Modules	Sr. No.	Topic and Details	No of Lectures Assigned	Marks Weight age %
UNIT-I	1	**Digital Logic Circuits:** Introduction to digital signals, Logic Gates Universal gates, Implementation of Universal gates using basic gates, Conversion of Universal gates into Basic Gates, Exclusive gates Truth Table, De-Morgan's Theorm : Statement and Proof.	8	16
UNIT-II	2	**Boolean Algebra:** Boolean Laws, Simplification of Boolean expression using Laws, Min terms (SOP) Max terms (POS), Standard/Canonical SOP and POS forms, K-map(2,3 and 4 variables) Don't care conditions.	8	12
	3	**Truth tables:** Simplification of Boolean expression using Truth Tables	4	8
UNIT-III	4	**Combinational Circuits:** What is a combinational circuit - Half Adder, Full Adder, Half Subtracter, Full Subtractor, Multiplexers (MUX) (using Basic gates) (2:1 , 4:1, 8:1) - Designing of Higher Mux using Lower Mux a. 4:1 using 2:1 b. 8:1 using 4:1 c. 16:1 using 8:1 d. 16:1 using 4:1 only Implementation of Mux in Boolean Algebra De-Multiplexer (De-MUX) (using Nand gates) a. 1:2 b. 1:4 c. 1:8 Designing of Higher demux using lower demux a. 1:4 using 1:2 b. 1:8 using 1:4 c. 1:16 using 1:8 d. 1:16 using 1:4 only	14	28
UNIT-IV	5	**Flip flops, Counters and Registers:** **Flip flops,**What is Sequential circuits, S R flip flop (NAND and NOR),Clocked SR flip flop D flip flop, J K flip flop, T flip flop **Counters,** Types of Counters, Design of 4 bit Asynchronous counter, Design of 4 bit synchronous counter, Design of Modulus counters	12	24
	6	**Computer Arithmetic:** Number systems and character codes, Integer representation, Integer arithmetic, Floating point representation, Floating point arithmetic.	4	8
Total			50	100

Text & Reference Books:

1. R P Jain,"Modern Digital Electronics" , Tata McGraw-Hill Education, 2003
2. N.G. Palan,"Logic Circuit" Technova Publication,1998

Branch: BCA	Semester-II
Subject Code: 2102	Lecture: 04 Credit: 04
Subject Title	DISCRETE STRUCTURES AND GRAPH THEORY

Modules	Sr. No.	Topic and Details	No of Lectures Assigned	Marks Weight age
UNIT-I	1	**Set Theory:** Definitions: Sets, Subsets, Types of sets, Power set, Complement of a set, Operations on sets, set builder form , listing form ,set cardinality and examples, Venn Diagram & examples, Fundamental laws of sets and examples .	8	16
UNIT-II	2	**Relations:** Definitions, i. Relation, ii. Reflexive Relation, iii. Symmetric Relation, iv. Transitive Relation, v. Antisymmetric Relation, vi. Equivalance Relation, vii. Equivalance classes. Theorems and problems Recurrence relation: Definitions and problems	8	16
	3	**Functions:** Define i. Function ii. Injective functions iii. Surjective functions iv. Bijective functions v. Composite function vi. Inverse of a function. vii. Domain viii. Range Theorems	8	16
UNIT-III	4	**Permutations and Combinations :** Definitions: Permutation, Combination and problems	6	12
UNIT-IV	5	**Binomial theorem and Mathematics Induction:** Binomial Theorem : Statement and problems Mathematical Induction: 1st and 2nd principles and problems	4	8
	6	**Properties of integers:** Definition of gcd, lcm, Theorems Euclidean algorithm and problems	4	8
	7	**Graph theory:** Graphs, types of graphs, Handshaking Lemma, Isomorphism of graphs, Subgraphs, Complement of graph.	12	24
Total			50	100

Text & Reference Books:
1. Kolman,Busby and Ross, "Discrete mathematical Structures and graph theory"
2. Alan Doerr, K. Levasseur , "Applied discrete structure for computer science", Galgotia publications, 1988
3. Trembley & Manohar, "discrete mathematics structure with application to computer science", McGraw Hill, 1987.
4. S. Lipschutz; "Schaums outline series", McGraw Hill, 1974, Vector analysis
5. M. Spicgel, "Schaums series of essential computer mathematics", McGraw Hill, 1974

