Detailed Syllabus

UNIT – I
Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance
- Sustainability: Stockholm and Rio Summit—Global Environmental Challenges:
  Global warming and climate change, Carbon Credits, acid rains, ozone layer
depletion, population growth and explosion, effects. Role of information Technology
in Environment and human health. Ecosystems: Concept of an ecosystem. -
Structure and function of an ecosystem. - Producers, consumers and decomposers.
- Energy flow in the ecosystem - Ecological succession. - Food chains, food webs
and ecological pyramids. - Introduction, types, characteristic features, structure and
function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic
ecosystems.

UNIT – II
Natural Resources: Natural resources and associated problems Forest resources –
Use and over – exploitation, deforestation – Timber extraction – Mining, dams and
other effects on forest and tribal people Water resources – Use and over utilization of
surface and ground water – Floods, drought, conflicts over water, dams – benefits
and problems Mineral resources: Use and exploitation, environmental effects of
extracting and using mineral resources, Sustainable mining of Granite, Literate,
Coal, Sea and River sands. Food resources: World food problems, changes caused
by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide
problems, water logging, salinity Energy resources: Growing energy needs,
renewable and non-renewable energy sources use of alternate energy sources Vs
Oil and Natural Gas Extraction. Land resources: Land as a resource, land
degradation, Wasteland reclamation, man induced landslides, soil erosion and
desertification. Role of an individual in conservation of natural resources. Equitable
use of resources for sustainable lifestyles.

UNIT – III
Biodiversity and its conservation: Definition: genetic, species and ecosystem
diversity- classification - Value of biodiversity: consumptive use, productive use,
socialBiodiversity at national and local levels. India as a mega-diversity nation - Hot-
spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts -
Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.
UNIT - IV

Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT - V


Text Books:

1. Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers, Vijayawada

References:

2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi
Detailed Syllabus

UNIT I


UNIT 2


UNIT 3


UNIT 4


UNIT 5


Text Books:


Reference Books:

1. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press
I Year - II Semester
Engineering Physics

Detailed Syllabus

UNIT 1
Fiber Optics: Principle of Optical fiber – Acceptance angle and acceptance cone – Numerical aperture – V-number – Types of optical fibers (Material, Refractive index and mode) – Photonic crystal fibers – Fiber optic communication – Fiber optic sensors

UNIT 2
Thermodynamics: Heat, Specific heat, latent heat, conduction, convection, radiation, laws of thermodynamics
Thermodynamics in Indoor Air: Understanding temperature, humidity, psychrometric, laws of thermodynamics to design comfortable indoor environment for houses, offices. Usage of Instruments: Temperature and humidity sensors, IR thermometers, thermal imagers, anemometer. Purpose of Insulation; Types and Application; Calculation of Insulation Thickness; Economic Thickness of Insulation(ETI); Simplified Formula for Heat Loss Calculation

UNIT 3

UNIT 4
Principles of Measurements and Instruments: Understanding types of instruments, Characteristics (Range, Resolution, Sensitivity, Accuracy, Uncertainty, Response time, Repeatability, Hysteresis, Linearity, Reproducibility, Threshold, Precision, Operating environment), Calibration (primary, secondary, field calibration, Calibration traceability)
Sources of errors and estimating errors – Incomplete definition of measurement, Failure for account for factor, Environmental factors, failure to calibrate, Physical variations, parallax errors, Errors when reading scales, Errors of digital instruments.
Cause and Effect: Precooling of air in Air conditioning systems, Decrease in lumen output of a lamp, Decrease in efficacy of a lamp, Decrease in Efficiency of solar panels, Error in rainfall data installed in remote areas, Not maintaining optimum level of chlorine content in water

UNIT 5

Text books:

2. Measurement and Instrumentation Principles - Morris, Alan S
3. Measurement of systems - Application and design - Earnest O. Doeblin
I Year - II Semester

Circuit Theory

Detailed Syllabus

UNIT - I

INTRODUCTION OF CIRCUIT ELEMENTS:

