

Course Structure & Syllabus

I BTech (CSE & IT) II Semester

(From the admitted batch of 2017 – 2018 under CBCS Scheme)



**University College of Engineering
Adikavi Nannaya University
Rajamahendravaram – 533 296**

I BTech II Semester CSE & IT wef 2017-18

Sub Code	Subject	Hrs/Week		Max Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
CSEINF201	ENGLISH-II	4	--	25	75	100	3
CSEINF202	MATHEMATICS-II	4	--	25	75	100	4
CSEINF203	DATA STRUCTURES	4	--	25	75	100	4
CSEINF204	CHEMISTRY	4	--	25	75	100	4
CSEINF205	BASICS OF ELECTRONICS	4	--	25	75	100	4
CSEINF206	ENVIRONMENTAL SCIENCES	3	--	25	75	100	--
CSEINF207	ENGINEERING WORKSHOP	--	3	50	50	100	2
CSEINF208	DATA STRUCTURES LAB	--	3	50	50	100	2
CSEINF209	CHEMISTRY LAB	--	3	50	50	100	2
TOTAL		23	9	300	600	900	25

Audit Course: CSEINF206 - Environmental Sciences

CSEINF201: ENGLISH - II

Theory : 4 Hrs/week

Credits : 3

Int. Marks : 25

Ext. Marks : 75

UNIT – I

Listening Skills

- a) The Listening process
- b) Types of listening
- c) Barriers to listening
- d) Effective listening strategies

UNIT – II

Speaking skills

- a) The speaking process
- b) Articulation of English Vowels and Consonants and Phonemic Transcription
- c) Stress, Accent and Intonation
- d) Conversations
- e) Effective Speaking Strategies

UNIT – III

Reading Skills

The Reading Process

- a) Types of Reading
 - i) Extensive Reading, ii) Intensive Reading, iii) Rapid Reading
- b) Skimming
- c) Scanning

UNIT – IV

Writing Skills

- a) Summarizing & Paraphrasing
- b) Precise Writing
- c) Review Writing
- d) Writing Letters & Emails
- e) Writing CVs and Resumes
- f) Technical Writing – Scientific Attitude and Impersonal Style; Plain Statements, Definitions; Description and Explanations (of objects, instruments, Processes, Scientific Principles, etc.)
Interpretation and use of charts, graphs and tables in technical writing.

REFERENCE BOOKS:

1. Hornby, A. S Guide to Patterns and Usage in English. 2nd ed. Oxford: Oxford UP, 1975.
2. Mohan, Krishna & Meera Benarji. Developing Communication Skills.India:Macmillan,2007
3. Oxford Advanced Learner's Dictionary of current English.8th ed. Oxford: Oxford UP, 2010
4. Raman Meenakshi. Technical Communication: Theory and Practice. New Delhi:Oxford UP,2006.
5. Rizvi, M. Ashraf. Effective Technical Communication, Tata McGraw Hill,2005

CSEINF202: MATHEMATICS-II

Theory	: 4 Hrs/week	Credits	: 4
Int. Marks	: 25	Ext. Marks	: 75

UNIT - I

Matrices – I

Rank of a matrix – Echelon Form, Normal Form – Solutions of Linear System of Equations- Consistency of Linear System of Equations – Direct Methods: Gauss Elimination Method, LU Factorization Method – Eigen Values and Eigen Vectors of a Matrix – Cayley – Hamilton Theorem – Inverse and Powers of a Matrix using Cayley – Hamilton Theorem.

Matrices – II

Diagonalization of a Matrix – Quadratic Forms – Reduction of Quadratic Form to Canonical Form – Nature of a Quadratic Form – Complex Matrices: Hermitian and Unitary Matrices and their Properties.

UNIT - II

Laplace Transforms-I

Introduction – Existence Conditions – Transforms of Elementary Functions – Properties of Laplace Transforms – Transforms of Derivatives – Transforms of Integrals – Multiplication by t^n – Division by t – Evaluation of Integrals by Laplace Transforms – Laplace Transforms of Unit Step Function, Unit Impulse Function and Periodic Functions.

Laplace Transforms-II

Inverse Laplace Transform – Convolution Theorem – Applications of Laplace Transforms to Ordinary Differential Equations, Simultaneous Linear Differential Equations with Constant Coefficients.

