efficient – Properties. Curve fitting: Linear (Simple problems).

TEXT BOOKS
1. P.Kandasamy, K.Thilagavathi, K.Gunavathi, -" Numerical Methods", Sultan Chand & Sons Ltd.NewDelhi, Revised Edition 2005.
2. S.P.Gupta - Statistical Methods, Sultan Chand & Sons, New Delhi, 42nd revised Edition, 2012.

REFERENCE BOOK
1. V.Rajaraman - Computer Oriented Numerical Methods, PHI Publication

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Practical 2: C++ PROGRAMMING LAB**	**II**	**18BIT25P**

OBJECTS and CLASSES

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() to insert an element and a member function POP() to delete an element. Check for overflow and underflow conditions.

2. Create a class ARITH which consists of a FLOAT and an INTEGER variable. Write member functions ADD(), SUB(), MUL(), DIV(), MOD() to perform addition, subtraction, multiplication, division and modulus respectively. Write member functions to get and display values.

OPERATOR OVERLOADING

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 functions to initialize get and display strings. Overload the operator + to concatenate two strings, == to compare 2 strings and a member function to find the length of the string.

INHERITANCE

5. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic salary, and grade. Write member functions to get and 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 class separately and display the result.

7. Create two classes which consist of two private variables, one Integer and one Float variable in each class. Write member functions to get and display them. Write a FRIEND function common to both classes which takes the object of the above two classes as arguments and the Integer and Float values of both the objects separately and display the result.

CONSOLE I/O

8. Write a user-defined function USERFUN () which has the formatting commands like setw(), Show point, show pos, precision (). Write a program which prints an multiplication table and Uses USERFUN () for formatting.

FILES

9. Write a program to perform insertion, deletion and updating using files.

10. Write a program which takes a file as argument and copy contents into another file with line numbers using Command Line Arguments.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	VALUE EDUCATION – GANDHIAN THOUGHTS (For all UG courses)	II	18VAL2GE

UNIT I: Birth and Parentage - Childhood - At the High school - Stealing and Atonement - Glimpses of Religion - Gandhi's choice - Experiments in Dietetics - Acquaintance with Religions - The Great Exhibition.

UNIT II: The first case - Preparing for South Africa - same experiences - on the way to Pretoria - Coolie - Natal Indian Congress - Education of Children - Brahmacharya.

UNIT III: Simple life - The Boer war - Sanitary Reform and Famine Relief - Lord Curzon's Darbar - A month with Gokhale - Experiments in Earth and water treatment - Indian opinion - Coolie Locations or Ghettoes - The Black plague.

UNIT IV: The Magic spell of a Book - The Zulu Rebellion - The Birth of Satyagraha - More experiments in Dietetics - Kasturbai's Courage - Domestic Satyagraha- Fasting - Shanti Niketan - Woes of Third Class passengers.

UNIT V: Kumbha mela - Lakshman Jhula - Founding of the Ashram - Abolition of Indentured Emigration - The Kheda Satyagraha - The Rowlatt Bills - Navajivan and young India - Congress Initiation - The Birth of Khadi.

TEXT BOOKS
1. M.K.GANDHI , "The Story of My Experiments with Truth" - An Autobiography Apple publishing International(P) Ltd, Chennai.
2.

. மகாத்மா காந்தியின் சுயசரிதை - சத்தியசோதனை தமிழாக்கம் -
-ரா.வேங்கடராஜுலு, நவஜீவன் பரசுராலயம், அகமதாபாத

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Core: OPERATING SYSTEMS	III	18BIT31C

Objectives:
- To enable the student to learn the operating system and the functioning.
- To understand the services provided by and the design of an operating system.
- To gain knowledge insight into the Components and management aspects of real time systems.

UNIT I: INTRODUCTION AND PROCESS CONCEPTS: Definition of DOS – Early History – History of DOS and UNIX OS – Definition of process – process states – process state transition – interrupt processing – interrupt classes – context switching – semaphores – deadlock and indefinite postponement.

UNIT II: STORAGE MANAGEMENT REAL STORAGE: Real storage management strategies – contiguous Vs non-contiguous storage allocation – single user contiguous storage allocation – fixed partition multiprogramming – variable partition multiprogramming – multiprogramming with storages wrapping.

UNIT III: VIRTUAL STORAGE MANAGEMENT: Introduction - Virtual storage management strategies – page replacement strategies –working sets – demand paging – page size. PROCESSOR MANAGEMENT - JOB AND PROCESSOR SCHEDULING: Pre-emptive, non-pre-emptive scheduling – priorities – deadline scheduling – FIFO – RR –quantum size – SJF – SRT – HRN.

UNIT IV: DISTRIBUTED COMPUTING: Classification of sequential and parallel processing – array processors – dataflow computers – multiprocessing – fault tolerance. DISK PERFORMANCE OPTIMIZATION: Operation of moving head disk storage – need for disk scheduling – seek optimization – FCFS – SSTF – SCAN – RAM disks – optical disks.

UNIT V: FILE AND DATABASE SYSTEMS: File system – functions – organization – allocating and freeing space – file descriptor – access control matrix – backup and recovery – file servers – distributed file system.

TEXT BOOK
1. H.M Deitel., "Operating Systems", 2nd Edition, Pearson Education Publ., 2003.

