BCA 101 (Introduction to Computer and IT)

Introduction

What is computer? Analog and Digital Computers. Characteristics of computers. Generations of computers and their features. Classification of computers: Micro Computers, Mini Computer, Mainframe and Super Computer

Computer Organization

CPU: ALU, Control Unit, Primary Storage Unit, RAM ROM. Cache Registers, Bus: Control Bus, Address Bus, Data Bus. Secondary Memory: Magnetic Tape Magnetic Disks: Floppy and hard disk. Optical Disks.

Input Devices

Punched Cards and Card Readers, Keyboards, Mouse, Joystick, Touch Screen

Output Devices

Hard/Soft copy, Printer: Dot-matrix printer, Daisy wheel, Line, Ink-Jet, Laser Printers.

Number Systems

Decimal, octal, binary and hexadecimal. Conversion from one number system to another. Addition and subtraction of numbers in these systems, fixed and floating point arithmetic

Binary Codes

BCD, EBCDIC, ASCII, Excess-3, Gray Code

Introduction to operating systems

What is an operating system? Functions of operating system. , Batch OS, Multiprogramming, Time Sharing.

Introduction to DOS

Date Time, Version, DIR, CHKDSK, MD, CD, RD, PATH, CLS, COPY CON, COPY, PRINT, RENAME, MOVE, DEL, UNDELETE, FORMAT and DISKCOPY commands. Introduction to Windows: Logging on to Windows. Starting and Quitting a program Opening a document. Getting Help, Finding Files and Folders. Changing System Settings, Shutting down Windows, Organizing files and folders.

Elements of IT

Multimedia, Characteristics of multimedia systems, Types of media, Internet: Information Super Highway, Internet Address. Tools: ftp, gopher, Email, Telnet, Usenet. Intranet: Definition.

Introduction to Intelligent Systems: Expert Systems, Characteristics of expert system, Application areas, Benefits and Limitations.

System Development Life Cycle: Waterfall model, prototyping, RAD.

Recommended Books:

- Fundamentals of Information Technology For BCA- S.Jaiswal, Galgotia
- Introduction to Information Technology, ITL Education Solutions Limited, Pearson
- Fundamentals of Computers- Rajaraman, PHI

BCA 102 (Programming in C)

Programming Fundamentals, algorithm development, techniques of problem solving, flowcharting, stepwise refinement; Programming in C including features of 'C', C tokens, data type, operators, expression, Branching Constructs: if-else, switch, conditional operator & goto statements; looping Constructs: white, do-while, for and Jumping statements; Arrays, string processing, Functions: categories of functions, recursion; Pointers: operations on pointers, pointers & structures; Structures and Unions; File Management: Defining & opening a file, closing a file, input operations. Development of efficient programs; Debugging, verification and testing of programs.

BCA 103 (Mathematics 1)

Differentiation and partial differentiation, derivative of sum, dot product and cross product of two vectors, gradient, divergence and curl; System of circles, standard equations and properties of parabola and Ellipse; General equation of second degree in two variables, tracing of conic sections, sphere; Successive differentiation, libneitz theorem, partial differentiation, curvature, asymptotes, singular points, concavity, points of inflexion and tracing of Cartesian curve, Differential equation of first order; Matrix Algebra including rank, inverse, linear system of equation, Eigen value & Caley Hamilton Theorem; team working and management.

BCA 104 (Organizational Behavior)

Psychological dimensions and relevance in the emerging society; learning: styles and principles; Skinner, Thorndike and Piaget theories; Conditions of learning; Organizational behavior; essential attributes; Memory: Short term and long term; Efficient and effective ways in respect of thinking, problem solving and decision making; Stress management; models of personality, factors and desirable features of a healthy personality; Basic Needs and their hierarchy: Mallow model and self actualizing personalities.

BCA 105 (Communication Skills)

English Language

Review of English grammar; Written and Spoken language; Common Errors in language; Punctuation (purpose, role, importance and use); Effective use of dictionary, thesaurus, encyclopedia, OED; Figures of speech;

Language Skills (listening, Speaking, Reading, Writing); Meaning what you mean;

Listening: Effective and efficient listening in various situations (discussions, lectures, news, seminars, speech, telephone calls etc);

Speaking: Phonetics, intonation, accent, usage; strategies for a good rhetoric;

Reading: Purpose; Comprehension; Tactics and strategies for good reading:

Writing: Guidelines for good writing; various writing styles (General and technical writing styles):

Communication Skills

Communication (purpose, role importance, elements); Effective and efficient communication; role of content, context and language; Spoken and written communication Presentation and delivery; Role of speaker and audience; Style body language;

Planning, organization, presentation, participation, conduction and feedback of discussions, meeting, seminars etc; Effective and efficient presentation and discussion skills;

Discussion and presentation skills of conferences meeting, seminars ; General and Technical documents (correspondence applications, letter, resumes, CV), drafts, essays, memos; minutes, notes, proposals, précis, reports, summary, synopsis, references, table of contents, acknowledgements, prologue, epilogue, revision; Use of Audio-Visual Aids: OHP, Slides, Charts, Computers etc.

CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES FOR UNDER **GRADUATE COURSES OF ALL BRANCHES OF HIGHER EDUCATION**

Unit 1: The multidisciplinary nature of environmental studies

Definition, scope and importance

(2 Lectures)

Need for public awareness

Unit 2: **Natural Resources: Renewable and non-renewable resources:**

Natural resources and associated problems.

- a. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extracting, mining, dams and their effects on forests and tribal people.
- b. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams,-benefits and problems.
- c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- d. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- e. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
- f. Land resources: Land as a resource, land degradation man induced landslides, soil erosion and desertification.
- \geq Role of an individual in conservation of natural resources.
- \triangleright Equitable use of resources for sustainable lifestyles.

(8 Lectures)

Unit 3: Ecosystems

- Concept of an ecosystem \succ
- \triangleright Structure and function of an ecosystem
- \triangleright Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- ≻ Food chains, food webs and ecological pyramids
- \triangleright Introduction, types, characteristic features, structure and function of the following ecosystem:
 - a. Forest ecosystem
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

(8 Lectures)

Unit 4: Biodiversity and its conservation

- Introduction-Definition: genetic, species and ecosystem diversity \geq
- Biogeographical classification of India \triangleright
- \triangleright Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values.
- Biodiversity at global, national and loval levels. \triangleright
- India as a mega-diversity nation
- Hot-spots of biodiversity
- AAAA Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India.
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit 5: Environmental Studies

Definition

- \succ Causes, effects and control measures of:
 - a. Air pollution
 - b. Water pollution
 - c. Soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - f. Thermal pollution
 - g. Nuclear pollution
- Soil waste management: Causes, effects and control measures of urban and industrial \geq wastes.
- Role of an individual in prevention of pollution \geq
- \triangleright Pollution case studies
- \triangleright Disaster management: floods, earthquake, cyclone and landslides\

(8 Lectures)

Unit 6: Social Issues and the Environment

- \geq From unsustainable to sustainable development
- \triangleright Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management \triangleright
- ⊳ Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- \triangleright Environmental ethics: issues and possible solutions
- \triangleright Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- \triangleright Wasteland reclamation
- Consumerism and waste products
- **Environmental Protection Act**
- Air (Prevention and Control of Pollution) Act.
- AAAAAA Water (Prevention and Control of Pollution)) Act
- Wildlife Protection Act
- Forest Conservation Act
- ≻ Issues involved in enforcement of environment legislation
- Public awareness

Unit 7: Human Population and the Environment

Population growth, variation among nations \geq

- Population explosion-Family Welfare Programmes \geq
- Environment and human health
- Human Rights
- Value Education
- **HIV/AIDS**
- Women and Child Welfare
- AAAAAA Role of Information Technology in Environment and Human Health
- \triangleright Case Studies.

(6 Lectures)

Unit 8: Field Work

- \geq Visit a local to document environmental to area assetsriver/forest/grassland/hill/mountain.
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural \succ
- \triangleright Study of common plants, insects, birds.
- \triangleright Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

SIX MONTHS COMPULSORY CORE MODULE COURSE IN ENVIRONMENTAL **STUDIES FOR UNDERGRAUTES**

Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes classroom teaching and fieldwork. The syllabus is divided into eight units covering 50 lectures. The first seven unit will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit eight is based on filed activities which will be covered in five lectures hours and would provide students first hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environment concerns. This moves out of the scope of the text book mode of teaching into the realm of real learning in the filed, where the teacher merely acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Filed studies are as essential as class work and form an irreplaceable synergistic tool in the entire learning process.

Course material provided by UGC for classroom teaching and field activities be utilized.

The universities/colleges can also draw upon expertise of outside resource persons for teaching purpose.

Environmental Core Module shall be integrated onto the teaching programmes of all undergraduate courses.

The duration of the course will be 50 lectures. The exam will be conducted Annual System: along with the Annual Examination.

Semester System: The Environment of the 50 lectures will be conducted in the second semester and the examinations shall be conducted at the end of the second semester.

Credit System: The core course will be awarded 4 credits.

Exam Pattern: In case of awarding the marks, the question paper should carry 100 marks. The structure of the question paper being:

Part-A, Short answer pattern-25 marks

Part-B, Essay type with inbuilt choice-50 marks

Part-C, Field work-25 marks