

**Scheme of Instructions & Syllabi**

**of**

**Bachelor of Science (Honors)  
in Computer Science**

(Effective from session 2018-19)

**Department of Computer Applications**

**INVERTIS UNIVERSITY  
Bareilly-243123 U.P.**

**B. Sc. (Honors ) in Computer Science**  
**Scheme of Instructions**  
 (Effective from session 2016-17)  
**2<sup>nd</sup> YEAR**

III Semester				Teaching Scheme			Marks Distribution		
PAPE R	CODE	SUBJECT	CREDI T	L	T	P	ES M	MS M	Tota l
Paper 1	CSH 301	RDBMS	4	3	1	0	70	30	100
Paper 2	CSH 302	OOPs using C++	4	3	1	0	70	30	100
Paper 3	CSH 303	Computer Networking	4	3	1	0	70	30	100
Paper 4	CSH 304	System Analysis and Design	4	3	1	0	70	30	100
Lab 1	CSH 351	RDBMS Lab	2	0	0	4	35	15	50
Lab 2	CSH 352	OOPs using C++ Lab	2	0	0	4	35	15	50
<b>Total</b>			20	1 2	4	8	350	150	500
IV Semester									
PAPE R	CODE	SUBJECT	CREDI T	L	T	P	ES M	MS M	Tota l
Paper 1	CSH 401	Graph Theory and it's Applications	4	3	1	0	70	30	100
Paper 2	CSH 402	Computer Graphics	4	3	1	0	70	30	100
Paper 3	CSH 403	E-Commerce	4	3	1	0	70	30	100
Paper 4	CSH 404	Environment and Ecology	2	3	0	0	35	15	50
Paper 5	CSH 405	Human Values & Ethics	2	3	0	0	35	15	50
Lab 1	CSH 451	Computer Graphics Lab	2	0	0	4	35	15	50
	CSH452	Seminar	2	2	0	0	35	15	50
<b>Total</b>			20	1 7	3	4	350	150	500

L – Lecture

T – Tutorial

P – Practical

ESM – End Semester Marks

MSM – Max. Sessional Marks

## CSH 301: Relational Database Management Systems

<b>Teaching Scheme</b> Lectures: 3 hrs/Week Tutorials: 1 hr/Week  Credits: 4	<b>Examination Scheme</b> Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks
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**Prerequisite:** - Computer Organization, Operating System, Data Structure, Mathematics

### Course Objectives:

1. Understand values of Data.
2. Understand significant role of DBMS.
3. Understand need for normalizing a Database.
4. Understand problems with unnecessary duplication of data.
5. Understand concepts of transaction
6. Understand concepts of concurrent transactions

### Detailed Syllabus:

<b>Unit-1</b> <b>Introduction to Database System:</b> DBMS Definition, Characteristics of DBMS, Application and advantages of DBMS, Instances, Schemas and Database States, Three Levels of Architecture, Data Independence, DBMS languages, Data Dictionary, Database Users, Data Administrators.
<b>Unit-2</b> <b>Data Models:</b> Data Models, types and their comparison, Entity Relationship Model, Entity Types, Entity Sets, Attributes and its types, Keys, E-R Diagram, Data Integrity, RDBMS: Concept, Components and Codd's rules.
<b>Unit-3</b> <b>Relational Databases:</b> Introduction to Relational Databases and Terminology-Relation, Tuple, Attribute, Cardinality, Degree, Domain. Keys, Super Key, Candidate Key, Primary Key, Foreign Key, Relational Algebra. Operations, Select, Project, Union, Difference, Intersection Cartesian product, Join, Natural Join.
<b>Unit-4</b> <b>Structured Query Language (SQL):</b> Introduction to SQL, History of SQL, Basic Structure, DDL Commands, DML Commands, TCL Commands, Simple Queries, Nested Queries, Join queries, semi-join queries, self-join. Aggregate Functions and Clauses.
<b>Unit-5</b> <b>Relational Database Design:</b> Introduction to Relational Database Design, DBMS vs RDBMS.
<b>Unit-6</b> <b>Normalization:</b> Anomalies of un-normalized database, Need of Normalization, Normal Forms-1NF, 2NF, 3NF, BCNF and functional dependency.