REFERENCE BOOKS
1. Achyut S Godbole, "Operating Systems", TMH Publ., 2002.
2. Silberschatz, Galvin, Gagne, Operating Systems Concepts, Sixth Edition, John Wiley & Sons, 2004.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: DATA STRUCTURES**	**III**	**18BIT32C**

Objectives:
- This paper is prepared depending on real job interviews.
- To learn various sorting and searching algorithms
- To learn dynamic programming analysis

UNIT I: Introduction and overview: Preliminaries: Mathematical Notations and Functions- Algorithmic Notations- Complexity of Algorithms- Other Asymptotic Notations for complexity of algorithms. Arrays, Records and pointers: Introduction- Linear arrays- Arrays as ADT- representation of Linear arrays in memory- Traversing Linear arrays- Inserting and deleting- Multidimensional arrays- Representation of Polynomials using arrays- pointers- dynamic memory management- records- representation of records- matrices- sparse matrices.

UNIT II: Stacks, queues, Recursion: Introduction- stacks- array representation of stacks- linked representation of stacks- application of stacks- recursion- towers of Hanoi- queues- linked representation of queues- circular queues- deques - application of queues.

UNIT III: Searching and Sorting: Linear Search- Binary Search-Bubble sort-Insertion sort- Selection sort- merge sort- shell sort- radix sort- heap sort. Searching and data modification - hashing.

UNIT IV: Linked List: Representation of linked list in memory- traversing a linked list- searching a linked list- insertion into a linked list- deletion from a linked list- circular linked list- doubly linked list.

UNIT V: Trees: Introduction- binary trees- representing binary trees in memory- traversing a binary tree- binary search trees. Graphs: introduction- graph theory terminology- sequential representation of graphs, adjacency matrix, and path matrix. Linked representation of a graph - traversing a graph.

TEXT BOOK
1. "Data structures with C", Seymour Lipschutz – Schaum's outlines 2012.

REFERENCE BOOKS
1. Ellis Horowitz &SartajSahani "Fundamentals of data Structure", Galgotia Books source,1999.
2. Ashok N Kamthane, "Programming and Data Structures", Pearson Education, 2004.
3. Algorithms + Data Structures= Programs by Niklaus Wirth, Prentice Hall of India Pvt Ltd.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: JAVA PROGRAMMING**	**III**	**18BIT33C**

Objectives:

- To give students a good understanding of basic concepts of object oriented program design using Java.
- On successful completion of the course the students should have Acquired skill in advanced java programming.
- To enable students to develop object Oriented Java Programs Solutions to small application programs.

UNIT I: JAVA Evolution History – Features – How Java Differs from C and C++ – Java and Internet – Java and WWW – Web Browsers. Overview of Java Language Introduction –Simple Java Program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT II: Constants – variables – Data types – Operators and Expressions. Decision Making and Branching If, If...else, else...If Ladder, switch, ?operator. Decision making and looping while, do, for – jumps in loops – labeled loops. Classes, Objects and Methods

UNIT III: Arrays, Strings and Vectors – Interfaces Multiple Inheritance – Packages Putting classes together – Multi Threaded Programming.

UNIT IV: Managing Errors and Exceptions – Applet Programming – Graphics programming.

UNIT V: Files Introduction – Concepts of Streams – Stream classes – Using Streams – I/O classes – File class – I/O Exceptions – creation of files – Reading / Writing characters / Bytes –Handling primitive data types – Random access Files.

TEXT BOOKS
1. E. Balagurusamy "Programming with Java - A Primer", TMH Publ., 2nd Edition, 2000.

REFERENCE BOOKS
1. PatricNaughton*,* and Herbert Scheldt "The Complete Reference Java 2" Tata McGraw Hill Publishers, 2000.
2. C. Xavier "Programming with Java 2", SciTech Publ., 2000.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Allied 3: DIGITAL COMPUTER FUNDAMENTALS**	**III**	**18BIT34A**

Objectives:
- The student should get the knowledge about the digital circuits and number system.
- To learn the concept of multiplexing, flip flop and counters.
- To familiarize with basic building blocks of digital system.

UNIT I: Number Systems: Decimal, Binary, Octal, Hexadecimal – conversion from one to another – Binary Addition, Subtraction, Multiplication and Division – Codes – BCD – Weighted – Excess-3 – Gray – Error Detection Codes.

UNIT II: Basic Logic Gates – Boolean Laws And Theorems – Sum Of Products Method– Truth Table To Karnaugh Map – Pairs, Quads And Octets – Karnaugh Simplifications –Don't Care Conditions - Product Of Sums Method - Product Of Sum Simplification.

UNIT III: Data Processing Circuits: Multiplexers – Demultiplexers – 1-OF-16 Decoder – Encoders - Parity generators - checker - Arithmetic building blocks: Half Adder, Full Adder – Adder - Subtractor. TTL Circuits: Digital IC – Positive and negative logic – CMOS circuits: Enhancement Type MOSFETS – CMOS Characteristics.

UNIT IV: Flip Flops: RS Flip Flop, Clocked RS Flip Flop, DFlip Flop, - Edge triggered D Flip Flop, JK Flip Flop, JK Master/Slave Flip Flop- Shift Register: Serial In Serial Out - Counters – Asynchronous Counters – Synchronous Counters, MOD-3 Counter - MOD-5 Counter, Shift Counters.

UNITV: D/A and A/D Conversion: Variable – Resistor Network - Binary Ladder – D/A Converter – A/D Converter: Simultaneous Conversion - Counter Method – A/D Techniques.

TEXT BOOK
1. "Digital Principles and Applications" – Albert Paul Malvino, Donald, P. Leach, McGraw Hill,2002.

