Course Structure and Syllabus

I BTech (ECE & EIE) 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 ECE & EIE wef 2017-18

Sub Code	Subject	Hrs/Week		Max Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
ECEEIE201	ENGLISH-II	4	--	25	75	100	3
ECEEIE202	MATHEMATICS-II	4	--	25	75	100	4
ECEEIE203	DATA STRUCTURES	4	--	25	75	100	4
ECEEIE204	PHYSICS	4	--	25	75	100	4
ECEEIE205	ENGINEERING DRAWING	2	3	25	75	100	4
ECEEIE206	PROFESSIONAL ETHICS AND MORAL VALUES	3	--	25	75	100	--
ECEEIE207	ENGLISH COMMUNICATION SKILLS LAB	--	3	50	50	100	2
ECEEIE208	DATA STRUCTURES LAB	--	3	50	50	100	2
ECEEIE209	PHYSICS LAB	--	3	50	50	100	2
TOTAL		21	12	300	600	900	25

ECEEIE201: 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.)
- g) 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

ECEEIE202: 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

ECEEIE203: 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.

TEXTBOOKS:
 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.

ECEEIE204: PHYSICS

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

UNIT – I

Thermodynamics
Introduction, Heat and Work, First Law of Thermodynamics and applications, Reversible and Irreversible Process, Carnot Cycle and Efficiency, Second Law of Thermodynamics, Carnot's Theorem, Entropy, Second Law in terms of entropy, Entropy and disorder, Third Law of Thermodynamics (Statement Only).

UNIT – II

Electromagnetism
Concept of Electric Flux, Gauss's Law – Some Applications, Electric Potential and Field Strength, Potential due to Point Charge and Dipole, Magnetic Field – Magnetic Force on Current, Torque on Current Loop, The Biot-Savart's Law, B near a Long Wire, B for a Circular Current Loop, Ampere's Law, B for a Solenoid, Hall Effect, Faraday's Law of induction, Lenz's law, Inductance, L-R Circuit, Induced Magnetic Fields, Displacement Current, Maxwell's Equations (Both differential and integral forms), Magnetic Materials: Classification of Magnetic Materials and properties.

UNIT – III

Optics
Interference: Principles of Super Position – Young's Experiment – Coherence – Inference in thin films, Wedge shaped film, Newton's Rings, Michelson Interferometer and its applications.
Diffraction: Single slit (Qualitative and Quantitative Treatment)
Polarization: Polarization by reflection, refraction and double refraction in uniaxial crystals, Nicol Prism, Quarter and Half wave plate, Circular and elliptical polarization and detection.

UNIT - IV

Lasers: Introduction, spontaneous and stimulated emissions, population inversions, pumping, Ruby Laser, Gas Laser (He-Ne Laser), Semiconductor Laser, Applications of Lasers.
Fiber Optics: Optical Fiber and Total Internal Reflection, Acceptance Angle and cone of a Fiber, Numerical Aperture, Fiber optics in Communications, Optical Parts in Fiber, Application of Optical Fibers.
Ultrasonics: Introduction, Production of Ultrasonics by Magnetostriction and Piezoelectric effects, Ultrasonics and diffraction pattern, Applications of Ultrasonics.

TEXTBOOKS:
1. Engineering Physics by R.K. Gaur and S.L. Gupta
2. Physics by David Halliday and Robert Resnick – Part I and Part II

REFERENCE BOOKS:
1.Engineering Physics by M.N. Avadhanulu& P.G. Kshirasagar; S. Chand & Company Ltd.
2. Modern Engineering Physics by A.S. Vadudeva
3. University Physics by Young and Freedman
4. Nonconventional Energy by Ashok V. Desai

ECEEIE205: ENGINEERING DRAWING

Theory   **: 2+3L Hrs/week**   **Credits**   **: 4**
Int. Marks   **: 25**   **Ext. Marks**   **: 75**

UNIT – I

Introduction: Lines**,** Lettering and Dimensioning.

Polygons: Constructing regular polygons by general methods, inscribing and describing polygons on circles.

Curves: Parabola, Ellipse and Hyperbola by general and special methods, tangents & normal for the curves.

UNIT – II

Scales: Plain scales, diagonal scales and vernier scales

Orthographic Projections: Horizontal plane, vertical plane, profile plane, importance of reference lines, projections of points in various quadrants, projections of lines, lines parallel either two of the reference planes (HP,VP or PP)

UNIT – III

Projections of Straight Lines: Projections of straight lines inclined to both the planes, determination of true lengths, angle of inclination and traces- HT, VT

Projections of Planes: Regular planes perpendicular/parallel to one plane and inclined to the other reference plane; inclined to both the reference planes.

