



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Program Name: Bachelor of Technology

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BTMA101		Applied Mathematics I	60	20	20	-	-	3	1	-	4

Course Objective

To introduce the students with the Fundamentals and Applications of the Differential, Integral, Vector Calculus and Numerical Analysis

Course Outcomes

After the successful completion of this course students will be able to:

1. Understand and apply the concepts of the differential and integral calculus.
2. Apply and simplify the techniques/problems in the numerical analysis.
3. Discuss the numerical solution of the system of linear algebraic equations.
4. Understand, analyse and apply the basics of the vector calculus.

Course Content:

UNIT – I

Differential Calculus

Limits of functions, continuous functions, uniform continuity, monotone and inverse functions. Differentiable functions, Rolle's theorem, mean value theorems and Taylor's theorem, power series. Functions of several variables, partial derivatives, chain rule, Tangent planes and normal. Maxima, minima, saddle points, Lagrange multipliers, exact differentials

UNIT – II

Integral Calculus

Riemann integration, fundamental theorem of integral calculus, improper integrals. Application to length, area, volume, surface area of revolution. Multiple integrals with application to volume, surface area, Change of variables.

UNIT – III

Numerical Analysis

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Number Representation and Errors: Numerical Errors; Floating Point Representation; Finite Single and Double Precision Differences; Machine Epsilon; Significant Digits. **Numerical Methods for Solving Nonlinear Equations:** Method of Bisection, Secant Method, False Position, Newton-Raphson's Method, Multidimensional Newton's Method, Fixed Point Method and their convergence.

UNIT – IV

Numerical Analysis

Numerical Methods for Solving System of Linear Equations: Norms; Condition Numbers, Forward Gaussian Elimination and Backward Substitution; Gauss-Jordan Elimination; FGE with Partial Pivoting and Row Scaling; LU Decomposition; Iterative Methods: Jacobi, Gauss Seidel; Power method and QR method for Eigen Value and Eigen vector.

UNIT – V

Vector Calculus

Gradient and directional derivative. Divergence and Curl of Vector point function, line and surface integrals. Green's, Gauss' and Stokes' theorems and their applications.

Texts:

- T. M. Apostol, Calculus, Volume I, 2nd Ed, Wiley, 1967.
- T. M. Apostol, Calculus, Volume II, 2nd Ed, Wiley, 1969.
- K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition (2004).
- B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi

References:

- R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.
- J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.
- J. D. Hoffman, Numerical Methods for Engineers and Scientists, McGraw-Hill, 2001.
- M.K Jain, S.R.K Iyengar and R.K Jain, Numerical methods for scientific and engineering computation (Fourth Edition), New Age International (P) Limited, New Delhi, 2004.

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Shri Vaishnav Institute of Science

Name of Program: B.Tech. (All streams)

(2021-2025)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCH101	BEC	Applied Chemistry	60	20	20	30	20	3	1	2	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit.

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Course Educational Objectives (CEOs):

The subject aims to provide the student with:

1. To bring adaptability to new developments in Engineering Chemistry to acquire the skills required to become a perfect engineer.
2. To include the importance of water analysis and treatment in industrial usage, significance of corrosion control to protect the structures, structure, and applications of electrochemical cells.
3. To acquire required knowledge about engineering materials like cement, refractories, and lubricants and to understand the instrumentation techniques used in industries.
4. To acquaint the students with practical knowledge of the basic concepts of chemistry.

Course Outcomes (COs):

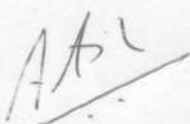
1. Students will gain the basic knowledge of chemical procedures related to polymerization, redox reactions and corrosion and its control.
2. They learn the use of fundamental principles to make predictions about the general properties of materials like lubricants, cement and refractories and the instrumentation techniques used in industries.
3. They can understand the basic properties of water and its treatment to overcome the boiler related problems in industries and power plants.
4. They can predict potential applications of chemistry and practical utility to become good engineers and entrepreneurs.


Syllabus

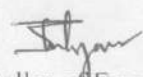
Unit-I

POLYMERS AND REINFORCED PLASTICS

Classification of polymers - types of polymerization reactions - mechanism of addition polymerization: free radical, ionic and Ziegler - Natta - effect of structure on the properties of polymers - strength, plastic deformation, elasticity, and crystallinity -Preparation and properties of important resins: Polyethylene, PVC, PMMA, Polyester, Teflon, Bakelite and Epoxy resins - compounding of plastics - moulding methods - injection, extrusion, compression.