REFERENCE BOOKS
1. Digital Computer Fundamentals – Bartee, Tata McGraw Hill, 1996.
2. Digital Logic & Computer Design, Morris Mano, PHI, 2001.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Practical 3: JAVA PROGRAMMING LAB	III	18BIT35P

1. Write a Java program to define a class, describe its constructors and instantiate its object.

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

3. Write a Java program to implement array of objects.

4. Write a Java program to use string class and its methods.

5. Write a Java program to implement Inheritance and demonstrate method overriding.

6. Write a Java program to demonstrate use of implementing interfaces.

7. Write a Java program to demonstrate use of extending interfaces.

8. Write a Java program to implement the concept of importing classes from user defined package and creating packages.

9. Write a Java program to implement the concept of multithreading by extending thread class.

10. Write a Java program to implement the concept of Exception Handling by creating user defined exceptions.

11. Write a Java program to display a message in an Applet.

12. Write a Java program to display basic shapes and fill them.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Skill Based Subject-I: WEB TECHNOLOGY**	**III**	**18BIT36S**

Objectives:
- To Develop a Web Page
- To Study the design concepts
- To Study the various Scripting Concepts

UNIT I: HTML- Outline of an HTML document- Head Section- Body Section- Headers- Paragraphs- Text formatting- Linking-Internal linking- Embedding images- Lists- Tables- Frames- Other Special tags and characters- HTML Forms.

UNIT II: Cascading Style Sheet- Coding CSS- Properties of tags- properties of values- other style properties- In-line style sheet- embedded style sheets- External Style sheets- Grouping- positioning- background- element dimensions.

UNIT III: XML- Introduction- HTML Vs XML- Syntax- XML attributes- XML validation- XML DTD- Building blocks of XML- DTD element- DTD Attributes- DTD entities- DTD Validation.

UNIT IV: Java Script- Introduction- Language elements- identifiers- expressions- keywords- operators- statements- Functions- Object of Java script- Window object- Document object- forms object- Text boxes, Text areas- Buttons, Radio buttons and Checkboxes- Select Object-Date Object- Math Object- String Object- Arrays.

UNIT V: VB Script- Introduction- Embedding VB Script code in an HTML document- Comments- Variables- Operators- Procedures- Conditional Statements- Looping Constructs.

TEXT BOOK:
1. N.P. Gopalan, J.Akilandeswari, "Web Technology, A developers Perspective"- Prentice Hall of India PVT Limited, New Delhi.

REFERENCE BOOKS
1. Tomas A.Powell, "The complete Reference Web design", Tata McGraw Hill Pub.
2. C.Xavieer, "World Wide Web Design with HTML", TML Publications, 2001.
3. Joel Sklar, "Principles of Web Design", Vikas Pub, 2001.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: SOFTWARE ENGINEERING**	IV	18BIT41 C

Objectives:
- Every industry, company or organization today depends on software systems, which makes the software engineering profession in demand everywhere.
- Software based companies, which has the most influence on the world, tend to follow software engineering principles especially since current software systems have become much more complex.
- In Software development work environment, software engineers could work on different fields including requirements analysis, design, quality assurance, and programming. Software engineers are familiar with most aspects related to the software development lifecycle.

UNIT I: Introduction to Software Engineering: Some Definitions – Some Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project: Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT II: Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT III: Software Requirements Definitions: The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT IV: Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines.

UNIT V: Verification and Validation Techniques: Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification.
Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source-Code Metrics – Other Maintenance Tools and Techniques.

TEXT BOOK
1. "Software Engineering Concepts" – Richard Fairley – Tata McGraw - Hill Publishing Company Limited, NewDelhi 1997.

REFERENCE BOOKS
1. Software Engineering – K. L. James, Prentice Hall of India Pvt.Ltd, New Delhi – 2009
2. Fundamentals of Software Engineering – Rajib Mall, Prentice Hall of India Pvt.Ltd., New Delhi – 2003.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: COMPUTER NETWORKS**	IV	18BIT42C

Objectives:
- To educate concepts and techniques currently used in the area of computer networks.
- To study protocols, network standards, the OSI model, IP addressing, cabling and networking components.
- To learn existing state-of-the-art in network protocols, architectures, and applications.
- To be familiar with contemporary issues in networking technologies.

UNIT I: Introduction- The Uses of Computer Networks – Networks hardware – Network software – Reference models.

UNIT II: The Physical Layer - Transmission Media – Communication satellites – Wireless transmission –The public switched telephone system

UNIT III: The Data Link layer - Data link layer Design Issues – Error Detection and Correction- Elementary Data link protocols. Medium Access Sub Layers The channel allocation problem – Multiple access protocols Carrier sense multiple access protocols, collision –free protocols, Limited contention protocols.

UNIT IV: The Network Layer – Network Layer Design Issues – Routing Algorithms The optimality principle, shortest path routing, flooding, and distance vector routing, routing for mobile hosts.

UNIT V: The Transport Layer – The Transport service – Services provided to the upper layers, transport service primitives – Elements of Transport protocols. Application Layer – DNS – The Domain Name System – Electronic mail – Architecture and services, the user agent.

TEXT BOOKS
1. Andrew S. Tanenbaum, "Computer Networks", 4th Edition, Pearson Education Publ. 2014.

REFERENCE BOOKS
1. Miller, "Data and Network Communications", Vikas Publ., 2001.
2. William A Shay, "Understanding data communications and Networks", 2nd Edition, Vikas Publ., 2001.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: VISUAL BASIC PROGRAMMING**	**IV**	**18BIT43C**

Objectives:
- To understand the concept of VB Fundamentals.
- To understand the concept of Branching and Looping.
- To understand the concept of Database programming with VB.

UNIT I: Introduction - VB Environment – VB Fundamental: Constants, Variables, Data Types, and Data Declaration – Operators – Expressions – Library Functions.