UNIT – IV

Projections of Solids: Projections of Solids – Prisms, Pyramids, Cones and Cylinders with the axis inclined to one of the planes.

Isometric Views: Introduction to Isometric projection, Isometric scale and Isometric view. Isometric views of simple planes. Isometric view of Prisms, Pyramids, cylinder and cone. Isometric view of an object when projections are given.

TEXT BOOK
1. Elementary Engineering Drawing by N.D.Bhatt, Charotar Publishing House.

REFERENCE BOOKS
1. Engineering Drawing by K.L.Narayana & P. Kannaiah, Scitech Publishers
2. Engineering Drawing 2nd Edition– K Venugopal, V. Prabhu Raja, New Age

ECEEIE206: PROFESSIONAL ETHICS AND MORAL VALUES

Theory : 3 Hrs/week   **Credits** : 0
Int. Marks : 25   **Ext. Marks** : 75

UNIT –I
Ethics and Human Values: Understanding Value Education: Need for Value Education, Content of Value Education; Process of Value Education. Self Exploration as the Process for Value Education: Introspection; Process of Self Exploration. Ethics: Ethical Vision and Ethical Decisions Human Values: Classification of Values and Universality of Values .

UNIT – II
Engineering Ethics: Nature of Engineering Ethics, Profession and Professionalism, Professional EthicsCode of Ethics, Sample codes- IEEE, ASCE, ASME and CSI. Engineering as Social Experimentation; Engineering Professionals – Life Skills. Engineers as Managers, Consultants and Leaders; Role of Engineers in promoting ethical climate

UNIT – III
Safety Social Responsibility and Rights: Safety and Risk, Moral Responsibility of Engineers for safety. Case Studies: Bhopal Gas Tragedy, Chernobyl disaster, Fukushima Nuclear disaster. Professional Rights; Gender discrimination, Sexual harassment at work place. Balanced outlook on Law.

UNIT – IV
Global Issues: Globalization and MNCs, Environmental Ethics. Computer Ethics; Cyber crimes. Ethical Living; Concept of Harmony in Life

TEXT BOOKS
1. Govindharajan, M., Natarajan, S. and Senthil Kumar, V.S., Engineering Ethics, Prentice Hall of India, (PHI) Delhi, 2004.
2. Subramaniam, R., Professional Ethics, Oxford University Press, New Delhi, 2013.

REFERENCE BOOKS
1.Charles D, Fleddermann, Engineering Ethics, Pearson/ PHI, New Jersey 2004. (Indian Reprint)
2. Guar, R.R., Sangal, R., and Bagaria, G.P. A Foundation course in Human Values and Professional Ethics, Excel Books, New Delhi, 2010.

ECEEIE207: ENGLISH COMMUNICATIONS SKILLS LAB

Lab	**: 3 Hrs/week**	**Credits**	**: 2**
Int. Marks	**: 50**	**Ext. Marks**	**: 50**

Listening Skills

Listing to sounds, stress and intonation
Listening for Information

Speaking Skills

Presentation Techniques

Presentation to Oneself
Group Discussions
Interview Skills

Students have to prepare and present an assignment through PPT in the communication Skills laboratory.

ECEEIE208: 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

ECEEIE209: PHYSICS LAB

Lab	**: 3 Hrs/week**	**Credits**	**: 2**
Int. Marks	**: 50**	**Ext. Marks**	**: 50**

List of Experiments

1. Melde's Experiment – Determination of frequency of an electrically maintained turing fork.
2. Newton's Rings – Determination of Radius of Curvature of a Convex Lens
3. Diffracting Grating – Determination of wavelengths of lines of mercury spectrum using spectrometer.
4. Wedge Method – Determination of thickness of paper by forming parallel interface fringes.
5. Determination of refractive index of Ordinary (μ_0) and Extraordinary (μ_e) rays
6. Variation of Magnetic field along the axis of current carrying circular coil Stewart and Gee's apparatus.
7. Lee's Method – Determination of coefficient of thermal conductivity of a abad conductor.
8. Determination of Magnetic Moment and Horizontal (M & H) component of Earth's Magnetic field.
9. Determination of band gap of Semi Conductor.
10. Compound Pendulum
11. Sonometer.

REFERENCE BOOKS:
1.Engineering Physics by M.N. Avadhanulu& P.G. Kshirasagar; S. Chand & Company Ltd.
2. Modern Engineering Physics by A.S. Vadudeva
3. University Physics by Young and Freedman
4. Nonconventional Energy by Ashok V. Desai