Programming Fundamental & 'C' (BHCS-101)

UNIT I

Introduction to programming – definitions and developing Algorithms and flowcharts for simple programs. Introduction to C Programming: Origin and history of c programming character set, Identifiers and keywords, data types, constants, variables, operators, special operators, Expressions and operators precedence, compound statements, structure of C program, Input and output function.

UNIT II

C Statements : Selection statements – if nested if's, if-else, if ladder conditional expressions, switch statement nested switch statements. Iteration statements(looping) – for loop, for loop variations, while loop, do-while loop, declaring variable within selection and iteration statements, goto statement, return statement, break statement, continue statement, exit() function.

UNIT III

Arrays – Array Declaration, Array Initialization – Accessing individual elements of an array, Two Dimensional Arrays, Multi Dimensional Array, – Rules of using an array. Strings: definition, String I/O, string Manipulation.

Functions- The General Form of a Function, elements of function, function categories- built-in and user defined functions, Math functions, string functions. Function Arguments Call by value, Call by Reference, return statement. Passing an array element to a function, Uses of functions.

C pre – processors, types with examples and storage classes – Automatic ,Register, Static and external.

Pointers – definition, pointer variables, pointer expressions, arithmetic pointers, pointers and arrays, initializing pointers and functions and problems with pointers.

UNIT IV

Structures – definition, accessing structure members, structure assignments, **Unions** – definitions, structure Vs union.

object oriented programming, characteristics of object-oriented languages C and C++. C++ Programming basics : Output using cout. Directives. Input with cin.

UNIT V

Making sense of core object concepts (Classes, Object, Encapsulation, Polymorphism, Inheritance) Implementation of class in C++, constructor functions.structures and classes.

Recommended Text and Reference Books:

1. "Computer System and Programming In C", Author:Yashavant kanetkar, Publisher:BPB Publications, Published:2017.
2. "Fundamentals of Computing and Programming in C", Author: Jeyapoovan T., Publisher: Vikas Publishing House, Published:2014.
3. "Let Us C Solutions", Author:Yashavant kanetkar, Publisher: BPB Publications, Published:2017.
4. Programming for Problem Solving: Additional Solved Gujarat Technical University Examination Questions, Author: E Balagurusamy, Publisher:McGraw-Hill Education, Published:2019.
5. "Programming in ANSI C", Author:E.Balagurusamy, Publisher:Tata McGraw-Hill, Published:2008.

Introduction to Web and HTML(BHCS-102)

Unit I

Introduction: Introduction to web, protocols using on web, Web Site, Web Portal, Web applications, web project & team, Browser, Web Server.

Unit II

Static Web Page Designing: Introduction to HTML, Html tags- Head, Body, Title, anchor, formatting tags, table, images, frames, Div.

Unit III

Dynamic Webpage Design: - Introduction to forms, Form Elements Text, Button, checkbox, radio, combo box, list, Cascading Style Sheets .

Unit IV

Introduction to Java script, documents, forms, statements, functions, objects, event and event handling

Unit V

DOM, introduction to COM/DCOM, Introduction to XML, Protocols governing web- email, www, DNS, HTTP.

Recommended Text and Reference Books:

1. "HTML & Web Design Tips & Techniques", Author:Kris Jamsa, Konrad King, Andy Anderson, Publisher:McGraw-Hill Education, Published:2002,

2. "An Introduction to Web Development in HTML, CSS, and JavaScript", Author:Camryn Williams, Cassidy Williams, Publisher:O'Reilly Media, Incorporated, Published:2015.

3. "Html: Int. To Web Page Design N Dev (Sos)", Author:Mercer, Publisher:McGraw-Hill Education (India) Pvt Limited.

4. "Introduction To Web Technology (2nd Edition)", Author:Pankaj Sharma, Publisher:S. K. Kataria & Sons, Published:2009

5. "Fundamentals of the Internet and the World Wide Web", Author:Raymond Greenlaw, Ellen Hepp, Publisher:McGraw-Hill, Published:2002.