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Shri Vaishnav Institute of Science

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(2021-2025)

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Unit-II

(A) ELECTROCHEMISTRY

Arrhenius theory of electrolytic dissociation, Transport number, Kohlrausch's law, Solubility product, Redox reaction, Electrochemical and concentration cells and their applications, Ion selective electrodes.

(B) CORROSION AND ITS CONTROL

Corrosion: Basic concepts - mechanism of chemical, electrochemical corrosion - Pilling Bedworth rule - Types of Electrochemical corrosion - galvanic corrosion - differential aeration corrosion - pitting corrosion - stress corrosion - Measurement of corrosion (wt. loss method only) - factors influencing corrosion. Corrosion control: Cathodic protection - sacrificial anodic method - corrosion inhibitors. Protective coatings: surface preparation for metallic coatings - electro plating (copper plating) and electroless plating (Nickel plating) - chemical conversion coatings - anodizing, phosphating & chromate coating.

Unit-III

BASIC INSTRUMENTAL TECHNIQUES

Basic principles, instrumentation, and applications of UV - visible spectroscopy, Infrared spectroscopy, and flame photometry. General introduction of Chromatography.

Unit-IV

WATER ANALYSIS AND TREATMENT

Water quality parameters: Physical, Chemical & Biological significance - Hardness of water - estimation of hardness (EDTA method) - Dissolved oxygen - determination (Winkler's method), Alkalinity - determination - disadvantages of using hard water in boilers: Scale, sludge formation - disadvantages - prevention - treatment: Internal conditioning - phosphate, carbon and carbonate conditioning methods - External: Zeolite, ion exchange, Lime Soda methods & Numericals - desalination - reverse osmosis and electrodialysis - domestic water treatment.

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Unit-V

(A) LUBRICANTS

Mechanism of lubrication, Classification of lubricants, Properties & testing of lubricating oil. Definition of viscosity of a liquid; Determination of Viscosity; Shear Viscosity; Intrinsic Viscosity; Molecular weight from Viscosity measurement & Numerical problems based on viscosity index.

(B) ENGINEERING MATERIALS

Cement and Refractories.

References

1. Engg. Chemistry- Rath cengage learning.
2. Chemistry for Environmental Engineering – Sawyer, McCarty and Parkin McGraw Hill, International.
3. Basic Lubrication theory – Alistair Cameron
4. Engineering chemistry- Dr. Jyoti Mitna
5. Engineering chemistry- Dr. Sunita Ratan
6. Applied Chemistry – S.M. Khopkar
7. Polymer Science- V.R. Gowawriker
8. Introduction of polymer science – G.S. Mishra.

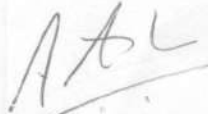
List of Experiments

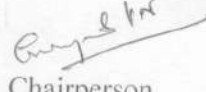
Exp. 01. To estimate the strength of the given unknown solution of Mohr's salt (Ferrous ammonium sulphate ($\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$) using KMnO_4 solution as an intermediate.

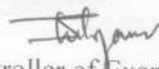
Exp.02 Estimation of hardness by EDTA method.


Exp.03. Conductometric titration - determination of strength of an acid.

Exp.04. Estimation of iron by potentiometry.


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Exp.05. Determination of molecular weight of polymer by viscosity average method.

Exp.06. Determination of Na / K in water sample by Flame photometry (Demonstration).


Exp.07. Determination of total alkalinity and acidity of a water sample.


Exp.08 Estimation of calcium ions present in tap water. (TDS).

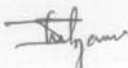
Exp.09 To determine the viscosity of a given liquid (30% sugar solution) at room temperature using Ostwald's viscometer.

Exp.10 Testing of Flash point of lubricating oil by Pensky Martins apparatus.

Exp.11 To determine the viscosity index by Red wood Viscometer 1 & 2.


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Choice Based Credit System (CBCS) in Light of NEP-2020
HUMANITIES

Semester I / Semester II

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
HUCS101	AECC	Communication Skills	60	20	20	-	20	1	0	2	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

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Course educational Objectives (CEOs): The students will be

- **CEO1** Provided an overview of Business Communication and an outline to effective Organizational Communication.
- **CEO2** Familiarized with the usage pattern of English language to help them to learn and identify language structures for correct English usage.
- **CEO3** Explained ways to put in use the basic mechanics of Grammar.
- **CEO4** Imparted the nuances of Business correspondence and different types of letter writing required in an official setup.
- **CEO5** Imparted the different types of Reports used in an organizational setup.

