Detail Syllabus(Semester-wise)

SEMESTER-I

Course Code	Course Name
0127001	Mathematical Foundation for Computer Science
0127002	Computer Fundamental and Office Automation
0127003	Programming in "C"
0127004	Digital Electronics & Computer Organization
0127005	Business Communication
0127080	C & Office Lab
0120008	Environmental Studies

Course Name: Mathematical Foundation for Computer Science

Course Code: 0127001 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Matrix Theory Review of fundamentals, equivalent matrices, elementary row (column) operations, rank of a matrix by reducing it to the normal form, rank of a matrix by reducing it to echelon form.

UNIT-II

Mathematical Logic Connectives, Negation, Conjunction, Disjunction, conditional, bi-conditional, statement formulas, Tautology and contradiction, Equivalence formulae Normal forms: Principle conjunctive and disjunctive normal forms, Theory of inferences for statement calculus validating using truth tables.

UNIT-III

Graph Theory: Definition of a Graph, Finite and infinite Graphs, Incidence and Degree of a vertex, Null Graph, Sub graphs, Walks, Paths, Circuits, Connected, Disconnected graphs and Components, Euler Graph, Hamiltonian Path and Hamiltonian Circuits.

UNIT-IV

Trees and Matrix Representation: Properties of Trees, Distance and Centres in a Tree, Rooted and Binary Trees, Spanning Trees and Fundamental Circuits. Cutset, properties of a Cutset. Matrix Representation of graphs: Incidence matrix, Circuit matrix, Fundamental Circuit matrix, Cutset matrix, Path matrix, Adjacency matrix

Planar and Dual Graphs Planar Graphs, Kurtowski's two Graphs, Different Representations of a Planar Graph, Detection of Planarity.

UNIT-V

Directed Graphs: Definition, Some types of Digraphs, Digraphs and Binary relations, Directed paths and Connectedness, Euler Digraphs, Trees with directed edges, Fundamental Circuits in Digraphs, Adjacency Matrix of a Digraph**.**

Referential Books:

- Engineering Mathematics by H.C. Das, Chand publications.
- Graph theory – Narasingh Deo
- Discrete mathematical Structures by J.P. Trembley and R. Manohar, TMH Publications.
- Discrete Mathematics by Liu.
- BCA, Mathematics Vol-II G.K. Ranganath and B. Soorya Narayana.

Course Name: Computer Fundamental and Office Automation

Course Code: 0127002 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Introduction to Computers

Introduction, Characteristics of Computers, Block diagram of computer. Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers. Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages).Data Organization, Drives, Files, Directories. Types of Memory (Primary And Secondary) RAM, ROM, PROM, EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive) I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems, Introduction to Binary, Octal, Hexadecimal system Conversion, Simple Addition, Subtraction, Multiplication

UNIT-II

Algorithm and Flowcharts

Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples, Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples

UNIT-III

Operating System and Services in O.S.

DOS History, Files and Directories, Internal and External Commands, Batch Files, Types of Operative System.

UNIT-IV

Windows Operating Environment

Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.

UNIT-V

Editors and Word Processors

Basic Concepts, Examples: MS-Word, Introduction to desktop publishing.

UNIT-VI

Spreadsheets and Database packages

Purpose, usage, command, MS-Excel, Creation of files in MS-Access, Switching between application, MS-PowerPoint.

Referential Books:

- Fundamentals of computers-By P.K.Sinha.
- Fundamentals of computers-By V.Rajaraman B.P.B Publications
- M.S-Office 2000 – By Steve Sagman

Course Name: Programming in "C"

Course Code: 0127003 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Introduction to 'C' Language History, Structures of 'C' Programming, Function as building blocks.

Language Fundamentals Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, and Comments.

UNIT-II

Operators: Types of operators, Precedence and Associativity, Expression, Statement and types of statements

Build in Operators and function Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files, Preprocessor directives: #include, #define.

UNIT-III

Control structures : Decision making structures: If, If-else, Nested If-else, Switch; Loop Control structures: While, Do-while, for, Nested for loop; other statements: break, continue, goto, exit

UNIT-IV

Simple Arithmetic Problems

Addition / Multiplication of integers, Determining if a number is +ve / -ve / even / odd, Maximum of 2 numbers, 3 numbers, Sum of first n numbers, given n numbers, Integer division, Digit reversing, Table generation for n, ab, Factorial, sine series, cosine series, nC_r , Pascal Triangle, Prime number, Factors of a number, Other problems such as Perfect number, GCD numbers etc (Write algorithms and draw flowchart), Swapping

UNIT-V

Functions

Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variable, Storage classes, Recursion.

Reference Books:

- Let us C-Yashwant Kanetkar
- Programming in C-Balguruswamy
- The C programming Lang., Pearson Ecl - Dennis Ritchie

Course Name: Digital electronics and Computer Organization

Course Code: 0127004 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Logic gates and circuit

Gates (OR, AND, NOR, NAND, XOR & XNOR); Demogran's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Map).

UNIT-II

Combinational Building Blocks: Multiplexes; Decoder; Encoder; Adder and Subtracter.

UNIT-III

Memories

ROMs, PROMs, EPROMs, RAMs, Hard Disk, Floppy Disk and CD-ROM.

UNIT-IV

Sequential Building Blocks

Flip-Flop (RS, D, JK, Master-slave & & T flip-flops); Registers & Shift registers; Counters; Synchronous and Asynchronous Designing method.