6. "Html, Css, Jawascripts, Perl ,Python & Php (Web Standards Programmers Reference)", Author:Steven M. Schafer, Publisher:Wiley-Dreamtech, India.

Digital Electronics (BHCS-103)

UNIT I

Number Systems & Codes: Number System - Base Conversion - Binary Codes -Code Conversion. Digital Logic: Logic Gates - Truth Tables - Universal Gates.

UNIT II

Boolean Algebra: Laws & Theorems - SOP, POS Methods - Simplification of Boolean Functions - Using Theorems, K-Map, Prime - Implicant Method – Implementation using Universal Gates. Binary Arithmetic: Binary Addition - Subtraction - Various Representations of Binary Numbers - Arithmetic Building Blocks - Adders -Subtracters.

UNIT III

Combinational Logic: Multiplexers - Demultiplexers - Decoders - Encoders – Code Converters - Parity Generators & Checkers - PAL - PLA

UNIT IV

Sequential Logic: RS, JK, D, and T Flip-Flops - Edge-Triggered - Master-Slave Flip-Flops. Registers: Shift Registers - Types of Shift Registers. Counters: Asynchronous Counters Ripple, Mod, Up-Down Counters- Decoding Gates, Synchronous Counters - Ring, Decade, Presettable, Shift Counters. Memory: Basic Terms & Ideas - Magnetic Memories - Memory Addressing - Types of ROMs – Types of RAMs.

UNIT V

Memory Basic cell of static and dynamic RAM; Building large Organization memories using chips; Associative memory; Cache memory organization and Virtual memory organization

Recommended Text and Reference Books:

1. "Digital Logic and Computer Design", Author:M. Morris Mano, Publisher:Pearson India, Published: 2017.
2. "Computers Architecture and Organization", Author: B. Govindarajalu, Publisher: Mc Graw - Hill Education (India) Pvt Limited, Published: 2010.
3. "Computer Architecture & Organisation", Author: D.A.Godse A.P.Godse, Publisher :Technical Publications, Published:2007
4. "Computer Fundamentals, Architecture & Organisation", Author:B. Ram, Publisher : New Age International (P) Limited, Published:2009.
5. "Digital Circuits & Design", Author:D. P. KOTHARI, Publisher:Pearson Education India, Published:2015.
6. "Fundamentals of Digital Circuits", Author:A. Anand Kumar, Publisher:Prentice Hall India Pvt. Limited, Published: 2016.
7. "Logic and Computer Design Fundamentals", Author:M. Morris Mano, Charles R. Kime, Publisher:Pearson/Prentice Hall, Published: 2003.

Discrete Mathematics (BHCS-104)

UNIT I

Sets - finite and Infinite sets, uncountable Infinite Sets; functions, relations, Properties of Binary Relations, Closure, Partial Ordering Relations; counting - Pigeonhole Principle, Permutation and Combination; Mathematical Induction, Principle of Inclusion and Exclusion.

UNIT II

Algebraic systems – Semi groups and monoids – Groups – Subgroups – Homomorphism‘s – Normal subgroup and cosets – Lagrange‘s theorem – Definitions and examples of Rings and Fields.

UNIT III

Vectors , vector product, dot and cross , vector space, Matrix and its types- symmetric matrix, determinant operations on matrices(scalar, vector), diagonal matrix Sparse Matrix, Transpose, Inverse, Simultaneous equations through matrix, Eigen values, Eigen vectors and characteristics equations, SVD.