Course Outcomes (Cos): The students will be able to

- **CO1** Demonstrate strong conceptual knowledge of organizational communication and its different barriers and at the same time develop an understanding of verbal and non verbal communication in a business set up.
- **CO2** Demonstrate his/her ability to write error free sentences and speak in the required Communicative competence.
- **CO3** apply knowledge of spotting common errors and rectify them and develop coherence, cohesion and competence in oral and written discourse.
- **CO4** Draft effective business correspondence (letters) with brevity and clarity depending on the various prescribed formats.
- **CO5** Delineate effective business reports with brevity and clarity depending on the various prescribed Formats.

COURSE CONTENTS:

UNIT I

Communication: Nature, Meaning, Definition, Verbal and Non Verbal Communication Barriers to Communication.


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HUMANITIES

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UNIT II

Basic Language Skills: Grammar and usage- Parts of Speech, Tenses, S-V Agreement, Preposition, Article.

UNIT III

Basic Language Skills: Types of Sentence, Direct - Indirect, Active - Passive voice, Phrases & Clauses.

UNIT IV

Business Correspondence: Business Letter, Parts & Layouts of Business Resume and Job application, E-mail writing.

UNIT V

Report Writing: Importance of Report, Types of Report, Structure of a Report.

Practical:

- Self Introduction
- Reading Skills and Listening Skills
- Oral Presentation
- Linguistics and Phonetics
- JAM (Just a Minute)
- Group Discussion

Suggested Readings

- Ashraf Rizvi.(2005). *Effective Technical Communication*. New Delhi:Tata Mc Graw Hill
- Adair, John (2003). *Effective Communication*. London: Pan Macmillan Ltd.


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- A.J. Thomson and A.V. Martinet(1991). *A Practical English Grammar* (4th ed). Newyork: Oxford IBH Pub.
- Kratz, Abby Robinson (1995). *Effective Listening Skills*. Toronto: ON: Irwin Professional Publishing.
- Prasad, H. M.(2001) *How to Prepare for Group Discussion and Interview*. New Delhi: Tata McGraw-Hill.
- Pease, Allan. (1998). *Body Language*. Delhi: Sudha Publications.


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Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Technology and Science
Choice Based Credit System (CBCS) Scheme in light of NEP-2020
B. Tech/B.Tech+MBA in Mechanical Engineering
(2023-2027) Revised Syllabus

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME									
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BTME105	BEC	FUNDAMENTALS OF MECHANICAL ENGINEERING AND APPLIED MECHANICS	60	20	20	30	20	3	0	2	4	

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Course Educational Objectives (CEOs):

The objective of the course is to develop basic knowledge of (A) engineering materials (B) thermodynamics, I.C. engines & boilers (C) Forces and Equilibrium (D) centroid & moments of inertia.

Course Outcomes:

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes:

1. Student would be able to understand the need of engineering materials and its properties.
2. Student would be able to understand the basics of thermodynamics and boilers.
3. Student would be able to understand working principle of IC engines.
4. Students will be able to demonstrate various types of forces and their analysis.
5. Students will be able to calculate the centre of gravity and moment of inertia of different geometrical shaped figures.

Syllabus:

UNIT I

(8 Hrs)

Introduction to Engineering Materials: Introduction, Classification of Engineering Materials, Mechanical properties like strength, hardness, toughness, ductility, brittleness, malleability etc. of materials, Tensile Test-Stress-strain diagram of ductile and brittle materials, Hooks law and modulus of elasticity, Hardness, and Impact testing of materials, BHN etc.

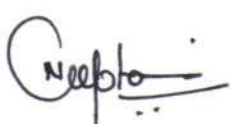
UNIT II

(9 Hrs)

Thermodynamics: Thermodynamic system, properties, state, process, Zeroth, First and second law of thermodynamics, thermodynamic processes at constant pressure, volume, enthalpy & entropy.

Steam & Boilers: Formation of steam, steam processes, classification and working of boilers, mountings and accessories of boilers, efficiency and performance analysis of boilers, height of chimney.


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UNIT III **(8 Hrs)**

IC Engines: Working principle of IC Engine, Terminology of IC engine, Carnot, Otto, and Diesel cycles P-V & T-S diagrams and its efficiency, working of two stroke & four stroke Petrol & Diesel engines.

Unit - IV **(10 Hrs)**

Forces and Equilibrium: Graphical and Analytical Treatment of Concurrent and non-concurrent, Co-planner forces, free Diagram, Force Diagram and Bow's notations, Types of supports and their reactions. Analysis of plane Trusses: Method of joints, Method of Sections. Frictional forces in equilibrium problems.

