

Course Structure and Syllabus

I BTech (ECE & EIE) I Semester

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



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

I BTech I Semester ECE & EIE wef 2017-18

Sub Code	Subject	Hrs/Week		Max Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
ECEEIE101	ENGLISH-I	4	--	25	75	100	3
ECEEIE102	MATHEMATICS-I	4	--	25	75	100	4
ECEEIE103	COMPUTER PROGRAMMING AND NUMERICAL METHODS	4	--	25	75	100	4
ECEEIE104	CHEMISTRY	4	--	25	75	100	4
ECEEIE105	BASICS OF ELECTRONICS	4	--	25	75	100	4
ECEEIE106	ENVIRONMENTAL SCIENCES	3	--	25	75	100	--
ECEEIE107	ENGINEERING WORKSHOP	--	3	50	50	100	2
ECEEIE108	COMPUTER PROGRAMMING AND NUMERICAL METHODS LAB	--	3	50	50	100	2
ECEEIE109	CHEMISTRY LAB	--	3	50	50	100	2
TOTAL		23	9	300	600	900	25

Audit Course: ECEEIE106 - Environmental Sciences

ECEEIE101: ENGLISH-I

Theory : 4 Hrs/week
Int. Marks : 25

Credits : 3
Ext. Marks : 75

UNIT-I

Grammar

Clause Analysis
Tenses
Active and Passive Voice
Reported Speech
Use of connectives in complex and Compound sentences
Question Tags

UNIT – II

Vocabulary

Word Formations (by adding suffixes and prefixes);
Technical Word Formation; Synonyms, Antonyms, Homophones, and Homonyms;
One Word Substitution; Misappropriations; Indianisms; Redundant words; Collocations
Idioms & Phrasal Verbs

UNIT - III

Reading Comprehension

The Last Leaf-O.Henry
Ozymandias- Percy Bysshe Shelley

UNIT - IV

Writing Devices

Expansion of an Idea Explain the idea ‘Make hay while the sun shines’
Paragraph Writing
Essay Writing

REFERENCE BOOKS:

1. Krishna Swamy N., “Modern English Grammar”, MacMillan India Ltd.
2. Oxford Advanced Learner’s Dictionary of Current English.8th ed. Oxford: Oxford UP,2010
3. Raman, Meenakshi. Technical Communication: Theory and Practice. New Delhi:Oxford UP,2006
4. RIZVI, M. Ashraf. Effective Technical Communication. Tata MCGraw Hill,2005.
5. Mirror Images- A Text book fo general English, Orient Blackswan

ECEIE102: MATHEMATICS – I

Theory : 4 Hrs/week
Int Marks : 25

Credits : 4
Ext Marks : 75

UNIT – I

Partial Differentiation

Functions of two or more variables – Partial derivatives – Homogeneous Functions – Euler’s Theorem – Total Derivative – Change of Variables – Jacobians – Geometrical Interpretation: Tangent Plane and Normal to a Surface.

UNIT – II

Application of Partial Differentiation

Taylor’s Theorem for functions of two variables – Errors and Approximations – Total Differential – Maxima and Minima of functions of two variables – Lagrange’s Method of Undetermined Multipliers – Differentiation Under the Integral Sign – Liebnitz’s Rules.

UNIT – III

Ordinary Differential Equations of First Order and First Degree

Formation of the ordinary differential equations (ODEs) – Solution of an ordinary differential equation – Equations of the First Order and First Degree – Linear Differential Equation – Bernoulli’s Equation – Exact Differential Equations – Equations Reducible to exact equations.

UNIT – IV

Applications of Differential Equations of First Order

Orthogonal Trajectories – Simple electric (LR & CR) Circuits – Newton’s Law of Cooling – Law of Natural growth and decay.

Linear Differential Equations of Higher Order

Solutions of Linear Ordinary Differential Equations With Constant Coefficients – Rules for finding the Complimentary Functions – Rules for finding the particular integral – Method of variation of parameters – Cauchy’s linear equation – Legendre’s Linear Equation – Simultaneous linear equations.

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
5. Higher Engineering Mathematics by Dr. M. K. Venkataraman.

ECEEIE103: COMPUTER PROGRAMMING AND NUMERICAL METHODS

Theory : 4 Hrs/week
Int Marks : 25

Credits : 4
Ext Marks : 75

UNIT- I

Introduction to C: Basic structure of C program, Constants, Variables and data types, Operators and Expressions, Arithmetic Precedence and associativity, Type Conversions. Managing Input and Output Operations, Formatted Input, Formatted Output.

Decision Making, Branching, Looping , Arrays & Strings: Decision making with if statement, Simple if statement, The if...else statement, Nesting of if...else statement, the else..if ladder, switch statement, the (?:) operator, the GOTO statement., The while statement, the do statement, The for statement, Jumps in Loops ,One, Two-dimensional Arrays, Character Arrays. Declaration and initialization of Strings, reading and writing of strings, String handling functions, Table of strings.