UNIT IV

Basic Terminology, Models and Types, multi graphs and weighted graphs, Graph Representation, Graph Isomorphism, Connectivity, Euler and Hamiltonian Paths and Circuits, Planar Graphs, Graph Coloring, Trees, Basic Terminology and properties of Trees, Introduction to Spanning Trees

UNIT-V Boolean algebra (8 Lectures)

Boolean algebra and lattices. Logical Connectives, Well-formed Formulas, Tautologies, Equivalences, Inference Theory, Partial ordering – Posets – Lattices as posets – Properties of lattices

Recommended Text and Reference Books:

1. “Elements of Discrete mathematics”, Author: C.L. Liu & Mahopatra, Publisher:Tata McGraw Hill. ,2nd Sub Edition 1985

2. “Discrete Mathematics and its Applications”, Author: Rosen, K.H., Publisher:Tata McGraw Hill Pub. Co. Ltd., New Delhi, Special Indian Edition, 2011.

3. “Discrete Mathematical Structures with Applications to Computer Science”, Author: Tremblay, J.P. and Manohar.R,”, Publisher: Tata McGraw Hill Pub. Co. Ltd, New Delhi, 30th Reprint, 2011.

Enviornmental Studies (BHCS – 008) (Qualifying Course)

UNIT I: INTRODUCTION TO NATURAL RESOURCES/ENERGY

Environmental Studies: Definition, scope, awareness-Introduction to natural resources: food, forest, water and energy –Renewable and non renewable resources-coal, oil, tidal, wind, geothermal, solar, biomass (over view) – nuclear fission and fusion-nuclear energy.

UNIT II: ECOSYSTEMS

Concept of an ecosystem-structure and function of an ecosystem-producers, consumers and decomposers-ecological succession-food chains (any 2 eg)-food webs (any 2 eg)-ecological pyramids.

UNIT III: BIODIVERSITY AND ITS CONSERVATION

Introduction, definition: genetic, species and ecosystem diversity-Values of biodiversity: consumptive, productive, social, ethical, aesthetic and option values-hotspots of biodiversity-Threats to biodiversity: habitat loss, poaching of wildlife-endangered species and endemic species of India -conservation of biodiversity: in – situ and ex-situ conservation of biodiversity.

UNIT IV: ENVIRONMENTAL POLLUTION /DISASTER MANAGEMENT

Definition-causes, effects and control measures of: Air, Water and Soil pollution-e-waste management-Disaster management: Natural and man made-food/earthquake/cyclone, tsunami and landslides.

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENT

Sustainable development-Climate change: global warming, acid rain, ozone layer depletion and nuclear radiation-Environment Protection Act (any imp 2) air, water, wildlife and forest.

Recommended Text and Reference Books:

1."Environmental Studies 2E", Author:Joseph, Publisher:McGraw-Hill Education (India) Pvt Limited, Published:2009

2."Environmental Studies", Author:Dr. J. P. Sharma, Publisher:Laxmi Publications Pvt Limited, Published:2009.

3."Environmental Studies - MCQ",Author:Arun K. Tripathi, Publisher:Energy and Resources Institute, Published:2016

4."Environmental Studies - Basic concepts", Author:V. K. Ahluwalia, Publisher:Energy and Resources Institute, Published:2016

5."Text Book of Environmental Studies", Author:D. K. Asthana, Publisher:S. Chand Limited, Published:2006

6."Textbook of Environmental Studies for Undergraduate Courses", Author:Erach Bharucha, Publisher:Universities Press (India) Pvt. Limited, Published: 2005

C/ C++ Programming Lab (BHCS-151)