### Text and Reference Books

1. Database System Concepts, Henry Korth, A. Silberschatz, 5<sup>th</sup> Edition, 2005.
2. An Introduction to Database System, Bipin Desai, Galgotia Publications, 1991.
3. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB Publications, 4<sup>th</sup> Edition.
4. Schaum's Outline of "Fundamental of Relational Databases", Ramon A. Mata, Pauline K. Cushman, McGraw Hill, December, 2006.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Differentiate between multiprocessing, multiprogramming, and multitasking. |
| 2. Differentiate between programs, processes and threads.                     |
| 3. Apply segmentation and paging techniques.                                  |
| 4. Compare file naming in Linux and Windows.                                  |
| 5. Awareness of various Operating System                                      |

## CSH302: OOPs using C++

### Teaching Scheme

Lectures: 3 hrs/Week

Tutorials: 1 hr/Week

Credits: 4

### Examination Scheme

Unit Test - 12Marks

Teachers Assessment - 6Marks

Attendance – 12 Marks

End Semester Exam – 70 marks

**Prerequisite :** - Basics of c language

### Course Objectives:

1. Understand fundamentals of object-oriented programming in C++.
2. Have the ability to write a computer program to solve specified problems.
3. Be able to explain the difference between object oriented programming and procedural programming.
4. Be able to program using more advanced C++ features
5. Be able to build C++ classes using appropriate encapsulation and design principles.
6. Improve problem solving skills

### Detailed Syllabus

#### UNIT I

**Introduction to OOP:** Basic concepts of OOPs, Advantages of OOP, Need of object-oriented programming, characteristics of object-oriented languages, Object oriented approach vs procedure oriented approach, Object, Classes, Encapsulation, Data Abstraction, Inheritance, Polymorphism, Dynamic binding, Message Passing, Application of OOPs.

#### UNIT II

**C++ Programming Basics:** Language Fundamentals-Character set, Keywords, Identifiers, Variables, Constant, Data Types, and Comments. Operators in C++, Operator Precedence - Types of operators, Precedence and Associativity. Type Conversion, Statement and types of statements. Difference between C++ and C. Basic program construction, input/output using cin/count; manipulators

#### UNIT III

**Control Statements:** Conditional expressions, loop statements, breaking and control statements. Arrays-Notation, Declaration, Initialization, Processing.

#### UNIT IV

**Functions:** Simple functions, Function Prototyping, Call by reference, Return by Reference, Default Arguments, Constant Arguments, Inline Function, functions overloading, static function.

#### UNIT V

**Classes and Objects:** Introduction, structure and classes, declaration of class, defining the object of a class, accessing a member of class, arrays of class objects, Constructors, Destructors, friend function, Dynamic memory allocation. Constructors and Destructors, objects as function arguments, static class member.

#### UNIT VI

**Inheritance:** Introduction, defining derived classes, overriding member functions, Single Inheritance, multilevel Inheritance, multiple Inheritance, Hierarchical Inheritance, Virtual Base Class. Operator Overloading: Overloading Unary & Binary operators, Data conversion.

**Text and Reference Books**

1. Object Oriented Programming with C++, E. Balaguruswamy, 4<sup>th</sup> Edition.
2. Object Oriented Programming in C++, Robert Lafore, Sams, Dec., 2001.
3. C++ Programming, D. Ravichandran, TMH, 2<sup>nd</sup> Edition, Dec. 2002.
4. Mastering C++, Venugopal, TMH, September, 1997.
5. Object Oriented Programming using C++, Joyce Farrell, Cengage Learning India Pvt. Ltd., 6<sup>th</sup> Edition.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. |
| 2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc                       |
| 3. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.              |
| 4. Implement abstraction level programming using inheritance  |
| 5. Design modular programs.   |
| 6. Apply good programming style and understand the impact of style on developing and maintaining programs.              |
| 7. Design object oriented solutions for small systems involving multiple objects.                                       |

## CSH 303: Computer Networking

### Teaching Scheme

Lectures: 3 hrs/Week  
Tutorials: 1 hr/Week

Credits: 4

### Examination Scheme

Class Test -12Marks  
Teachers Assessment - 6Marks  
Attendance – 12 Marks  
End Semester Exam – 70 marks

### Prerequisite : -

1. Familiarity with the fundamentals of Digital Electronics.
2. A network simulation method

### Course Objectives:

1. To learn the basics of topology.
2. To learn the principles of Inter Networking.
3. To build an application using Network Simulator.