UNIT - III

Special Functions

Bessel's Equation – Bessel's Functions – Recurrence Formulae for Bessel's Function – Generating Function – Equations Reducible to Bessel's Equation – Orthogonality of Bessel's Functions.

UNIT - IV

Legendre's Differential Equation – General Solution of Legendre Equation – Legendre Polynomials – Rodrigue's Formula – Generating Function, Recurrence Formulae, Orthogonality of Legendre Polynomials.

TEXT BOOK:

1. Scope and Treatment as in "Higher Engineering Mathematics", by Dr. B. S. Grewal, 43rd edition, Khanna Publishers.

REFERENCE BOOKS:

1. Advanced Engineering Mathematics by Erwin Kreyszig.
2. A text book of Engineering Mathematics, by N. P. Bali and Dr. Manish Goyal, Lakshmi Publications.
3. Advanced Engineering Mathematics by H. K. Dass, S. Chand Company.
4. Higher Engineering Mathematics by B. V. Ramana, Tata Mc Graw Hill Company

CSEINF203: DATA STRUCTURES

Theory : 4 Hrs/week

Credits : 4

Int. Marks : 25

Ext. Marks : 75

UNIT – I

Introduction to Data Structures: Review of C Programming, Recursive Definition and Processes, Recursion in C, Simulation of Recursion, Efficiency of Recursion, Abstract Data Types, Meaning and Definition of Data Structures, Arrays.

Stacks: Stack as an Abstract Data Type, Primitive Operations, Implementing Stack Operations using Arrays, Infix, Postfix and Prefix: Definitions, Applications of Stacks; Infix to Postfix Conversion and Postfix Evaluation.

UNIT-II

Queues: Queue as an Abstract Data Type, Sequential Representation, Types of Queues, Operations, Implementation using Arrays.

Linked List: Operations, Implementation of Stacks, Queues using Linked Lists+, Circular Lists: Insertion, Deletion and Concatenation Operations, Doubly Linked Lists, Insertion, Deletion and Concatenation.

UNIT-III

Trees: Binary Trees - Definitions and Operations, Binary Tree Representation: Node Representation, Implicit array Representation, Binary Tree Traversal, Threaded Binary Trees and their Traversal, Trees and their Applications; Tree Searching: Insertion and Deletion of a node from a Binary Search Tree, Efficiency of Binary Search Tree operations.

Graphs and Their Application: Definition of Graphs, Representation of Graphs, Transitive closure, Linked Representation of Graphs, Topological Ordering of nodes, Graph Traversal and Spanning Forests, Undirected Graphs and their Traversals, Applications of Graphs, Minimal Spanning Trees.

UNIT-IV

Searching: Basic Searching Techniques: Dictionary as an Abstract Data Type, Algorithmic Notation, Sequential Searching and its Efficiency, Binary Search and its Efficiency.

Sorting: General Background: Efficiency, Asymptotic Notations, Efficiency of Sorting, Bubble Sort and Quick Sort and their Efficiency, Selection Sorting, Binary Tree Sort, Heap Sort, Insertion Sorts , Shell Sort , Address calculation Sort , Merge and Radix Sorts.

TEXT BOOKS:

1. Data Structures Using C and C++ Yddish Langsam, Moshe J. Augenstein and Aaron M. Tanenbaum, Prentice Hall Of India (2nd Edition)
2. Data Structures, Algorithms and Applications with C++, Sahani Mc-Graw Hill.

REFERENCE BOOKS:

1. Data Structures and Algorithms, 2008,G.A.V.Pai, TMH
2. Classic Data Structures, 2/e, Debasis ,Samanta,PHI,2009
3. Fundamentals of Data Structure in C, 2/e, Horowitz,Sahni, Anderson Freed,University Press.

CSEINF204: CHEMISTRY

Theory : 4 Hrs/week

Credits : 4

Int. Marks : 25

Ext. Marks : 75

UNIT – I

Polymers: Definition – Types of Polymerization (Addition & Condensation) – Mechanisms of Polymerization – Radical and Ionic – Thermodynamics of Polymerization Process.