1. Write a program to input and output the text message.
2. Write a Program to perform all arithmetic operations.
3. Write a Program to utilize the math function.
4. Write a Program to perform the mathematical expressions.
5. Write a Program for Local and Global Variables.
6. Write a Program for internal static and external static variables.
7. Write a Program to find the roots of a Quadratic equation.
8. Write a Program for all the Operators. (Arithmetical, Logical, Relational, Bitwise).
9. Write a Program for Increment and Decrement Operators.
10. Write a Program to implement the Ternary Operator.
11. Write a Program for special Operators.
12. Write a Program for all the Control Structures. (Sequential Control Structures, Conditional Control Structures, Iterative Control Structures).
13. Write a Program to display the different types of patterns using nested for loop.
14. Write a Program for Statements. (switch, break, goto, continue etc.,).
15. Write a Program to print biggest number from n numbers.
16. Write a Program to find the given integer number is even or odd number.
17. Write a Program to calculate the factorial of a given number.
18. Write a Program to swap the two numbers using temp variable and without using temp variable.
19. Reading and Printing a single dimensional array of elements.
20. Ascending and descending of an array.
21. Sum of all odd numbers and sum of all even numbers in a single dimensional array.
22. Mathematical operations on single dimensional arrays.
23. Reading and Printing a multi dimensional array of elements.
24. Mathematical operations on multi dimensional array of elements.
25. Passing an array element to a function.
26. Reading and Printing a string.
27. C/C++ Programs on String functions.
28. Write a program to calculate string length by writing the user-define function.
29. Function declaration and initialization.
30. C/C++ Program to differentiate the parameters and arguments in functions.
31. Programs for different types of inbuilt functions.
32. Call by value and Call by reference programs in functions.
33. Write a program to swap the given 2 number using passing by reference.
34. Write C/C++ Programs to perform all valid arithmetic operations using pointers.
35. C programs on Structures and accessing of members of the structures.
36. Write a program to print a book information (Book name, Book no, author name) by writing a structure.
37. Write a C program by passing structure elements to a function and display employee information (emp no, emp name, emp salary, and emp address).
38. BASIC OOPS concept Programming.

Web Programming Lab (BHCS-152)

[I] Practical on HTML

2. A Program to illustrate Image tag .
3. A Program to illustrate Hyper Link tag (Anchor tag) .
4. A Program to illustrate Table tag .
5. A Program to illustrate Frame tag .
6. A Program to illustrate Form tag .
7. A Program to illustrate CSS (cascading style sheet) (Inline, Internal, External).

[II] Practical on JavaScript

8. Write a JavaScript program to display Hello!!
9. Write a JavaScript program to for Internal and External java scripts.
10. Write a JavaScript program to create intelligent login page.
11. Write a JavaScript program to create registration form (after login success).
12. Write a code to show how an array with different types of elements can be constructed.
13. Write a code for accepting two numbers from the user & prints the greater one.
14. Write a code for calculating the sum of the numbers 10 through 20 using for statement.
15. Write a code for printing all even-odd numbers b/w 1 and 12 by using for & if statement.
16. Write a code to show how function arguments in JavaScript used with different types.

Data Structures Using C &C++ (BHCS-201)

Unit I

Introduction: Basic Terminology, Elementary Data Organization, Algorithm, Efficiency of an Algorithm, Time and Space Complexity, Asymptotic notations: Big-Oh, Time-Space trade-off. Abstract Data Types (ADT)Arrays: Definition, Single and Multidimensional Arrays.

Linked lists: Array Implementation and Dynamic Implementation of Singly Linked Lists, Doubly Linked List, Circularly Linked List, Operations on a Linked List. Insertion, Deletion, Traversal, Polynomial Representation and Addition, Generalized Linked List

Unit II

Stacks: Abstract Data Type, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C, Application of stack: Prefix and Postfix Expressions, Evaluation of postfix expression, Recursion, Tower of Hanoi Problem, Simulating Recursion, Principles of recursion, Tail recursion, Removal of recursion Queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Array and linked implementation of queues in C, Dequeue and Priority Queue.

Unit III

Trees: Basic terminology, Binary Trees, Binary Tree Representation: Array Representation and Dynamic Representation, Complete Binary Tree, Extended Binary Trees, Array and Linked Representation of Binary trees, Tree Traversal algorithms: Inorder, Preorder and Postorder, Threaded Binary trees, Traversing Threaded Binary trees, Huffman algorithm.

Unit IV

Graphs: Terminology, Sequential and linked Representations of Graphs: Adjacency Matrices, Adjacency List, Adjacency Multi list, Graph Traversal : Depth First Search and Breadth First Search, Connected Component, Spanning Trees, Minimum Cost Spanning Trees

Unit V

Searching : Sequential search, Binary Search, Comparison and Analysis Internal Sorting: Insertion Sort, Selection, Bubble Sort, Quick Sort, Merge Sort, Heap Sort, Radix Sort.