UNIT II: Branching and Looping: If...Then, If-Then-Else, Else If, Nested If, Selected-Case, For-Next, Do-Loop, While-Wend, Nested Loops, Stop Statement. VB Controls: Textbox – Checkbox – List Box – Combo Box –Label – Command Button – Directory List –Box –Drive List Box. Assigning Values to Forms and Controls – Naming Controls and Forms – Executing Commands – Displaying O/P Data – Assigning Properties Collectively Using With Block

UNIT III: Timer Control, Scroll Bar, Message Box (), Input Box (), Functions, MDI Forms, Menus and Dialog Boxes: Building Drop – Down Menus, Sub Menus - Pop - Up Menus –Dialog Boxes – Debugging and Executing A Projects –Error Handling –Convert –VB Project To Exe File – Procedures –Scope-Optional Arguments.

UNIT IV: Arrays –Parsing Arrays to Procedures- Dynamic Arrays –Array Function –Control Arrays – Data Files –Processing A Data Files –Sequential File –Random Access File.

UNIT V: Database Programming With VB: Understanding Database Management Systems – Understanding Relation Concepts – Using Visual Data Manager- Validating Data – Enter Data – Accessing Fields in Record Sets –SQL – Advanced Data –Bound Controls –Managing Databases. Active Data Objects: Crating Data Project –Designing with The Data Environment Active X Designer –ADO Data Control.

TEXT BOOKS
1. Byron S. Gottfried, Ph.D, "Visual Basic", Schaum's Outlines.
2. Gary Cornell, "Visual Basic 6 from the GROUND UP", Tata Mcgraw- Hill Edition.

REFERENCE BOOKS
1. David Jung, Pierre Boutquin, John D.ConleyIII, Loren Eidahl, Lowell Mauer, JackPurdum,
 "Visual Basic 6 , Super Bible" , Techmedia.
2. Peter Wrights,"Beginning Visual Basic 6 ", SPD.
3. Steven Holzner, "Visual Basic 6 Black Book ", DreamTech Press, 2000.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Allied – 4: COMPUTER SYSTEM ARCHITECTURE	IV	18BIT44A

Objectives:

- To conceptualize the basics of architectural issues of a digital computer.
- To analyze performance issues in processor and memory design of a digital computer. 3. To understand various data transfer techniques in digital computer.
- To understand the concept of cache mapping techniques.

UNIT I: Data Representation: Fixed point representation – Floating point representation – Alphanumeric code - Register Transfer and Micro operation: Register Transfer Language – Register Transfer – Arithmetic Micro operation – Logic Micro operation – Shift Micro operation – Arithmetic Logic Shift Unit.

UNIT II: Basic Computer Organization and Design: Instruction Codes – Timing and Control – Computer Register – Instruction Cycle – Input-Output and Interrupt - Micro-Programmed Control: Control Memory – Address Sequencing – Design of Control Unit.

UNIT III: Central Processing Unit: General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Programmed Control – Reduced Instruction Set Computer – CISC.

UNIT IV: Computer Arithmetic: Addition and Subtraction – Multiplication Algorithm – Division Algorithm - Input Output Organization: Peripheral Devices – Input Output Interface – Asynchronous Data Transfer – Modes of Transfer – Direct Memory Access – Input Output Processor (IOP).

UNIT V: Memory Organization: Memory Hierarchy – Main memory – Auxiliary memory – Associative memory – Cache memory – Virtual memory.

TEXT BOOKS
1. M. Morris Mano, "Computer System Architecture", Third Edition, PHI, 2001.

REFERENCE BOOKS
1. Hayes. J. P, "Computer Architecture and Organization", McGraw Hill, 1998.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Practical 4: VISUAL BASIC PROGRAMMING LAB	IV	18BIT45P

1. Write a simple VB program to accept a number as input and convert them into

a. Binary b. Octal c. Hexa-decimal

2. Write a simple VB program to add the items to list box with user input and move the selected Item to combo box one by one.

3. Write a simple VB program to develop a calculator with basic operation.

4. Design a form using common dialog control to display the font, save and open dialog box without using the action control property.

5. Write a simple program to prepare a Questionnaire.

6. Write a VB program to enter a list of n numbers and calculate their average and then calculate the deviation of each number about the average.

7. Write a VB program to calculate series approximation for sin(x) using functions.

8. Write a VB Program to develop a menu driven program

a. Add a MDI window in the form and arrange them in the cascading/horizontal

b. style using menus (Create a menu to add form, arrange) (Menu Item 1).

c. Also change the form color using the menu in another menu item (Menu Item 2).

9. Write a VB application for Student Mark List Processing System.

10. Write a VB application for exercising (B.Sc., Information Technology) UG Admission in Government Arts College, Coimbatore.

11. Write VB coding for Font application.

12. Write a VB program for exercising Notepad application.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	SkillBased Subject – II: MICRO PROCESSOR & ASSEMBLY LANGUAGE PROGRAMMING	IV	18BIT46S

Objectives:
- To understand basic architecture of 16 bit and 32 bit microprocessors.
- To understand interfacing of 16 bit microprocessor with memory and peripheral chips Involving system design.
- To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.

UNIT I: Introduction to Microprocessors – Evolution of Microprocessors- Buses -Microprocessor Architecture: Intel 8085 – ALU - Timing and control unit – Registers - Pin configuration - Instruction cycle: Fetch and Execute operation - Machine cycle and state.

UNIT II: Instruction set of INTEL 8085: Introduction – Instruction and Data formats - Addressing Modes - Status Flags - Intel 8085 Instructions: Data transfer group – Arithmetic group- Logical group - Branch group - Stack, I/O machine control group - Assembly language: stacks – subroutines – MACRO.