### Detailed Syllabus

#### UNIT-I (10 Hours)

**Introduction to Computer Networks:** Data Communication System and its components, Data Flow, Computer network and its goals, Types of computer networks: LAN, MAN, WAN, Wireless and wired networks, broadcast and point to point networks, Network topologies, Network software: concept of layers, protocols, interfaces and services, ISO-OSI reference model, TCP/IP reference model.

#### UNIT-II (6 Hours)

**Physical Layer:** Concept of Analog & Digital Signal, Bandwidth, Transmission Impairments: Attenuation, Distortion, Noise,. Introduction to Transmission Media : Twisted pair, Coaxial cable, Fiber optics, Wireless transmission (radio, microwave, infrared), Switching methods, integrated services digital networks.

#### UNIT-III (10 Hours)

**Medium Access sub layer:** Channel Allocations, LAN protocols -ALOHA protocols, Collision free Protocols-Token Passing, IEEE standards, Ethernet and Token Ring. Data Link Layer: Framing, Error detection and correction codes: checksum, CRC, hamming code, Sliding Window Protocols: Stop & Wait ARQ, Go-back-N ARQ, Selective repeat ARQ,

#### UNIT-IV (10 Hours)

**Network Layer:** Point-to Point networks, Routing algorithms, Congestion control algorithms, Internetworking Devices, IP protocol, IP addresses: IPv4 classful and classless addressing, Introduction to IPv6.

#### UNIT-V (10 Hours)

**Transport Layer:** Connection management: Three-way Handshaking. Introduction of User Datagram Protocol (UDP), Basics of Transmission Control Protocol. (TCP).

#### UNIT- VI (10 Hours)

**Application Layer:** File Transfer Protocol, Domain Name System, Electronic mail, Intro of Client server model, Hyper Text Transfer Protocol, WWW, Example Networks - Internet and Public Networks

### **Text and Reference Books**

1. Computer Networks, A. S Tanenbaum, Pearson education, 4th Edition.
2. Data and Computer Communication, W. Stallings, Macmillan Press, 7th Edition
3. Data Communication & Networking, 4th Edition, Tata McGraw Hill. By Behrouz A. Forouzan.
4. Computer Networking, 3rd Edition, Pearson Education by James F. Kurose and Keith W. Ross

### **Course Outcomes :**

- 1.Explain and demonstrate the mechanics associated with IP addressing, device interface, association between physical and logical addressing, subnetting and supernetting
- 2.Understand the techniques and protocols used (DSL, SONET, ATM).
- 3.Know the principles of congestion control and trade-offs in fairness and efficiency
- 4.Distinguish between analog and digital signals and understand their characteristics ( Fourier representation, signal corruption).



## CSH 304 System Analysis And Design

Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	Examination Scheme Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks
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**Prerequisite:** - Innovative Thinking, Enthusiasm to learn Management concepts.

### Course Objectives:

1. To provide the idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases.
2. To provide an idea of using various process models in the software industry according to given circumstances.
3. To gain the knowledge of how Analysis, Design, processes are conducted in a software project.
4. To gain knowledge on Implementation, Testing and Maintenance processes are conducted in a software project.
5. To understand how to build a system.

### Detailed Syllabus:

<b>Unit-1</b> System definition, Characteristics and Types, System Development Life Cycle: Problem Identification, Feasibility Analysis, Design, Implementation, Post Implementation and maintenance. Role of system analyst, Case Study.
<b>Unit-2</b> Traditional Methods for Determining Requirement: Information Gathering Tools: Review of literature, Interviews and Questionnaires, Types of Interviews and Questionnaires. Modern Methods for Determining Requirement: Joint Application design.
<b>Unit-3</b> Feasibility Study: Steps in Feasibility Analysis, Feasibility Report. Structured Analysis, Data Flow Diagram, Process Modeling, DFD Rules, Decomposition of DFD, Balancing DFD. Data Dictionary, Logical Modeling: Decision Tree, Structures English, Decision Table. Case study for use of DFD .
<b>Unit-4</b> Introduction of Cost/ Benefit Analysis: Cost and Benefit categories. Entity Relationship Diagrams: Entities, Attributes, Candidate Key, Cardinalities. <b>The Process of Design:</b> Logical and physical design, Structured Walkthrough, Input, Output and Form design.
<b>Unit-5</b> Introduction of System Testing, Test data, Test Plan: Activity network for system testing, Types of System Test, Quality Assurance: Quality Factors Specifications, Levels of Quality Assurance.
<b>Unit-6</b> System Implementation, User Training. Installation: Direct, parallel, Single Location, Phased. Post Implementation: Maintenance or Enhancement, Primary Activities of Maintenance Procedure. Introduction to System Security.

