

Learning Outcomes:

Upon completion of this course, students will be able to:

- Understand all basic fundamentals of Differentiation and Integration.
- Prepare him/her for finding Area and Volume.
- Apply mathematical formulas in various subjects of his/her branch.

Syllabus:

Unit No	Topics
1	Differential Calculus : Review of the prerequisites such as limits of sequences and functions, continuity, uniform continuity and differentiability. Successive differentiation, Leibniz's theorem (without proof), Taylor's & Maclaurin's expansions of single variable, Indeterminate forms.
2	Partial differentiation and its applications : Partial and total differential coefficient, Euler's theorem, Transformations, Geometrical interpretation of partial derivatives, Tangent plane and Normal line, Jacobians, Taylor's expansion for two variables, Errors and approximations, Maxima and Minima of functions of two variables ,Lagrange method of undetermined multipliers to determine stationary values.
3	Integral Calculus : Reduction Formulae: Reduction formulae of the type $\int \sin^n x dx$, $\int \cos^n x dx$, $\int \sin^m x \cos^n x dx$, $\int \tan^n x dx$ and $\int \cot^n x dx$. Beta & Gamma function, Error function, Elliptic integrals. Application of integration- Length of a curve, Area of a bounded region, volume & surface area of a solid of revolution for Cartesian, parametric & polar form.
4	Multiple integrals : Double integral, change of order of integration, transformation of variables by Jacobian only for double integration, change into polar co-ordinates in double integrals only ,Triple integral, Application of multiple integration to find areas, volumes, C.G., M.I. and mean values.

Text Books:

(1) Higher Engineering Mathematics by Dr. B. S. Grewal

Reference Books:

- (2) Higher Engineering Mathematics Vol. I & II by Dr. K. R. Kachot.
 (3) Calculus and analytical geometry by G. B. Thomas and R. L. Finney

Learning Outcomes:

On successful completion of the course the students will be able to:

- Understand the basic concepts of Communication Skills
- Understand the basic concepts of Soft Skills
- Acquire satisfactory competency in use of two basic skills (*Quantitative Ability and Logical Reasoning*)
- Solve campus placements aptitude papers covering Quantitative Ability and Logical Reasoning

Syllabus

Unit No	Topics
1	<p>Basics of Communication</p> <p>Definition, Principles, Process, Functions, and Forms of communication (Formal – Informal, Verbal – Non-verbal, Electronic and Visual)</p> <p>Barriers to communication with remedies</p>
2	<p>Receptive Language Skills</p> <p>Listening Skill:</p> <p>Definition and process of listening skill, Pre-requisites of effective listening, Modes of listening, Causes of poor listening, Tips for effective listening, Traits of a good listening</p> <p>Reading Skill:</p> <p>Definition and types of reading, Techniques for effective reading comprehension, Purposes of Reading</p>
3	<p>Quantitative Ability</p> <p>Basic Operations, Problems on Trains, Time and Work, Profit and Loss, Problems on Ages, Average, Permutation and Combination, Problems on H.C.F and L.C.M, Square Root and Cube Root, Stocks and Shares, Time and Distance</p>
4	<p>Logical Reasoning</p> <p>Puzzles, Series</p>
5	<p>Learning Presentation Skills</p> <p>Key Elements of Presentation (Content, Presenter, Audience, Message, Reaction, Method, Impediments)</p> <p>Presentation Delivery (Voice, Eye Contact, Gesture, Postures and Movements)</p> <p>Unwritten rules of Good and Effective Presentation</p> <p>Quick Tips</p> <p>Positive Factors</p> <p>Nervous Making Factors</p> <p>Tips of Dynamic Delivery</p>

Reference Books:

1. Quantitative Aptitude, by R. S. Aggarwal
2. Comprehension, Interpersonal & Communication Skills For General Studies (Paper - 2)
1st Edition by Arun Sharma, Meenakshi Upadhyay
3. Effective Communications by Dale Carnegie

Learning Outcomes:

Upon completion of this course, students will acquire knowledge about:

- Learn to predict the behavior of any electrical and magnetic circuits.
- Apply basic electric laws in solving circuit problems and able to perform power calculation.
- Identify the types of capacitors and know the practical applications of various types of capacitors.
- Understand the basic concepts of Electromagnetic Induction and Electrical Generation principle.
- Understand the concept of single-phase and three-phase A.C. circuit.
- Understand the Economic Aspects of Electrical Engineering and apply this knowledge to work with better power factor leading to Energy Conservation.
- Develop the capability to analyze and design simple circuits containing non-linear elements such as transistors and FETs using the concepts of load lines, operating points and incremental analysis
- Learn how operational amplifiers are modeled and analysed, and to design Op-Amp circuits to perform operations such as integration, differentiation and filtering on electronic signals
- Be introduced to the concepts of both positive and negative feedback in electronic circuits
- Learn how negative feedback is used to stabilize the gain of an Op-Amp-based amplifier and how positive feedback can be used to design an oscillator
- Acquire experience in building and trouble-shooting simple electronic analog circuits.

Syllabus:**Section – I Elements of Electrical Engineering**

Unit No.	Topics
1	D.C. Circuits : Ideal and Practical Energy Sources, Line Regulation and Load Regulation, Source Transformation, Star-Delta Transformation, Application of Kirchhoff's Law, Superposition Theorem, Thevenin's Theorem, Norton's & Maximum Power Transfer Theorem.
2	Capacitor : Types of Capacitor, Capacitance of Multiple Parallel Plate Capacitor, Energy stored in a Capacitor, Charging & Discharging of Capacitor & Time constant.
3	Magnetic circuit & Electromagnetic Induction : Law of Magnetic Circuit, Series & parallel Magnetic Circuits and Calculation, Comparison of magnetic & Electric Circuit, Magnetization Curves, review of Faraday's Law, Lenz's Law, Self & Mutual Inductance, Inductance of coupled circuits.