UNIT III: Assembly language programming - Addition of two 8-bit numbers - 8-bit subtraction - Decimal addition of two 8-bit numbers - Addition of two 16-bit numbers - 8-bit decimal subtraction - finding square from look-up table - Finding largest number in a data array - Arrange a data array in ascending and descending order - Sum of series of 8-bit numbers - 8-bit multiplication - 8-bit division.

UNIT IV: Peripheral devices and their interfacing: Address space partitioning - Memory and I/O interfacing -Data Transfer schemes- Interrupts of Intel 8085.

UNIT V: I/O ports- Programmable Peripheral interface - Architecture of Intel 8255-Programmable DMA controller - Programmable interrupt controller 8259 - Programmable communication interface 8251.

TEXT BOOK
1. B.RAM, "Fundamentals of Microprocessors and Microcontrollers," DhanpatRai Publications, 7th Edition, 2010.

REFERENCE BOOKS
1. Ramesh Gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085", Penram International publishing (India) PVT. LTD., 6th Edition, 2013.
2. Aditya P Mathur,"Introduction to Microprocessors", McGraw Hill Education (India) Private Limited,3rd Edition, 2001.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Core: CLIENT SERVER COMPUTING	V	18BIT51C

Objectives:
- To understand the concepts of Client/Server Computing, Client/Server Database models, Transaction processing monitor model of Client/Server.
- To understand the Groupware model of Client/Server and the Distributed object model of Client/Server.
- To understand the Internet concepts from the Client/Server prospective and to able to know about to design, build and deploy three tier Client/Server Applications.

UNIT I: Client/Server computing–What is Client/Server–File servers, Database servers, Transaction servers, Groupware servers, Object application servers, Web application servers– FAT Servers or FAT Clients – 2-Tier versus 3-Tier - Client/Server–Client/Server building blocks.

UNIT II: Client, Servers and Operating Systems–The Anatomy of a server program–NeedsofClient/ServerfromanOS–Serverscapability–Clientanatomy–Client and server Trends – Client OS and Server OS.

UNIT III: Remote Procedure Calls, Messaging and Peer-to-Peer – SQL Database Servers: What does SQL do–The ISO standards– What does a database server do –Stored procedures, Triggers and Rules.

UNIT IV: Data warehouses – OLTP – Decision Support Systems–Executive Information system–comparing Decision Support and OLTP systems–Production vs. Information Databases. The Data Warehouse-Client/Server Transaction Processing – The ACID properties – Transaction Models.

UNIT V: Web Client/Server–What is URL–Shortest HTML tutorial–HTTP–3-Tier Client/Server, Web-style–HTM web – based forms–CGI: The server slide of the web.

TEXT BOOK
1. Robert Orfali, Dan Harkey& Jeri Edwards, "Client/Server Survival Guide", Wiley INDIA
Edition, 3rd Edition, 2011.

REFERENCES
1. Patrick Smith &SteveGuengerich, "Client/Server Computing" , PHI., 2011.
2. Eric Johnson, Susan McDermott, "The Complete Guide to Client Server Computing", PHI, 2001.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: RELATIONAL DATABASE MANAGEMENT SYSTEM**	**V**	**18BIT52C**

Objectives:
- To provide a strong Formal Foundation in Database concepts.
- To get familiarize with SQL & PL/SQL concepts.
- To give a good formal foundation on the relational model of date.

UNIT I: 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-Renormalizations – Another Example of Normalization.

UNIT II: Oracle9i: Overview: Personal Databases–Client/ServerDatabases–Oracle9i an introduction–SQL*Plus Environment–SQL–Logging into SQL*Plus–SQL*Plus Commands–Errors &Help–Alternate Text Editors-SQL*PlusWorksheet – iSQL*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: Working with Tables: Data Management and Retrieval: DML – Adding a new Row/Record – Customized Prompts – Updating and Deleting Existing Rows/Records–Retrieving Data from A 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 Operators.

UNIT IV: PL/SQL: A Programming Language: History–Fundamentals–Block Structure–Comments – Data Types–Other Data Types–Variable Declaration–Anchored Declaration-Assignment operation – Bind Variables–Substitution Variables–Printing–Arithmetic Operators. Control Structures and Embedded SQL: Control Structures–Nested Blocks–SQL 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: PL/SQL:PL/SQL Composite Data Types: Records–Tables– arrays. Named Blocks: Procedures–Functions–Packages–Triggers – Data Dictionary Views.

TEXTBOOKS
1. "Database Systems Using Oracle"–NileshShah,2nd edition, PHI.

REFERENCEBOOKS
1."Database Management Systems", ArunMajumdar&PritimoyBhattacharya,2007,TMH.
2."Database Management Systems",GeraldV.Post,3rdedition,TMH.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: COMPUTER GRAPHICS**	**V**	**18BIT53C**

Objectives
- Identify and explain the core concepts of computer graphics.
- Apply graphics programming techniques to design and create computer graphics scenes.
- Demonstrate their ability to use modern 3D computer graphics techniques, models, and algorithms to solve graphics problems.

UNIT I: Overview of Graphics System – Display Devices – CRT – Random Scan and Raster Scan Monitors – Techniques for Producing Colour Display – Beam – Penetration and Shadow – Mask Methods – DVST – Plasma – Panel Displays – Hardcopy Devices – Printers and Plotters – Display Processors – Output Primitives – DDA and Bresenham's line drawing algorithms – Antialiasing lines – Bresenham's Circle Algorithm – Character Generation.