### Text and Reference Books

1. System Analysis and Design - E.M.Awad 2001, Galgotia Publication Ltd.
2. Modern System Analysis and Design, Jeffrey A. Hoffer, 2001, Pearson Education.
3. System Analysis and Design Methods, Whitten, Bentley and Barlow, Galgotia Publication.
4. System Analysis and Design, Silver and Silver, Addison Wesley, Last Edition

**Course Outcomes :**

After completing the course, students will be able to:

- |   |
|---|
| 1. Identify the theoretical and methodological issues involved in modern software engineering project management  |
| 2. Develop the transferable skills in logical analysis, communication and project management necessary for working within a team  |
| 3. Translate a specification to a design, and identify the components to build the architecture for a given problem, using an appropriate software engineering methodology. |
| 4. Select and use project management frameworks that ensure successful outcomes.  |
| 5. Develop software projects based on current technologies, by managing resources economically and keeping ethical values..   |

## CSH 401- Graph Theory

<b>Teaching Scheme</b> Lectures: 3 hrs/Week Tutorials: 1 hr/Week  Credits: 4	<b>Examination Scheme</b> Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks
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**Pre-requisites:** Fundamentals of IT and C Language

### Course Objectives:

1. Define how graphs serve as models for many standard problems
2. To understand and apply the fundamental concepts in graph theory
3. To apply graph theory based tools in solving practical problems
4. Discuss the concept of graph, tree, Euler graph, cut set and Combinatory.
5. To explain the Permutations & Combinations of fundamental principles of counting
6. See the applications of graphs in science, business and industry

### Detailed Syllabus

<b>Unit-1</b> <b>Introduction:</b> Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits – Connectedness – Components – Euler graphs – Hamiltonian paths and circuits – Trees – Properties of trees – Distance and centers in tree – Rooted and binary trees.
<b>Unit-2</b> <b>Trees, Connectivity &amp; Planarity:</b> Spanning trees – Fundamental circuits – Spanning trees in a weighted graph – cut sets – Properties of cut set – All cut sets – Fundamental circuits and cut sets – Connectivity and separability – Network flows – 1-Isomorphism – 2-Isomorphism – Combinational and geometric graphs – Planer graphs – Different representation of a planer graph.
<b>Unit-3</b> <b>Matrices and Coloring:</b> Chromatic number – Chromatic partitioning – Chromatic polynomial – Matching – Covering – Four color problem.
<b>Unit-4</b> <b>Directed Graph:</b> Directed graphs – Types of directed graphs – Digraphs and binary relations – Directed paths and connectedness – Euler graphs.
<b>Unit-5</b> <b>Permutations &amp; Combinations:</b> Fundamental principles of counting – Permutations and combinations – Binomial theorem – combinations with repetition – Combinatorial numbers – Principle of inclusion and exclusion – Derangements – Arrangements with forbidden positions.
<b>Unit-6</b> <b>Generating Functions:</b> Generating functions – Partitions of integers – Exponential generating function – Summation operator – Recurrence relations – First order and second order – Non-homogeneous recurrence relations – Method of generating functions.
<b>Text and Reference Books</b> 1. Clark J. and Holton D.A, “A First Look at Graph Theory”, Allied Publishers, 1995. 2. Liu C.L., “Elements of Discrete Mathematics”, Mc Graw Hill, 1985. 3. Rosen K.H., “Discrete Mathematics and Its Applications”, Mc Graw Hill, 2007.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Explain the basic concepts of graph theory and students will understand the graphs and trees   |
| 2. Apply the basic concepts of mathematical logic and students will understand various types of trees and methods for traversing trees. |
| 3. To solve some real time problems using concepts of graph theory.   |
| 4. To develop the skill of digraphs and binary relations with directed paths and connectedness Euler graphs.                            |
| 5. Solve problems involving vertex and edge connectivity, planarity and crossing numbers  |
| 6. Solve problems involving vertex and edge coloring and model real world problems using graph theory.                                  |

## CSH402: Computer Graphics

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test – 12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 Marks

**Prerequisite:** Linear Algebra, Matrix, and C-Programming.

### Course Objectives:

Students will try to learn:

1. To introduce the use of the components of a graphics system and become familiar with building approach of graphics system components and algorithms related with them.
2. To learn the basic principles of 2- dimensional and 3- dimensional computer graphics.
3. Provide an understanding of how to scan convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition.
4. Provide an understanding of mapping from a world coordinates to device coordinates, clipping, and projections.
5. To be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
6. To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies, principles, and applications.