Basic definition of the unit of Charge, Voltage, Current, Power and Energy, Circuit concept, Active and Passive circuit elements; Ideal, Practical and dependent sources and their V-I characteristics, Source transformation, Voltage and Current division; V-I characteristics of Passive elements and their series / parallel combination; Star Delta transformation, Energy stored in Inductors and Capacitors Kirchhoff's Voltage law and Kirchhoff's Current law. [Text Book 2]

GRAPH THEORY:

Introduction to Graph Theory, Tree, Branch, Link, Cutset and loop matrices, relationship among various matrices and parameters, Mesh and Nodal Analysis. [Text Book 3]

UNIT - II

INTRODUCTION TO ALTERNATING CURRENTS AND VOLTAGES:

Instantaneous, Peak, Average and RMS values of various waveforms; Crest factor, Form factor; Concept of phase and phase difference in sinusoidal waveforms; Phase relation in pure resistor, Inductor and capacitor; Impedance diagram, phasor diagram, series and parallel circuits, compound Circuits. [Text Book 3]

POWER AND POWER FACTOR

Computation of active, reactive and complex powers; power factor. [Text Book 3]

UNIT - III

NETWORK THEOREMS:

Superposition theorem, Thevenin's and Norton's theorems, Reciprocity, Compensation, Maximum power transfer theorems, Tellegen's and Millman's theorems, Application of theorems to DC circuits, Application of network theorems to AC circuits. [Text Book 1]

UNIT - IV

RESONANCE: Series resonance, Impedance and phase angle, voltages and currents, bandwidth and Q factor and its effect on bandwidth, magnification, parallel resonance, resonant frequency, variation of impedance with frequency, Q factor, magnification, reactance curves in parallel resonance. [Text Book 3]
UNIT – V


Laplace Transforms of typical signals, periodic functions, Inverse transforms, Initial and final value theorems, Application of Laplace transforms in circuit analysis.

TEXT BOOKS:

REFERENCE BOOKS:
I Year - II Semester

Data Structures and Algorithms

Detailed Syllabus

UNIT 1
Asymptotic Notations: Big-oh, Big-omega, Theta, Little-oh, Little-omega notations, Properties of Asymptotic Notations
Analysis of Algorithms: RAM Model, Analysis of Iterative and Recursive Algorithms Abstract Data Types (ADTs), Implementation and Applications of Stacks, Operations and Applications of Queues

UNIT 2

UNIT 3
Introduction to Trees, Implementation of Trees, Binary Trees, Tree Traversals with an Application, Binary Search Trees (BSTs), Query and Update Operations on BSTs, AVL Trees, Rotations, Search and Update Operations on Balanced BSTs, Splay Trees, B-trees

UNIT 4
Hashing: Implementation of Dictionaries, Hash Function, Collisions in Hashing, Separate Chaining, Open Addressing, Analysis of Search Operations
Priority Queues: Priority Queue ADT, Binary Heap Implementation and Applications of Priority Queues

UNIT 5
Sorting Algorithms: Stability and In Place Properties, Insertion Sort, Merge Sort, Quick Sort, Heap Sort, Lower Bound for Comparison Based Sorting Algorithms, Linear Sorting Algorithms: Counting Sort, Radix Sort, Bucket Sort

Graph Algorithms: Graphs and their Representations, Graph Traversal Techniques: Breadth First Search (BFS) and Depth First Search (DFS), Applications of BFS and DFS, Minimum Spanning Trees (MST), Prim's and Kruskal's algorithms for MST, Connected Components, Dijkstra's Algorithm for Single Source Shortest Paths, Warshall's Algorithm for finding Transitive Closure of a Graph, Floydd's Algorithm for All-Pairs Shortest Paths Problem

Text Books:
Detailed Syllabus

UNIT 1
Data and Number systems - Binary representations, codes and conversions - BCD, Octal, Hexadecimal, ASCII, Gray, signed number representation with 1’s and 2’s complement methods. Binary arithmetic.

UNIT 2

UNIT 3

UNIT 4
Finite State Machines - State machine, state variables, state tables and state transition diagrams. Moore machine and Mealy machine - concept, applications and examples. Finite state machine - minimization

UNIT 5
CPLDs and FPGAs - Architecture and applications
VHDL - Introduction to VHDL, Behavioural model, Structural Model, Data flow model, Functions and procedures, Tools, Creating logics in VHDL

Text Books:
1. Switching Theory and Finite state Automata - Z Kohavi
3. VHDL for Programmable Logic - Skahill Kevin, Addison Wesley
I Year - II Semester
Engineering Physics Lab

1. Estimate the heat load for office and justify the estimate by measuring the temperature and Relative humidity. Represent the data using control charts with reference to standard working conditions.