UNIT II: Two-dimensional Transformations – Scaling, Translation and Rotation – Matrix Representations – Composite Transformations – Reflection – Shearing – Other Transformations. Windowing and Clipping – Concepts – Cohen and Sutherland Line Clipping Algorithm – Midpoint Subdivision.

UNIT III: Three dimensional Concept- Three-Dimensional object representations – polygon surfaces – polygon tables- plane equations - Three-Dimensional geometric transformations – translation – rotation – scaling – other transformations.

UNIT IV: Three-Dimensional viewing – viewing pipeline - Display Techniques – Parallel Projection – Perspective Projection – Hidden-Surface and Hidden-Line removal – Back face removal – Depth Buffer Method – Scan Line Method – BSP Tree Methods – Depth-Sorting Method – Area-subdivision Method – Octree Methods – Comparison of Hidden-Surface Methods.

UNIT V: Colour models and colour applications – properties of light – standard primaries and the chromaticity diagram – xyz colour model – CIE chromaticity diagram – RGB colour model – YIQ, CMY, HSV colour models, conversion between HSV and RGB models, HLS colour model, colour selection and applications.

TEXT BOOK
1. Donald Hearn and Pauline Baker, "Computer Graphics", Prentice Hall of India, 2001.

REFERENCE BOOKS
1. "Computer Graphics" – Schaums outline series.
2. "**Fundamentals of Computer Graphics**", Peter Shirley, MicheelAshikhmin, Steve Marschner.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Practical5 :Relational Database System Management Lab	V	18BIT54P

1. Create the following table *(PK - Primary Key, FK – Foreign Key)* cat_head, route_head, place_head, route_detail, ticket_detail, ticket_headwith the mapping given below:

   cat_headroute_head
   (cat_code PK) (cat_code FK)
   route_headroute_detail
   (route_id PK) (route_id FK)
   ticket_headticket_detail
   (tick_no PK) (tick_no FK)
   place_headroute_detail
   (place_id PK) (place_id FK)

   Alter the table ticket_header to add a check constraint on ticket_no to accept values between 1 and 500
   (ii) Alter table route_header to add a column with data type as long.

2. (a) Insert values to above tables
   (b) Display only those routes that originate in madras and terminate at cochin
   (c) Display only distinct category code from the table route_header in descending manner.
   Update the table route_header to set the distance between madras and coimbatore as 500

3. (a) Select rows from ticket_details such that ticket number greater than any ticket_numberinTicket_header.
   (b) Select rows from route_header such that the route_idare greater than all route_id in route_detailWhere place id is "100".
   (c) Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id

4. Write a PL/SQL program to create and manipulate Student database for Student Mark Processing system.

5. Create tables as given below :
   Student (SID INTEGER PRIMARY KEY, name CHAR(30), age INTEGER, GPA FLOAT)
   Take (SID INTEGER,CID CHAR(10),PRIMARY KEY(SID, CID))
   Course (CID CHAR(10) PRIMARY KEY,title VARCHAR(100) UNIQUE)

6. Insert 6 records for each table and print the following :
   Details of all students: Name, course title and GPA of all students.

7. Create Employee table with the following fields:
   EmployeeID, LastName, FirstName, HireDate, City
   Insert required records into the table and write select statements for the following queries
   Select employees where City <> 'London'
   Select employees where HireDate>= '1-july-2012'
   Select employees where HireDate lies between '1-june-1992' and '15-december-1993')
   Select employees where City IN ('Seattle', 'Tacoma', 'Redmond')

Select employees ORDER BY Country ASC, City DESC
   Create tables as given below :
        Personal-data (emp-id, emp-name, dob, qualification, specialization)
        Budjet-actuals (emp-id, dept-id, proj-id, acc-code)
        Create another table new-employee by selecting records from personal-data where personal-data.emp-id = budjet-actuals.emp-id and acc-code = 3, order by emp-id.

8.   Write a cursor to select the five highest paid employees from the emp table
     (ename, empno, sal)ORDER BY sal DESC;

9.   Write a PL/SQL block to help user to insert salary of an employee.
       a) Create a Employee table (empn, empname, designation, category, Basic salary, joined date.
      b) Display the name of the employee (from the emp table) to know that,the entered salary is present in the table 'emp'.
      c) Display the appropriate message by using exceptions such as 'no_data_found'.

10. Generate a report from the table ticket_detail for the particular ticket_no

11. Write a PL/SQL code to find
a)Create Table corder (Invoice Number,Invoicedate,Customercode,Product code, Quantity sold) and create table totalpurchase(Customer code,Total purchase)and create table total sale(Product code,total sale number)
      b) The total purchase in Rupee of each customer.
      c) Total sale of each product.
 There are ten customers with codes 0 to 9 and five products with codes 0 to 4.The rates of products areRs.15,35,42,51 and 60 respectively .Write a program to find the total purchase in RS. Of each customer and total sale of each product using this table and insert these values in other two table.

12. Create employee table. Display eno, ename, dept no, current monthly salary and the adjusted monthly salary to satisfy the following pay increase scenario. All employees with deptno 10 will receive a 5% increase, deptno 20 a 7% increase and all other departments will maintain their current salary.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Skill Based Subject – III: DATA MINING AND WAREHOUSING**	V	**18BIT55S**

Objectives:
- On successful completion of this course the students should have learnt the concept of Data Mining Techniques, Web Mining.
- Also should learn the concept of Data Warehousing.
- To know the concept of cluster analysis methods.