### Detailed Syllabus:

#### Unit-1

**Introduction to computer graphics:** Types of computer graphics, Graphic Displays- Random scan displays, Raster scan displays, Color CRT, Flat panel displays, Frame buffer and video controller, interactive input and output devices

#### Unit-2

**Line drawing algorithms:** DDA, Bresenham. Circle generating algorithms: Mid point circle generating algorithm, Bresenham circle generating algorithm.

#### Unit-3

**2D Transformations:** Definition of transformation, geometric and coordinate transformation, translation, rotation about origin, scaling, reflection transformations, Matrix representations and homogenous coordinates, Composite transformations.

#### Unit-4

**Polygon Filling:** Convex and concave polygons, scan line algorithm, boundary fill algorithm, flood fill algorithm. Two Dimensional Viewing: Viewing pipeline, Viewing transformations

#### Unit-5

**Clipping:** Line clipping algorithms such as Cohen Sutherland line clipping algorithm, Liang Barsky algorithm, Polygon clipping – Sutherland Hodgeman polygon clipping, Weiler and Atherton polygon clipping, Curve clipping, Text clipping.

#### Unit-6

**Three Dimensional:** 3-D geometric primitives, 3-D Transformation, 3-D viewing, projections, 3-D Clipping.

**Curves and Surfaces:** Quadric surfaces, Spheres, Ellipsoid, Blobby objects.

#### Suggested Readings:

1. Computer Graphics-C Version, Donald Hearn, M. Pauline Baker, Pearson Education, 2007
2. Computer graphics, Schaum's outline, TMH, 2006.
3. Computer Graphics: A Programming Approach, Steven Harrington, TMH, 1984.
4. Computer Graphics Principles and Practice, James D Foley, Pearson education 2004.

**Course Outcomes:**

After completing the course, students will be able to:

1. Have a knowledge and understanding of the structure of an interactive computer graphics system, and the separation of system components.
2. Have a knowledge and understanding of geometrical transformations and 3D viewing.
3. Have a knowledge and understanding of techniques for representing 3D geometrical objects.
4. Have a knowledge and understanding of interaction techniques.
5. Create interactive graphics applications.
6. Use C builds functions or equivalent graphics tools.
7. Perform simple 2D graphics with lines, curves and can implement algorithms to rasterizing simple shapes, fill and clip polygons and have a basic grasp of anti-aliasing techniques.

## CSH 403: E-Commerce

### Teaching Scheme

Lectures: 3 hrs/Week

Tutorials: 1 hr/Week

Credits: 4

### Examination Scheme

Class Test -12Marks

Teachers Assessment - 6Marks

Attendance – 12 Marks

End Semester Exam – 70 marks

**Prerequisite** : - Knowledge of computers.

### Course Objectives:

1. To Identify and apply relevant problem solving methodologies.
2. To Design components, systems and/or processes to meet required specifications for a web presence.
3. To Demonstrate research skills.
4. To Communicate effectively in ways appropriate to the discipline, audience and purpose.
5. To Work as an effective member or leader of diverse teams within a multi-level, multi-disciplinary and multi-cultural setting for the Group Website Research Project.
6. To Appreciate ethical implications of professional practice.

### Detailed Syllabus

#### Unit-1

**Introduction of E-Commerce** : Definition of E- Commerce, Advantages and Disadvantages, Traditional Commerce, Basic Requirements of E-Commerce, Architectural framework, Impact of E-commerce on business, Technology and Prospects, Electronic Commerce framework, Economic potential of Electronic Commerce, Concepts b2b, b2c, c2c, b2g, g2h, g2c.

#### Unit-2

**Electronic Commerce: Network infrastructure**: Local area networks, Ethernet LAN, Wide area networks, Internet, TCP/IP reference model, Domain Name Systems, Internet Industry structure.

#### Unit-3

**Mobile Commerce**: Introduction, Mobile computing Framework, Wireless Application Protocol, WAP Technology, Mobile Information access device, Mobile Computing Applications, Bluetooth, Personal Communication Service [PCS]. Case Studies of leading E-Commerce Companies: FLIPKART, AMAZON, EBAY.