UNIT- II

Functions: Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions: No Arguments and no Return Values, Arguments but no Return Values, Arguments with Return Values, No Argument but Returns a Value, Functions that Return Multiple Values. Nesting of functions, recursion, passing arrays to functions, passing strings to functions, The scope, visibility and lifetime of variables.

Pointers: Accessing the address of a variable, declaring pointer variables, initializing of pointer variables, accessing variables using pointers, chain of pointers, pointer expressions, pointers and arrays, pointers and character strings, array of pointers, pointers as function arguments, functions returning pointers, pointers to functions, pointers to structures-Program Applications

UNIT-III

Structure and Unions: Defining a structure, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, arrays of structures, arrays within structures, structures within structures, structures and functions and unions, size of structures and bit-fields- Program applications.

File handling: Defining and opening a file, closing a file, Input/ Output operations on files, Error handling during I/O operations, random access to files and Command Line Arguments-Program Applications.

UNIT-IV

Numerical Methods: Solutions of Algebraic and Transcendental Equations: Bisection Method, Newton Raphson Method. Interpolation: Newton's forward and backward Interpolation, Lagrange's Interpolation in unequal intervals. Numerical Integration: Trapezoidalrule, Simpson's 1/3 rule.Solutions of Ordinary First Order Differential Equations: Euler's Method, Modified Euler's Method and Runge-Kutta Method.

TEXT BOOKS

1. Programming in ANSI C, E Balagurusamy, 6th Edition. McGraw Hill Education (India) Private Limited.
2. Introduction to Numerical Methods, SS Sastry, Prentice Hall.

REFERENCE BOOKS

1. Let Us C ,YashwantKanetkar, BPB Publications, 5th Edition.
2. Computer Science, A structured programming approach using C", B.A.Forouzan and R.F.Gilberg, " 3rd Edition, Thomson, 2007.
3. The C –Programming Language' B.W. Kernighan, Dennis M. Ritchie, PHI

ECEEIE104: CHEMISTRY

Theory : 4 Hrs/week
Int Marks : 25

Credits : 4
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.

ECEEIE105: BASICS OF ELECTRONICS

Theory : 4 Hrs/week
Int Marks : 25

Credits : 4
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 Mailman and Halkias
3. Electronic Fundamentals and Applications, by John D. Ryoler.

ECEEIE106: 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.

ECEEIE107: ENGINEERING WORKSHOP

Lab : 3 Hrs/week
Int Marks : 50

Credits : 2
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.

ECEEIE108: COMPUTER PROGRAMMING AND NUMERICAL METHODS LAB

Lab : 3 Hrs/week

Credits : 2

Int Marks : 50

Ext Marks : 50

List of Programs Using C

1. Write a program to read x, y coordinates of 3 points and then calculate the area of a triangle formed by them and print the coordinates of the three points and the area of the triangle. What will be the output from your program if the three given points are in a straight line.
2. Write a program which generates 100 random numbers in the range of 1 to 100. Store them in an array and then print the array. Write 3 versions of the program using different loop constructs (eg. for, while and do-while).
3. Write a set of string manipulation functions eg. for getting a sub-string from a given position, copying one string to another, reversing a string and adding one string to another.
4. Write a program which determines the largest and the smallest number that can be stored in different data types like short, int, long, float and double. What happens when you add 1 to the largest possible integer number that can be stored?
5. Write a program which generates 100 random real numbers in the range of 10.0 to 20.0 and sort them in descending order.
6. Write a function for transporting a square matrix in place (in place means that you are not allowed to have full temporary matrix).
7. First use an editor to create a file with some integer numbers. Now write a program, which reads these numbers and determines their mean and standard deviation.
8. Implement bisection method to find the square root of a given number to a given accuracy.
9. Implement Newton Raphson Method to determine a root of polynomial equation.
10. Given a table of x and corresponding f(x) values, write a program which will determine f(x) value at an intermediate x value using Lagrange's Interpolation.
11. Write a function which will invert a matrix.
12. Implement Simpson's 1/3rd rule for numerical integration.
13. Implement Trapezoidal rule for numerical integration.
14. Write a program to solve a set of linear algebraic equations.
15. Write a program to solve a differential equation using Runge-Kutta Method.

REFERENCE BOOKS

1. Let Us C, Yashwant Kanetkar, BPB Publications, 5th Edition.
2. Computer Science, A structured programming approach using C", B.A. Forouzan and R.F. Gilberg, " 3rd Edition, Thomson, 2007.
3. The C –Programming Language' B.W. Kernighan, Dennis M. Ritchie, PHI

ECEEIE109: 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