Search Trees: Binary Search Trees (BST) Hashing: Hash Function, Linear probing.

Recommended Text and Reference Books:

1. "Data Structures Using C", Author:E. Balagurusamy, Publisher:McGraw-Hill Education (India), Published:2013
2. "Data Structures Through C++", Author:Yashavant Kanetkar, Publisher:BPB PUBN, Published: 2019
3. "Data Structures (SOS) (Revised First Edition)", Author:Seymour Lipschutz, Publisher:McGraw-Hill Education, Published: 2014
4. "Fundamentals of data structures in C Second Edition", Author:Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed, Publisher:Silicon Press, Published: 2007
5. "Data structures", Author:Richard F. Gilberg, Behrouz A. Forouzan, Publisher:Cengage Learning, Published: 2005
6. "Data Structures Using 'C'", Author:A.A.Puntambekar, Publisher:Technical Publications, Published: 2014
7. "Data Structures & Algorithms: Theory Design And Implementation Using C", Author: SALARIA R S, Publisher:KHANNA PUB, Published: 2001

Mathematics II (Numerical Methods) (BHCS-202)

Unit I

Floating point representation and computer arithmetic, Significant digits, Errors in numerical computation. Bisection method, Secant method, Regula−Falsi method, Newton−Raphson method, Iteration method, error analysis.

Unit II

Iterative methods:, Gauss elimination direct method and pivoting. Gauss-Seidel iterative methods difference operators. Interpolation & extrapolation method, Lagrange‘s and Newton‘s forward and backward finite difference formula.

Unit III

Numerical integration and differentiation: Trapezoidal rule, Simpson‘s 1/3 & 3/8 rule, Boole’s rule.

Unit IV

Numerical Solution of elementary ordinary and partial differential equation. Laplace and Fourier, tchebycheff , transform and introduction to wavelets, straight line, parabolic and exponential.

Unit V

Sampling methods, simple random sampling, Purposive sampling, stratified random sampling. Test of significance: Chi square test for goodness of fit of uniformity and independence of attributes, one and two sample t-test. Forecasting and time series analysis: time series models, methods of moving average.

Recommended Text and Reference Books:

1. "Data Structures Using C", Author:E. Balagurusamy, Publisher:McGraw-Hill Education (India), Published:2013
2. "Numerical methods in Engineering and Science", Author: Grewal B.S, Publisher: Khanna Publishers, 1994.
3. "Mathematical Statistics with Applications” Author: John.E..Freund, Irwin Miller, Marylees Miller, Publisher: Prentice Hall of India, Seventh Edition, 2004.
4. "Probability Random Processes and Queuing theory", Author: A.M.Natarajan & A.Tamilarasi, Publisher: New Age International Publishers, 2nd Edition, 2005.
5. "Numerical Methods for Engineers", Author: S.K. Gupta, Publisher: New age International Publishers ,1995.

Professional Communication (BHCS-203)

Unit I

Fundamentals of Communication Technical Communication: features: Distinction between General and Technical communication; Language as a tool of communication; Levels of communication: Interpersonal, Organizational, Mass communications; the flow of Communication: Downward, Upward, Lateral of Horizontal (Peer group): Importance of technical communication; Barriers to Communication.

Unit II

Constituents of Technical Written Communication Words and Phrases: Word formation. Synonyms and Antonyms; Homophones; Select vocabulary of about 500-1000 New words; Correct Usage: all Parts of Speech; Modals; Concord; Articles; Infinitives; Requisites of Sentence Construction: Paragraph Development: Techniques and Methods-Inductive, Deductive, Spatial, Linear, Chronological etc; The Art of Condensation-various steps.