Plastics: Thermosetting and Thermoplastics – Effect of Polymer Structure on Properties of Cellulose Derivatives – Vinyl Resins – Nylon (6,6), Reinforced Plastics – Conducting Polymers

UNIT - II

Corrosion: Origin and Theory – Types of Corrosion: Chemical and Electrochemical; Factors Effecting Corrosion.

Corrosion Controlling Methods: Protective Coatings: Metallic Coatings, Electroplating and Electroless Plating – Chemical conversion Coatings – Phosphate, Chromate, Organic Coatings – Paints and Special Paints.

UNIT - III

Water Chemistry: Sources of Water – Impurities and their influence of living systems – WHO Limits – Hardness and its Determination – Boiler Troubles and their removal, Break Point Chlorination – Desalination of Sea Water – Reverse Osmosis Method, Electro dialysis.

Building Materials: Portland Cement: Manufacture of Cement – Dry and Wet Process – Chemical Composition of Cement – Setting and Hardening of Cement – Cement Concrete – R.C.C. – Decay of Concrete and Protective Measures – Special Cements.

Refractories: Classification – Properties – Engineering Applications

Ceramics: Classification – Properties – Engineering Applications

UNIT – IV

Fuels and Lubricants

Solid Fuels: Wood and Coal, Ranking of Coal – Analysis (Proximate and Ultimate) Coke Manufacture – Otto Huffmann’s Process – Applications.

Liquid Fuels: Petroleum Refining – Motor Fuels – Petrol and Diesel Oil – Knocking – Octane number – Cetane Number.

Gaseous Fuels: Biogas, LPG and CNG – Characteristics – Applications.

Rocket Fuels: Propellants – Classification – Characteristics

Lubricants: Classification – Mechanism – Properties of Lubricating Oils – Selection of Lubricants for Engineering Applications.

TEXT BOOKS:

1. Engineering Chemistry – PC Jain and M. Jain – Dhanpath Rai and Sons, New Delhi.
2. A Text book of Engineering Chemistry – S. S. Dara – S. Chand & Co. New Delhi.
3. Engineering Chemistry – B. K. Sharma – Krishna Prakashan – Meerut.

REFERENCE BOOKS:

1. S.S. Dara (2013) Text Book of Engineering Chemistry, S.Chand Technical Series.
2. K.Sesha Maheswaramma and Mridula Chugh (2013), Engineering Chemistry, Pearson Pub
3. R.Gopalan, D.Venkatappayya, Sulochana Nagarajan (2011), Text Book of Engineering Chemistry, Vikas Publications.
4. B.Viswanathan and M.Aulice Scibioh (2009), Fuel Cells, Principals and applications, University Press.

CSEINF205: BASICS OF ELECTRONICS

Theory : 4 Hrs/week

Credits : 4

Int. Marks : 25

Ext. Marks : 75

UNIT-I

Introduction to Electronics and Semiconductors: Energy band theory, Conduction in Insulators, Semiconductors and metals, Electron emission from metals, Classification of semiconductors, Carrier concentration in an intrinsic semiconductor, Properties of intrinsic semiconductor, Drift and diffusion currents.

UNIT-II

Semi Conductor Diode: Theory of PN junction diode, Open circuited PN junction, V-I characteristics of a PN diode, Diode current equation, Transition and diffusion capacitances, Break down in PN diode, Applications of PN diodes. Zener diode, Zener regulator, Tunnel diode Schottky diode.

Rectifying circuits: Half wave and full wave rectifiers, Bridge rectifiers, Efficiency, Ripple and regulation of each rectifier, Capacitor filters.

UNIT-III

Bipolar Junction Transistor :- Introduction, construction, Operation of PNP and NPN Transistors – Transistor Circuit configurations- Characteristics of a CE configurations – h parameters, low frequency small signal equivalent circuit of a Transistor.

Transistor Biasing and thermal stabilization: Transistor Biasing, Stabilization, Different methods of transistor biasing – Fixed bias, Collector feedback bias – self bias – Bias compensation.

UNIT-IV

Transistor Amplifiers: CE, CB, CC amplifier configurations –Multistage amplifier – A Two Stage RC coupled amplifier – frequency response curve and bandwidth.

Field Effect Transistors: Junction Field Effect Transistors (JFET) – JFET characteristics, JFET Parameters, Small signal equivalent circuit – MOSFETS – Depletion and Enhancement MOSFETS.