Branch: BCA	Semester-II
Subject Code: 2103	**Lecture: 04** **Credit: 04**
Subject Title	**ADVANCED C**

Modules	Sr. No.	Topic and Details	No of Lectures Assigned	Marks Weightage
UNIT-I	1	**Arrays:** What are Arrays, Array initialization, Passing arrays to a function, Two Dimensional Array, Passing array as arguments to the functions.	8	16
	2	**Pointers:** An Introduction to Pointer, Pointer Declaration and Initialization of Pointer variables, Call by value and Call by Reference, Pointers with Arrays, Pointers and Character Strings	10	20
	3	Dynamic Memory Allocation: Introduction, Allocating Block of Memory, Introduction to the following functions Calloc(), Malloc(), Free(), Realloc	6	12
	4	**Structure and Union:** Introduction to Structure, Defining and Declaring Structure Variables, .Dot Operator, Nested Structure, Array of Structure, Introduction to Union Difference between Structure and Union	6	12
	5	**FileHandling:**Whyweneed a file, File operations(create,open,read, move , write, close), File opening Mode, Closing a file, Input/output operations, Creating and reading a file	6	12
	6	**Graphics :** Introductions to Graphics, Applications of C.G I/O device for, Graphics (mouse, printer, joystick, CRT), Raster and Vector Scan Display.	8	16
	7	**Creating** Circle, Rectangle, and different geometric shapes with existing predefined functions, filling algorithms, drawing and simple graphics creations with line.	6	12
		Total	50	100

Text Books:
1. Y.P Kanetkar, "Let Us "C", Infinity Science Press, 2008
2. B.S Gottifries, "Schaum,s Outline of Theory and Problems of Programming with C", Tata McGraw Hill,1995.
3. Kerningham and Ritchie, "the C Programming Language", Prentice Hall,1991.
4. Ramkumar and agrawal, "Programming in ANSI C", Tata McGraw Hill, 1996.
5. Jignesh Shah,"Programming in /c", Charotar Publisher, 2010
6. Venu Gopal," Programming in C", Tata Mcgraw-Hill Publishing company Limited,1997
7. E- BalaguruSwamy,"Ansi 'C" , Tata McGraw Hill.
8. A.P Godse,"Introduction to Computer Graphics" , Technical Publications, 2009

Branch: BCA	Semester-II
Subject Code: 2104	**Lecture: 04** **Credit: 04**
Subject Title	**ENVIRONMENTAL SCIENCE & RTI**

Modules	Sr. No.	Topic and Details	No of Lectures Assigned	Marks Weight age
UNIT-I	1	The Multidisciplinary nature of environmental studies, Definition, scope and importance, Need for public awareness	5	10
	2	**Natural Resources:** Renewable and non-renewable resources, Natural resources & role of natural resources with reference to Forests, water, Mineral, Food, Land, Energy, Role of an individual in conservation of these resources	6	12
UNIT-II	3	Ecosystems: Concept of an ecosystem, Structure and functions of an ecosystem, Types, characteristic features,structure and function of following ecosystems : forest, grassland, desert and aquatic	8	16
	4	**Environmental Pollution** – Definition, Causes, effects and control measures with reference to Air Pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear Hazards, Solid waste management: Causes, effect and control measures of urban and industrial wastes: ☐ Role of an individual in prevention of pollution ☐ Pollution case studies related to field of computers Disaster management: floods, earthquake, cyclone and landslides.	12	24
UNIT-III	5	**Disposal of e-waste**	4	8
	6	**Introduction to Green IT:** Concepts of green IT, design, management and education., Approaches of green IT such as virtualization, power management, material recycling, telecommunication, electronic disposals, etc. , Benefits of green IT	7	14
UNIT-IV	7	**Right of Information Act:** Introduction, Right to information and obligations of public authorities, central information commission, state information commission and their duties, powers and functions of information commissions, appeals and penalties, Miscellaneous	8	16

Text Books:

1. AnubhaKaushik, "Environmental Studies", New Age International (P) Ltd., 2007

Branch: BCA	Semester-II
Subject Code: 2201	**Practical: 02** **Credit: 02**
Subject Title	**ADVANCED C LAB**