4	A.C.Circuits: Generation of A.C. Voltage , Equation of A.C. Voltage, Average value, R.M.S. Value, Form Factor, Peak Factor, Phase & Phase Difference, Pure Resistive, Pure Inductive, Pure Capacitive and combination of R-L-C Circuits, Active - Reactive and Apparent power & Power Factor, Generation of 3-phase voltage, Phase Sequence , Interconnection of three phase, Star – Delta, Voltage ,Current & Power relationship in balanced 3-Phase Circuits, Measurement of power in 3-phase circuit and Effect of power factor on Wattmeter readings.
5	Economic Aspects : Electrical Power and Energy, Calculation of Power & Energy, Tariff & its types.

Text Books:

1. U.A.Patel , “Elements of Electrical & Electronics Engineering “ ,Atul Prakashan.
2. B.L.Thereja,”Electrical Technology”, S.ChandVolume-I.

Reference Books:

1. V.N.Mittal,”Basic Electrical Engineering”, Tata Mc Grawhill, New Delhi.
2. V.K.Mehta,”Principles of Power Systems “ , Pub. By S.Chand.

Section – II Elements of Electronics Engineering

Unit No.	Topics
1	Semiconductors (p-type, n-type), pn junction diodes, pn junction as a circuit element, its characteristics, half wave, full wave and bridge type rectifier circuits, basic filter circuits, Diode as a voltage multiplier, clipper & clamper circuit. Zener diode as a voltage regulator. LED , its characteristics construction & applications.
2	Introduction to transistors, Characteristics of transistors in different configuration. Concept of d.c. and a.c. load line and operating point selection. Various amplifiers configurations their h-parameter equivalent circuits, determination of voltage gain current gain, input resistance and output resistance & power gain. Concept of feedback in amplifiers, different oscillators circuits (without analysis).
3	Differential amplifier and its transfer characteristics. IC Op-Amps, its ideal & practical specifications and measurement of parameters. Op-Amp in different modes as inverting amplifier, non inverting amplifier, scale changer,

	differentiator & integrator.
4	Characteristics of JFET, MOSFET, Various amplifier configurations using FET. Characteristics and Construction of SCR, TRIAC, UJT. Their basic areas applications.

References:

1. Electronic Devices & Circuits - Boylstad & Nashelsky.
2. Integrated Electronics By Millman & Halkias.
3. Electronic Principles – Malvino
4. Principles of Electronics – V.K. Mehta, Shalu Mehta.
5. Electronic Circuits – Donald L. Shilling & Charles Belowl

Learning Outcomes:

Upon completion of this course, students will be able to:

- Understand and apply the design principles of HTML to create static and dynamic web pages.
- Understand the difference between HTML and XML scripting languages.
- Be able to create simple web pages using XHTML and CSS
- Be able to create simple web pages using Java Script

Syllabus:

Unit No.	Topics
1	HTML Basic: Introduction of HTML, HTML Elements, HTML Basic Tags, HTML Formatting, HTML Entities, HTML Links, HTML Frames, HTML Tables, HTML Lists, HTML Forms, HTML Images, HTML Background, HTML Colors, HTML Color-values, HTML Color-names, Meta-tags and search engine, HTML URL-encode, Publishing HTML on web.
2	Cascaded Style Sheet: CSS Introduction, Syntax, Setting Background, Text, Font, Border, Margin, Padding, List, Dimension, Classification, Positioning, Pseudo-class, Pseudo-element, CSS Media Types, External, Internal and Inline style sheet.
3	Java Scripts: Variables declaration, If...Else statement, Switch statement, Operators statement, Popup Boxes, Functions, For Loop, While Loop, Break Loops, For...In, Events, Try...Catch, Throw, on error, Java Script Objects String, Date, Array, Boolean, Math, JS Browser, JS Cookies, Validation, Animation, Image Maps, Timing, Create Object, Accessing Important properties of HTML controls in a Java Script.

Reference Books:

1. Teach yourself HTML in 24 hours By Tec media
2. HTML4 BIBLE by Brayn Omdex
3. ABC of JavaScript by Purcell lee BPB publication
4. Pure java Script by Gilliam Johnson Tec media
5. Sams Teach Yourself HTML and CSS in 24 Hours, Eighth Edition by Julie Meloni, Michael Morrison

2CSE102: Essentials of Software Foundation & Programming – I [3 0 4 5]

Learning Outcomes:

After completing the course, students will learn the following

- History of Computing
- C programming Language with the concepts of Functions , Pointers , Input Output along with Structures
- Overview of Open Source Paradigm & Open Standards
- Overview of Linux Operating Systems
- Concepts of Open source Development Platforms (PHP, Ruby on Rails etc)

Syllabus:

Brief History of Computing Art and Science of Programming

Unit No.	Topics
1	Introduction to C Programming Background of C, Getting Started with C, Constructs, Loops & Arrays, Functions, Pointers, User Defined Types, Binary I/O With Structures, Appendix, Reference Tables
2	Open Standards, Open Source, and IBM What is an Open Standard, Open Standards Model, Industries needing standards, The Impact of Standards, Open Source Software, Open Source, Open Source Technology, The OPEN Proposition.
3	Introduction to Linux What is Linux, Background of Linux, Why is Linux so popular, what can you do with Linux, Linux Distributions, Linux Technology Center, Future of Linux
4	PHP What is PHP, PHP – Key Driver of LAMP Stack, Getting Started with PHP, Unified ODBC, PHP Data Objects, PHP Deployment Platform, What is Zend Core, Features and Benefits, Zend and IBM, What is Ruby, What is Rails