UNIT-V

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

Referential Books:

- Digital Logic and Computer design (PHI) 1998 : M.M. Mano
- Computer Architecture (PHI) 1998 : M.M. Mano
- Digital Electronics (TMH) 1998 : Malvino and Leach
- Computer Organization and Architecture : William Stallings

Course Name: Business Communication

Course Code: 0127005 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Means of Communication:

Meaning and Definition, Process, Functions, Objectives, Importance, Essentials of good communication, Communication barriers, 7C's of Communication

UNIT-II

Oral Communication:

Meaning, nature and scope, Principle of effective oral communication, Techniques of effective speech, Media of oral communication (Face -to-face conversation, Teleconferences, Press Conference, Demonstration, Radio Recording, Dictaphone, Meetings, Rumour, Demonstration and Dramatisation, Public address system, Grapevine, Group Discussion, Oral report, Closed circuit TV). The art of listening, Principles of good listening.

UNIT-III

Written Communication

Purpose of writing, Clarity in Writing, Principle of Effective writing, Writing Techniques, Electronic Writing Process.

UNIT-IV

Business Letters & Reports:

Need and functions of business letters – Planning & layout of business letter – Kinds of business letters – Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports.

UNIT-V

Drafting of business letters:

Enquiries and replies, Placing and fulfilling orders, Complaints and follow-up Sales letters, Circular letters Application for employment and resume

UNIT-VI

Information Technology for Communication:

Word Processor, Telex, Facsimile(Fax), E-mail, Voice mail, Internet, Multimedia, Teleconferencing, Mobile Phone Conversation, Video Conferencing, SMS, Telephone Answering Machine, Advantages and limitations of these types. Group Discussion, Mock Interview, Decision Making in a Group

Referential Books:

- Essentials of Business Communication, Rajendra Pal & J.S Korlahalli.
- Business Correspondence and Report Writing. R.C.Sharma & Krishna Mohan
- Communication Skill, R Dutta Roy & K.K.Dhir

Syllabus of Value Added Course in Environmental Studies for UG programmes

Course Title: Environmental Studies Credits-2

Max Marks: 100 Max Marks:100 Marks. Duration:2 Hrs

Learning objectives: This course attempts to create pro-environment attitude and a behavioral pattern in student community and society that attaches importance and priority to create sustainable life style and awareness on various environmental issues.

Learning outcomes: This course is expected to inculcate a critical thinking on various dimensions of environment through knowledge, skill, critical thinking and problem-solving

Unit 1: Understanding the Environment

1.1. Environment: concept, importance and components

1.2. Ecosystem: Concept and structure of Ecosystem

1.3 Functions of Ecosystem: Food chain, Food Web, Ecological Pyramids and Energy Flow

1.4. Ecosystem services: (Provisioning, regulating and cultural)

Unit 2: Natural resources and Environmental Pollution

2.1. Natural resources: Renewable and non-renewable (Global status, distribution and production)

2.2. Management of natural resources: Individual, community and government managed

2.3. Air, water and soil pollution: Causes, consequences and control

2.4. Solid waste management: Collection, segregation, transportation and disposal; 3R's

UNIT 3: Biodiversity and Issues in Environment

3.1 Concept of Biodiversity - levels, values and hot spots of Biodiversity

3.2 Threats to biodiversity and conservation of Biodiversity

3.3 Climate change, causes and consequences

3.4 Concept and objectives of Environmental Education, Environmental Ethics

UNIT-IV Introduction to Environment

4.1. Introduction to Environment, components of Environment and need of Environmental Education

4.2. Environmental Pollution-Types and effects on human beings and Environment

4.3. Human Population explosion and exploitation of Natural resources

UNIT V- Global Environmental issues

5.1. Global Warming and Climate Change, Ozone Depletion and Acid Rain.

5.2. Conventional and non-conventional Energy resources

5.3. Global Biodiversity loss and Species Extinction

Unit VI: Environmental law and policy

6.1 Constitutional provisions for environmental protection (article 21, 48A, 51A),

Environment Protection Act, 1986

6.2 The National Green Tribunal Act, 2010

6.3 National Environment Policy-2006

Unit VII: Environmental Protocols and Movements

7.1 Earth Summit and role of IPCC in Climate Change Monitoring

7.2 Kyoto Protocol and Montreal Protocol

7.3 Green Belt Movement and Chipko Movement

1. Suggested Reading:

1. Asthana, D. K. Text Book of Environmental Studies. S. Chand Publishing.
2. Basu, M., Xavier, S., Fundamentals Of Environmental Studies, Cambridge University Press, Basu, R. N. (Ed.) Environment. University of Calcutta, Kolkata.
3. Bharucha, E., Textbook of Environmental Studies for Undergraduate Courses. Universities Press.
4. Miller T.O. Jr., Environmental Science, Wadsworth Publishing Co. Wagner K.D. Environmental Management. W.B. Saunders Co. Philadelphia, USA
5. Conover, M. 2001 Resolving Human Wildlife Conflict, CRP Press.
6. Dickman, A.J.2010.Complexities of Conflict: the importance of considering social factors for effectively resolving human-wildlife conflict, Animal Conservation 13:458-466.
7. Thangavel, P. & Sridevi, G.2015.Environmental Sustainability: Role of Geen Technologies. Springer Publications.
8. Shastri, S.C. 2015, Environmental Law, Eastern Book Company.
9. Rao, M.N. &Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt.Ltd.
10. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley &Sons.
11. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi1992.
12. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
13. Latifi, N.R., Akhter, S. 2022. Environmental Sciences, Wisdom Press.
14. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
15. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley &Sons.

SCHEME OF EXAMINATION

The paper shall consist of 100 objective question of 100 marks. There are VII units in the syllabus paper setter have to take at least 10 question from each unit.