#### Unit-4

**Electronic Payments**: E-Payment System, Digital Tokens, Smart card, credit card, E-Checks, Credit/Debit card based EPS, online Banking. Payment Gateway, the SET Protocol, Certificate. EDI Application in Business, EDI S/W Implement, E- Commerce Law, Forms of Agreement, Govt. policies and Agenda.

#### Unit-5

**Web Security**: Security Issues on Web, Importance of Firewall, Components of Firewall, and Transaction security, Client Server Network Security, Firewall and Network Security, Limitation of Firewalls.

**Unit-6**

**Applications in Governance:** EDI in governance; E-government; E-governance applications of the internet; Concept of government-to- business, business-to-government and citizen-to-government; E-governance models; Private sector interface in e-governance.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Faster buying/selling procedure, as well as easy to find products.       |
| 2. Buying/selling 24/7.   |
| 3. More reach to customers, there is no theoretical geographic limitations. |
| 4. Low operational costs and better quality of services.                    |
| 5. No need of physical company set-ups.                                     |
| 6. Easy to start and manage a business.                                     |



## CSH 404: Environment and Ecology

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week Tutorials: 1 hr/Week  Credits: 4	Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

**Prerequisite** : -Study of interrelationships between human activities and the environment.

### Course Objectives :

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds

### Detailed Syllabus

<b>Unit-1</b> Defination, Scope & Importance, Need For Public Awareness- Environment definition, Eco system – Balanced ecosystem, Human activities – Food, Shelter, Economic and social Security.
<b>Unit-2</b> Effects of human activities on environment-Agriculture, Housing, Industry, Mining and Transportation activities, Basics of Environmental Impact Assessment.
<b>Unit-3</b> Natural Resources- Water Resources- Availability and Quality aspects. Water borne diseases, Water induced diseases, Fluoride problem in drinking water. Mineral Resources, Forest Wealth, Material cycles- Carbon, Nitrogen and Sulphur Cycles.
<b>Unit-4</b> Energy – Different types of energy, Electro-magnetic radiation. Conventional and Non-Conventional sources – Hydro Electric, Fossil Fuel based, Nuclear, Solar, Biomass and Bio-gas. Hydrogen as an alternative future source of Energy.
<b>Unit-5</b> Environmental Pollution and their effects. Water pollution, Land pollution. Noise pollution, Public Health aspects, Air Pollution, Solid waste management. Current Environmental Issues of Importance: Population Growth, Climate Change and Global warming- Effects, Urbanization, Automobile pollution.
<b>Unit-6</b> Acid Rain, Ozone Layer depletion, Animal Husbandry. Environmental Protection- Role of Government, Legal aspects, Initiatives by Non-governmental Organizations (NGO), Environmental Education, Women Education.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Describe a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. |
| 2. Critically analyze technical subject matter (written or oral) for scientific merit apply learned environmental knowledge and understanding to solve technical /research problems in new contexts                   |
| 3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.  |
| 4. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.  |
| 5. Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.  |
| 6. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.  |

## CSH 405: Human Values & Ethics

### Teaching Scheme

Lectures: 3 hrs/Week

Tutorials: 1 hr/Week

Credits: 4

### Examination Scheme

Class Test -12Marks

Teachers Assessment - 6Marks

Attendance – 12 Marks

End Semester Exam – 70 marks

**Prerequisite :** - Basic **requirement** for fulfillment of human aspiration.

### Course Objectives:

1. To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.
2. To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession
3. To help students understand the meaning of happiness and prosperity for a human being.
4. To facilitate the students to understand harmony at all the levels of human living, and live accordingly.
5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life.

### Detailed Syllabus

#### Unit-1

Need for values education, Self Exploration, Happiness and Prosperity, Basic Features of a good human, life management.

#### Unit-2

Understanding Harmony in Human Being, Social Health and Concept of Dharma.

#### Unit-3

Understanding harmony in family and relations, Value of trust and relationship management, Role of religion in human life.

#### Unit-4

Understanding Harmony in environment, Role of individuals in nation building, Conscious Business.

#### Unit-5

Comparison of Indian and western view of ethics and values.

**Course Outcomes:**

After completing the course, students will be able to:

- |   |
|---|
| 1. Understand the significance of value inputs in a classroom and start applying them in their life and profession.   |
| 2. Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc. |
| 3. Understand the value of harmonious relationship based on trust and respect in their life and profession.   |
| 4. Understand the role of a human being in ensuring harmony in society and nature.  |
| 5. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.                |