UNIT I: Introduction: Data Mining Applications – Data Mining Techniques – The Future of Data Mining – Data Mining Software. Association Rule Mining: Introduction – Basics – The Task and a Naïve Algorithm – The Apriori Algorithm – Improving the Efficiency of the Apriori Algorithm – Mining Frequent patterns without Candidate Generation (FP-Growth) – Performance Evaluation of Algorithms.

UNIT II: Classification: Introduction – Decision Tree – Over fitting and Pruning – Decision Tree Rules – Naïve Bayes Method – Estimating Predictive Accuracy of Classification Methods – Improving Accuracy of Classification Methods – Other Evaluation Criteria for Classification Methods – Classification Software.

UNIT III: Cluster Analysis: Introduction – features – Types of Data – Computing Distance - Types of cluster Analysis Methods – Partitioned Methods – Hierarchical Methods – Density Based Methods – Quality and validity of Cluster Analysis Methods – Cluster Analysis Software.

UNIT IV: Web Data Mining: Introduction – Web Terminology and Characteristics – Locality and Hierarchy in the Web – Web Content Mining – Web Usage Mining – Web Structure Mining – Web Mining Software. Search Engines: Search Engine Functionality - Search Engine Architecture – Ranking of Web Pages.

UNIT V: Data Warehousing: Introduction – Operational Data Stores – Data Warehouses – Data warehouse Design – Guidelines for Data Warehouse Implementation – Data Warehouse Metadata. Online Analytical Processing (OLAP): Introduction – OLAP – Characteristics of OLAP Systems – Multidimensional View and Data Cube – Data Cube Implementation – Data Cube Operations.

TEXT BOOK
1. G.K Gupta, "Introduction to Data Mining with Case Studies", Prentice Hall of India(Pvt) Ltd, India, 2008.

REFERENCE BOOKS
1. Jinweihan, MichelineKambler, "Data Mining: Concepts and Techniques", Morgan Kaufman Publishers, New Delhi.
2. Paul C Zikopoulos, Dirk deRoos, Krishnan Parasuraman, Thomas Deutsch, David Corrigan, James Giles, "Harness the Power of Big Data", The McGraw-Hill Publications,2013,1st Edition.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Non-Major Elective Paper – I: INFORMATION TECHNOLOGY – I (Fundamentals of Computers)**	**V**	**18BIT5EL**

Objectives:

On successful completion of the course the students should have:

- Understood the concepts of data and information.
- Understood the concepts of data storage, Software, Hardware and Internet.

UNITI: Introduction and Data Representation in Digital Computers: Historical Background of computing-Merits and limitations of computers-First to Fifth Generation of Computers-Characteristics of Computers-Classification of Computers.

UNITII: Representation of Characters, Integers and Fractions: Octal and Hexadecimal number systems-Signed-Fixed and floating point number representations-BCD Code-Gray Code-ASCII Code.

UNITIII: Building blocks of Computer: Anatomy of Digital Computer: Functions of CPU, ALU and Control Units. Data Storage: Introduction – Memory Units: RAM ROM, EPROM, and EEPROM.

UNITIV: Input Devices: Keyboard, Mouse, joystick, MICR, OCR, Bar-coding, and Speech.
Output Devices: Printers, Plotter, VDU, Graphic Display Devices.

UNITV: Auxiliary Storage Devices: Magnetic Tapes, Magnetic Disks, Floppy Disks, Hard Disks and Drives. CD-ROM, other Optical Devices: WORM, Erasable optical disks, touch Screen optical device**.**

REFERENCE BOOK
1. R.Rajaram, "Basic Computer Science and Communication Engineering", SciTechPublications,1998.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: PROGRAMMING IN PHP**	VI	18BIT61C

Objectives:
- To enable the students to understand concepts, strategies, and methodologies of PHP and learn PHP & MySQL connectivity.
- To understand the concept of creating classes.

UNIT I: PHP Introduction: History-unique features-basic development concepts. Using variables & operators: storing data in variables-understanding PHP'S data types-using constants. Controlling program flow: if, if-else, if-else if-else, switch case, while, do while, for loop.

UNIT II: Working with string & numeric functions: using string functions, using numeric functions. Working with arrays: creating an array – Modifying array element – using arrays with forms-working with array functions-working with date and time-creating user defined functions. Working with forms: creating a simple Input form –Accessing from - combining HTML and PHP code on single page –using hidden fields to save state –redirecting the user –working with file uploads.

UNIT III: Creating Classes: Introducing classes and objects-defining and using classes-using advanced OOPs concepts-using constructors and destructors-extending classes-adjusting visibility settings-working with files and directories: reading local file-remote file-specific segments of a file-writing files-processing directories-performing other file and directory operations.

UNIT IV: Reading & Writing Files – Testing File Attributes – Managing Sessions And Using Session Variables – Destroying A Session. Storing Data in Cookies – Selecting Cookies – Removing Cookies Data – Deleting Cookies – Dealing With Date & Time.

UNIT V: Database & MySQL – Installing MySQL – Integrating PHP & MySQL – Connecting to MySQL – MySQL Queries – Dataset – Multiple Connection – Error Checking – Creating MySQL Database with PHP – MySQL Data types – MySQL Functions.

TEXT BOOKS
1. Vikram Vaswani, ”PHP: A beginners guide“, TMH Hill, 1ˢᵗedition, 2010 (Unit-I to IV).
2. Steve Suehring, Tim Converse, Joyce Park , “PHP 6 and MySQL 6 Bible”, Wiley India pvt. Ltd., Edition, 2009 (Unit – V).