Modules	Sr. No.	Topic and Details	No of Lectures/Practicals Assigned	Marks Weight age %
UNIT-I	1	Programs with Arrays ☐ Array initialization ☐ Passing arrays to a function Two Dimensional Array	5	10
	2	Programs Using Pointers ☐ Pointer Declaration and Initialization of Pointer variables ☐ Call by value and Call by Reference ☐ Pointers with Arrays Pointers and Character Strings	5	10
UNIT-II	3	Programs with Dynamic Memory Allocation Programs with following functions-Calloc(), Malloc(), Free(), Realloc	4	8
	4	Programs Using Structure and Union Defining and Declaring Structure Variables,.Dot Operator, Nested Structure, Array of Structure, Examples of Union.	2	4
UNIT-III	5	Programs using I/O Operations File Handling ☐ File operations(create, open, read, move, write, close) ☐ Program To Create A file ☐ Program to Open a file ☐ Program to Close A file Input/output operations on file Character by – fgetc,fputc), Reading and writing files	5	10
UNIT-IV	6	Program with Computer Graphics: ☐ Drawing Shapes using different functions (line, Rectngle,Circle,ellipse,Arc) ☐ Filling shapes with fillcolor options Use of setcolor(), sleep() and delay() functions	4	8
		Total	25	50

Text and Reference Books:

1. Y.P Kanetkar, "Let Us "C", Infinity Science Press, 2008
2. B.S Gottifries, "Schaum,s Outline of Theory and Problems of Programming with C", Tata McGraw Hill,1995.

3. Kerningham and Ritchie, "the C Programming Language", Prentice Hall,1991.
4. Ramkumar and agrawal, "Programming in ANSI C", Tata McGraw Hill, 1996.
5. Jignesh Shah,"Programming in /c", Charotar Publisher, 2010
6. Venu Gopal,"Programming in C", Tata Mcgraw-Hill Publishing company Limited,1997
7. E- BalaguruSwamy,"Ansi 'C'"
8. A.P Godse,"Introduction to Computer Graphics" , Technical Publications, 01-Jan-2009

Branch: BCA	Semester-II
Subject Code: 2202	Practical: 02 Credit: 02
Subject Title	OPEN SOURCE OPERATING SYSTEM AND APPLICATIONS SOFTWARE'S LAB*

Modules	Sr. No.	Topic and Details	No of Lectures/Practicals Assigned	Marks Weight age 5
UNIT-I	1	**INSTALLING RED HAT LINUX:** Configuring a Dual Boot System , Allocating Disk Space for Linux, Add a new Hard Drive , Use an Existing Partition to Create Space for Loading Linux Using fdisk to Partition a Hard Disk Viewing, The Current Partitions, Deleting Partitions, Creating New Partitions	3	6
	2	THE APACHE INSTALLATION PROCESS, APACHE CONFIGURATION, MANIPULATING THE APACHE httped SERVICE	3	6
UNIT-II	3	INSTALLING PHP Quick Install Of PHP, Starting the Install Process to Begin PHP Configuration , To complete Installation of PHP , Binding the PHP Installation with Apache , Registering the Changes made in the httpd.conf With Apache	3	6
UNIT-III	4	INSTALLING MySQL: Using the Add/Remove Applications Tool , Using the Linux Command Line, Installing the My SQL RPMS, What to do if the Error Cannot Be Handled Easily, The Directory Tree Created during Installation, MySQL DATABASE ENGINE INSTALL, MySQL Database administration	3	6
	5	STARTING AND STOPPING MySQL Shutting down MySQL, Starting MySQL , Setting up, Setting the root Password using the	3	6

		Mysqladmin, Utility to set the root Password , Logging into MySQL after setting the root Password , Directly Updating User Information to set a root Password , Issues with updating the User Table using SQL , Creating a MySQL Super User , User Privileges		
UNIT-IV	6	CREATING DATABASE Database Ownership, Permitting a User access to the Inventory Database, The Resources of the Inventory Database , Adding New Users to MySQL , Manipulating the MySQL , Grant Tables Directly Deleting Users from MySQL , Creating Passwords for Users	4	8
	7	TESTING PHP AND MySQL SET UP Understanding the syntax of PHP , How are PHP programs created?, Understanding the physical structure of a PHP Program, String Functions Statements,Operators,Looping, PHP functions PHP Forms	6	12
Total			25	50