Unit III

Business Communication Principles, Sales & Credit letters; Claim and Adjustment Letters; Job application and Resumes. Reports: Types; Significance; Structure, Style & Writing of Reports. Technical Proposal; Parts; Types; Writing of Proposal; Significance; Negotiation & Business Presentation skills

Unit IV

Presentation Strategies and Listening Skills. Defining Purpose; Audience & Local; Organizing Contents; Preparing Outline; Audio-visual Aids; Nuances of Delivery; Body Language; Dimensions of Speech: Syllable; Accent; Pitch; Rhythm; Intonation; Paralinguistic features of voice; Listening Skills: Active Listening, Passive Listening. methods for improving Listening Skills.

Unit V

Value-Based Text Readings Following essays form the suggested text book with emphasis on Mechanics of writing.

Recommended Text and Reference Books:

1. "Professional Communication", Publisher:Hong Kong University Press, Published: 2009
2. "Technical Communication –Principles and Practices", Author: Meenakshi Raman & Sangeeta Sharma, Publisher: Oxford Univ. Press, Published: 2016.
3. "Improve Your Writing ed.", Author: V.N. Arora and Laxmi Chandra, Publisher: Oxford Univ. Press, Published: 2001.
4. "Business and Professional Communication in the Global Workplace", Author:H. L. Goodall, Jr., Sandra Goodall, Jill Schiefelbein, Publisher:Cengage Learning, Published: 2009
5. "Professional Communication", Author:Kumkum Bhardwaj, Publisher:I.K. International Publishing House Pvt. Limited, Published: 2009
6. "Soft Skill Business and Professional Communication", Author:Sutapa Banerjee, Publisher:I.K. International Publishing House Pvt. Limited, Published: 2010

Computer Architecture and Organization (BHCS-204)

Unit I Microprogramming: Basic Principles, Features of microprogramming, Hardwired vs. micro programmed computers, Applications and advantages of microprogramming, Limitations of microprogramming, Computer Clock, Microinstructions and its timing, Microinstruction format, Microinstruction timing, Control Path.

Unit II

8086 architecture, Instruction Set: Characteristics - Operand Types - Operation Types - Addressing Modes - instruction Formats , Addressing Modes (Simple Examples), assembly language programming , elementary assembly pipelining . interrupts.

Unit III

Input/Output: External Devices - I/O Module - Programmed I/O - Interrupt Driven I/O - DMA - I/O Channels & Processors. Computer Arithmetic: ALU -. Integer Representation and Arithmetic - Floating Point Representation and Arithmetic.

Unit IV

CPU: Organization of Processors and Registers - Instruction Cycle - Instruction Pipelining - Pentium Processor. RISC: Characteristics - Large Register File - Register Optimisation - Architecture Pipelining. Instruction Set Architecture(ISA), RISC and CISC, Characteristics of CISC.

Unit V

Control Unit: Micro-Operations - Control of Processors - Hardwired Implementation - Micro Programmed Control Concepts -- Microinstruction Sequencing - General Microinstruction Execution.

Recommended Text and Reference Books:

1. "Computer Organization & Architecture 7e", Author:Stallings, Publisher:Pearson Education, Published: 2008
2. "Computers Architecture and Organization", Author: B. Govindarajalu, Publisher:McGraw-Hill Education (India) Pvt Limited, Published: 2010.
3. "Computer Architecture & Organisation", Author: D.A.Godse A.P.Godse, Publisher :Technical Publications, Published:2007
4. "Computer Fundamentals, Architecture & Organisation", Author:B. Ram, Publisher:New Age International (P) Limited, Published:2009.
5. "Computer Organization", Author:Carl Hamacher, Zvonko Vranesic, Publisher:McGraw Hill, Published: 2009
6. "Computer Organization And Architecture", Author:A.P.Godse, D.A.Godse, Publisher:Technical Publications, Published: 2010

Human Values & Professional Ethics (BHCS-205)

(Qualifying Course)

Unit-I Course Introduction - Need, Basic Guidelines, Content and Process for Value Education(6)

1. Understanding the need, basic guidelines, content and process for Value Education.
2. Self Exploration-what is it? - its content and process; 'Natural Acceptance' and Experiential Validation-as the mechanism for self exploration
3. Continuous Happiness and Prosperity-A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities-the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly-A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

Unit-II Understanding Harmony in the Human Being-Harmony in Myself (6)

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Swasthya -Practice Exercised and Case Studies will be taken up in Practice Sessions.