REFERENCE BOOKS
1. Matt Doyle, “ Beginning PHP 5.3”, Wiley India pvt. Ltd, First edition, 2010.
2. Luke welling and Laura Thomson, “PHP and MySQL Web Development”, 5th Edition, 2016.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Core: MOBILE COMPUTING**	**VI**	**18BIT62C**

Objectives:
- To make the students understand different technologies in mobile computing.
- To enable students to adapt to the requirements of next generation mobile networks and mobile applications.
- To help students to design and develop their own mobile applications.

UNIT I: 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.

UNIT II: 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 III: Mobile Computing Through Telephony: Evaluation of telephony – Multiple access procedures –Satellite Communication Systems-Mobile computing through telephone – Developing an IVR Application – Voice XML – Telephony application Programming Interface. Emerging Technologies: Introduction- Bluetooth – Radio Frequency Identification– Wireless Broadband– Mobile IP – Internet Protocol Version6 – Java Card.

UNIT IV: GSM: Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – Mobility Management-GSM Frequency allocations – Authentications and Security.

UNIT V: GPRS – GPRS and packet data network – GPRS network architecture – GPRS network operations– Data services in GPRS – Application for GPRS.SMS: Mobile Computing Over SMS-Short Message Service-Value Added Services through SMS.

TEXT BOOK
1."Mobile Computing", Asoke K Talukder ,Roopa R Yavagal, TMH, 2005.

REFERENCE BOOKS
1. Raj Kamal, "Mobile Computing", Second Edition, Pearson Education, New Delhi, 2007.
2. Ikvinderpalsingh, "Mobile Computing", First Edition, Khanna book publications,2017.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	**Practical: PHP PROGRAMMING LAB**	VI	**18BIT63P**

1. Write a PHP program to validate the Textbox.

2. Write a PHP program to draw different shapes.

3. Write a PHP program to perform the string manipulation.

4. Write a PHP program to perform uploading.

5. Write a PHP program to perform user registration form using HTML tags.

6. Write a PHP program to display date and time.

7. Write a PHP program to check user login.

8. Write a PHP program to create a college website.

9. Write a PHP program for cookies and session scripts.

10. Write a PHP program to perform file read, write, open and append operation.

11. Write a PHP program using class and object.

12. Write a PHP program using MySQL table.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Skill Based Subject – IV: SOFTWARE PROJECT MANAGEMENT	VI	18BIT65S

Objectives:
- To distinguish between software and other types of development project.
- To understand some problems & concerns of software project managers.
- To understand the need for careful planning, moving & control.

UNIT I: Initiating the Project: Defining the project Management lifecycle – Gathering Project Information – Identifying the project needs. Planning the Project: How to plan – Establishing project priority – creating an Approach. Working with Management: Presenting the Project to Management – Defining Management's Role.

UNIT II: Defining the Work Breakdown Structure: Defining a WBS Approach-The Mechanism of Creating a WBS – why you need a WBS – Creating a WBS dictionary. Creating the Budget: Budget Basics – Implementing Bottom–up cost Estimates-Budget at Completion –Zero –Based Budgeting– Determining Project Expenses.

UNIT III: Building the project Plan: Project Plan Documents-Creating the Project Scope Management Plan – Defining the Project Schedule Management Plan-Creating the Project Cost Management Plan – Planning for Project Quality-Preparing for Managing a Project Team. Organizing a Project Team: Assessing Internal skills–Creating a Team –Interviewing Potential Team Members–Managing Team Issues–Using External Resources.

UNIT IV: Managing Teams: Leading the team –Establishing the Project Authority–Mechanic soft Leading a Team –Team Meetings–Maintaining Team Leadership –Working to ward the Finish – Motivating The Team. Implementing the Project Plan: Reviewing Assignments with the project Team – Focus on the work – Hosting a project Team Meeting–Tracking Process–Tracking Financial Obligations.

UNIT V: Enforcing Quality: Defining Quality–Quality of the deliverables–Quality of the process– Quality Management as a Process Completing the Project: Completing the Final Tasks–The Project Postmortem –Obtaining Final Sign-Off –Post-Project Audit–Creating the Final Report.

TEXTBOOK
1.JosephPhilips,"ITProjectManagement", Thirdedition,TMH,NewDelhi,2012.

REFERENCE BOOKS
1.MikeCottrellandBobHughes,RajibMall,"SoftwareProjectManagement–Inclination", Fifth Edition, TMH, 2011.
2. Walker Royce, "Software Project Management", Pearson education, 2000.

Year	Subject Title	Sem	Sub Code
2018 -19 Onwards	Non-Major Elective Paper – II: INFORMATION TECHNOLOGY- II (OFFICE AUTOMATION)	VI	18BIT6EL

UNIT I: Problem Solving: Problem Definition and Analysis – Algorithms – Flow Charts- Assembly Language-High Level Language-Compilation. Problem testing Documentation Data Processing: Files and records.

UNIT II: Windows Basics: Starting Windows – Moving and Resizing the Windows – Using menus in Windows– Opening multiple Windows – Windows Accessories: Formatting paragraphs and text – Finding and Replacing Text, Using Tabs – Using Notepad.

UNIT III: Microsoft Word: Word Processing Overview – Creating and Editing Documents – Formatting Documents – Creating Tables – Mail Merging.

UNIT IV: Microsoft Excel: Introduction – Creating a Worksheet – Formatting and Printing a Worksheet – Creating Charts.

UNIT V: Some Internet Application: E-mail-WWW-Information Browsing Services. Business Information System: Types of information needed by organization Computer and Business-System life cycle.

TEXT BOOKS
1. "PC Software for Windows Made Simple" – R.K. Taxali.
2. "Basic Computer Science and Communication Engineering", R.Rajaram, SciTech Publications,1998.