2. Controlling water temperature by controlling the voltage levels in a water heater from the feedback of temperature sensor.

3. Measure the light intensity at various locations and heights and estimate if intensity levels are sufficient enough as per Standards.

4. Identify the leakages of cool air from the windows using Thermal Imager and estimate the amount of heat loss.

5. Measure the sound levels in seminar hall at various locations using decibel meter and estimate if intensity levels are sufficient enough as per Standards.


7. Test the reliability of various materials (metals/non-metals) using salt solutions.
I Year - II Semester

Data Structures Lab

1. Write a program to implement stack using arrays.
2. Write a program to evaluate a given postfix expression using stacks.
3. Write a program to convert a given infix expression to postfix form using stacks.
4. Write a program to implement circular queue using arrays.
5. Write a program to implement double ended queue (deque) using arrays.
6. Write a program to implement a stack using two queues such that the push operation runs in constant time and the pop operation runs in linear time.
7. Write a program to implement a stack using two queues such that the push operation runs in linear time and the pop operation runs in constant time.
8. Write a program to implement a queue using two stacks such that the enqueue operation runs in constant time and the dequeue operation runs in linear time.
9. Write a program to implement a queue using two stacks such that the enqueue operation runs in linear time and the dequeue operation runs in constant time.
10. Write programs to implement the following data structures:
    (a) Single linked list
    (b) Double linked list
11. Write a program to implement a stack using a linked list such that the push and pop operations of stack still take O(1) time.
12. Write a program to implement a queue using a linked list such that the enqueue and dequeue operations of queue take O(1) time.
13. Write a program to create a binary search tree (BST) by considering the keys in given order and perform the following operations on it.
    (a) Minimum key
    (b) Maximum key
    (c) Search for a given key
    (d) Find predecessor of a node
    (e) Find successor of a node
    (f) delete a node with given key
14. Write a program to construct an AVL tree for the given set of keys. Also write function for deleting a key from the given AVL tree.
15. Write a program to implement hashing with (a) Separate Chaining and (b) Open addressing methods.

16. Implement the following sorting algorithms:
(a) Insertion sort
(b) Merge sort
(c) Quick sort
(d) Heap sort

17. Write programs for implementation of graph traversals by applying: (a) BFS (b) DFS

18. Write programs to find out a minimum spanning tree of a simple connected undirected graph by applying: (a) Prim's algorithm (b) Kruskal's algorithm

19. Write a program to implement Dijkstra's algorithm for solving single source shortest path problem using priority queue.

20. Write a program to implement Floyd-Warshall algorithm for solving all pairs shortest path problem.
I Year - II Semester
Digital & Basic Electronics Lab

1. Design a logic circuit for Binary to Gray and Gray to Binary conversion

2. Universal Gates
   a) Realization of AND, OR, NOT, EX-OR, EX-NOR and NOR by using NAND
   b) Realization of AND, OR, NOT, EX-OR, EX-NOR and NAND by using NOR
   c) SOP and POS Boolean expressions - resolving with minimum number of gates

3. Counter design - BCD, Ring, Ripple and Johnson counter
   a) Synchronous
   b) Asynchronous

4. Minimization using necessary techniques
   a) Resolve and implement 4/5 variable equation (equations in SOP and POS form)
   b) Counter design for the following sequence in Synchronous and Asynchronous modes
      0010, 0100, 0110, 1000, 1010, 1100, 1110, 1111, 0010

5. Design and implement following logics in CPLD
   a) Priority Encoder
   b) Interrupt controller
   c) Programmable Peripheral interface
   d) Programmable interval Timer
   e) Parallel to Serial and Serial to Parallel conversion
   f) Clock Divider with any given number (user defined)
   g) Create 8X8 RAM
   h) Tele-phonic Key board scanning with de-bounce checking
   i) Counters
   j) 4-bit shifter