TEXT BOOK:

1. Electronic Device and Circuits by Sanjeev Guptha.

REFERENCE BOOKS:

1. Electronic Device and Circuits Theory by Robert L. Boylested Electronic Device and Circuits by David. A. Bell
2. Electronic Devices and Circuits, by Millman and Halkias
3. Electronic Fundamentals and Applications, by John D. Ryder.

CSEINF206: ENVIRONMENTAL SCIENCES

Theory : 3 Hrs/week

Credits : 0

Int. Marks : 25

Ext. Marks : 75

UNIT - I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, 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. - 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. **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. **Land resources:** Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Individual's role in conservation of natural resources.

UNIT - III

Biodiversity and its conservation:

Definition & classification: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, Biodiversity 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

Social Issues and the Environment: Urban problems related to energy - Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible Solutions. Public awareness.

Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism.

TEXT BOOKS:

1. Environmental Studies by R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
2. A Textbook of Environmental Studies by Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies by P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai.

REFERENCE BOOKS:

1. Environmental Studies by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada.
3. Environmental Studies by Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. Environmental Studies by Piyush Malaviya, Pratibha Singh, Anoop singh: Acme Learning, New Delhi.

CSEINF207: ENGINEERING WORKSHOP

Lab : 3 Hrs/week

Credits : 2

Int. Marks : 50

Ext. Marks : 50

List of Experiments:

1. Carpentry

- 1) T-Lap Joint
- 2) Cross Lap Joint
- 3) Dovetail Joint
- 4) Mortise and Tennon Joint

2. Fitting

- 1) V Fit
- 2) Square Fit
- 3) Half Round Fit
- 4) Dovetail Fit

3. House Wiring

- 1) Parallel / Series Connection of three bulbs
- 2) Stair Case wiring
- 3) Florescent Lamp Fitting
- 4) Measurement of Earth Resistance

4. Tin Smithy

- 1) Taper Tray
- 2) Square Box without lid
- 3) Open Scoop
- 4) Funnel

Note: At least two exercises to be done from each Experiment.

CSEINF208: DATA STRUCTURES LAB

Lab : 3 Hrs/week

Credits : 2

Int. Marks : 50

Ext. Marks : 50

List of Programs:

1. Write a C program for sorting a list using Bubble sort and then apply binary search.
2. Write a C program to implement the operations on stacks.
3. Write a C program to implement the operations on circular queues.
4. Write a C program for evaluating a given postfix expression using stack.
5. Write a C program for converting a given infix expression to postfix form using stack.
6. Write a C program for implementing the operations of a dequeue
7. Write a C program for the representation of polynomials using circular linked list and for the addition of two such polynomials
8. Write a C program for quick sort
9. Write a C program for Merge sort.
10. Write a C program for Heap sort
11. Write a C program to create a binary search tree and for implementing the in order, preorder, Post order traversal using recursion.
12. Write a C program for finding the transitive closure of a digraph
13. Write a C program for finding the shortest path from a given source to any vertex in a digraph using Dijkstra's algorithm
13. Write a C program for finding the Depth First Search of a graph.
14. Write a C program for finding the Breadth First Search of a graph.

REFERENCE BOOKS:

1. Data Structures and Algorithms, 2008,G.A.V.Pai, TMH
2. Classic Data Structures, 2/e, Debasis ,Samanta,PHI,2009
3. Fundamentals of Data Structure in C, 2/e, Horowitz,Sahni, Anderson Freed,University

CSEINF209: CHEMISTRY LAB

Lab : 3 Hrs/week

Credits : 2

Int Marks : 50

Ext Marks : 50

List of Experiments:

1. Determination of Sodium Hydroxide with HCl (Na_2CO_3 Primary Standard)
2. Determination of Fe(II)/Mohr's Salt by Permanganometry
3. Determination of Oxalic Acid by Permanganometry
4. Determination of Hardness of Water sample by EDTA method
5. Determination of Calcium in Portland Cement by Permanganometry
6. Determination of Chromium (VI) by Mohr's Salt Solution

REFERENCE BOOKS:

1. Vogel's Quantitative Chemical Analysis – V – Edition – Longman
2. Experiments in Applied Chemistry (For Engineering Students) – Sinita Rattan – S. K. Kataria & Sons, New Delhi