Unit-III Understanding Harmony in the Family and Society -Harmony in Human-Human Relationship (6)

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti;
Trust (Vishwas) and Respect (Samman) as the foundational values of relationship
15. Understanding the meaning of Vishwas; Difference between intention and competence.
16. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family):
Samadhan, samridhi, Abhay, Sah-astitva as comprehensive Human Goals
18. Visualizing a universal harmonies order in society-Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha) - from family to world family.
-Practice Exercise and Case Studies will be taken up in Practice Sessions.

Unit-IV Understanding Harmony in the Nature and Existence - Whole existence as Co-existence(5)

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature-recyclability and self-regulations in nature
21. Understanding existence as Co-existence (Sah-astitva) of mutually interacting unites in all-pervasive space.
22. Holistic perception of harmony at all levels of existence
-Practice Exercise and Case Studies will be taken up in Practice Sessions.

Unit-V Implications of the above Holistic Understanding of Harmony on Professional Ethics (5)

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis of Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics;

a. Ability to utilize the professional competence for augmenting universal human order.
b. Ability to identify the scope and characteristics of people friendly eco-friendly production systems
c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

27. Case studies of typical holistic technologies, management models and production systems
28. Strategy for transition from the present state to universal Human Order;

a. At the level of individual: as socially and ecologically responsible engineers, technologies and mangers.
b. At the level of society: as mutually enriching institutions and organizations.

Recommended Text and Reference Books:

1. "Professional Ethics and Human Values", Author:A. Alavudeen, R. Kalil Rahman and M. Jayakumaran, Publisher:Technical Publications, Published: 2008
2. "Human Values And Professional Ethics", Author:Vaishali R Khosla, Kavita Bhagat, Publisher:Technical Publications, Published: 2009
3. "A Textbook On Professional Ethics And Human Values", Author:R.S. Naagarazan , Publisher:New Age International (P) Limited, Published: 2007
4. "Human Values and Professional Ethics, 3rd Edition", Author: S. Raghavan , Publisher:S. Chand Limited, Published: 2009
5. "Professional Ethics and Human Values, 3rd Edition", Author:M. Govindarajan, S. Natarajan, V. S. Senthilkumar, Publisher:PHI Learning, Published: 2013
6. "Human Values, 3rd Edition", Author:A. N. Tripathi, Publisher:New Age International (P) Limited, Published: 2009

Data Structure Lab (BHCS-251)

1. Write a Programme to implement a stack using array.

2. Write a Programme to implement a stack using linked list

3. Write a Programme to implement a queue using array.

4. Write a Programme to implement a queue using linked list

5. Write a Programme to implement a circular queue using array

6. Write a Programme to implement a simple linked list

7. Write a Programme to implement a circular linked list

8. Write a Programme to implement a doubly linked list

9. Write a Programme to count a node in linked list

10. Write a Programme to implement a reversed a linked list

11. Write a Programme to implement a quick sort.

12. Write a Programme to implement a merge sort.

CBNST Lab Practical (BHCS-252)

1. Find the roots of the equation by bisection method.

2. Find the roots of the equation by secant/Regula−Falsi method.

3. Find the roots of the equation by Newton‘s - Raphson method.

4. Find the solution of a system of nonlinear equation using Newton‘s method.

5. Find the roots of the equation by Iteration method.

6. Find the solution of system of equations using Jacobi/Gauss-Seidel method.

7. Find the cubic spline interpolating function.

8. Solve the boundary value problem using finite difference method.

9. Solve the initial value problem using Euler’s method and compare the result with the exact solutions.