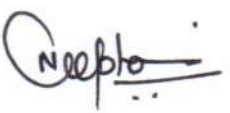
UNIT V **(10 Hrs)**

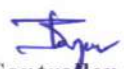
Centre of Gravity and moment of Inertia: Centroid and Centre of Gravity, Moment Inertia of Area and Mass, Radius of Gyration, Introduction to product of Inertia and Principle Axes. Support Reactions, Shear force and bending moment Diagram for Cantilever & simply supported beam with concentrated, distributed load and Couple.

Text and Reference Books:

1. "Basic Mechanical Engineering" by Dr. V. M. Domkundwar and S. S. Bhavikatti, Nirali Prakashan, 2018.
2. "Mechanical Engineering" by R.K. Rajput, S. Chand & Co. Delhi, 2019.
3. "An Introduction to Mechanical Engineering" by Jonathan Wickert and Kemper Lewis, CENGAGE Learning, 2012.
4. "Engineering Mechanics" by Shames and Rao, Pearson Edu(I), 2005.
5. "Engineering Mechanics (Statics & Dynamics)" by R.C. Hibler, Pearson Edu(I), 2015.
6. "A Text book of Applied Mechanics" by R.K. Rajput, Laxmi Pub. 2016.
7. "A Textbook of Engineering Mechanics" by R K Bansal, Laxmi Pub. 2005.


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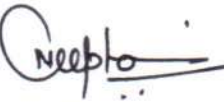
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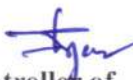
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List of Experiments:

1. To perform tensile test, plot the stress- strain diagram and evaluate the tensile property of a given specimen.
2. Study of different IC Engines.
3. Study of various types of Boilers.
4. Study of different types of Boilers Mountings and accessories.
5. Problems relating to centroid of composite areas.
6. Problems on moment of inertia, polar moment of inertia, radius of gyration, polar radius of gyration of composite areas.
7. Problems involving frictional forces.
8. Analysis of simple trusses by method of joints, method of sections & graphical method.
9. Problems on shear force and bending moment diagrams.


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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEE106		Fundamentals of Electrical and Electronics Engineering	60	20	20	30	20	3	0	2	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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Course Educational Objectives (CEOs):

1. To impart the basic knowledge about the Electric and Magnetic circuits.
2. To explain the working principle, construction, applications of Transformers, DC machines and AC machines.
3. To understand the concept of diode, and transistors.

Course Outcomes (COs):

After the successful completion of this course students will be able to:

1. Apply knowledge of mathematics to analyze and solve electrical circuit problems.
2. Illustrate basic knowledge about the Electric and Magnetic circuits.
3. Distinguish the working Principles of various Electrical Machines.
4. Understand the concept of diodes and transistors.

Syllabus

UNIT I

8 Hrs.

DC Circuits: Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems.

AC Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), Three-phase balanced circuits, voltage and current relations in star and delta connections.

UNIT II

9 Hrs.

Magnetic Circuits: Basic definitions, self-inductance and mutual inductance, energy in linear magnetic systems, coils connected in series, AC excitation in magnetic circuits, magnetic field produced by current carrying conductor, Force on a current carrying conductor. Induced voltage, laws of electromagnetic Induction, direction of induced E.M.F.

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Single phase transformer: General construction, working principle, e.m.f. equation, equivalent circuits, phasor diagram, voltage regulation, losses and efficiency, open circuit, and short circuit test

UNIT III

8 Hrs.

Electrical Machines: Construction, Classification & Working Principle of DC machine, induction machine and synchronous machine. Working principle of 3-Phase induction motor, Concept of slip in 3- Phase induction motor, Explanation of Torque-slip characteristics of 3-Phase induction motor. Types of losses occurring in electrical machines. Applications of DC machine, induction machine and synchronous machine.

UNIT IV

8 Hrs.

PN Junction diode: Principle of operation, V-I characteristics, Junction breakdown, Avalanche breakdown, various types of diodes: Zener diode, Schottky diode, PIN diode, varactor diode, Zener diode as voltage regulator

Rectifier: Half wave rectifier and Full wave rectifier.

UNIT V

9 Hrs.

Bipolar Junction Transistors: PNP and NPN transistors, Principle of operation, Ebers-Moll model, early effect, CB, CC, CE configuration and its input and output characteristics, transistor as an amplifier.

Textbooks:

1. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
2. D.P Kothari, I.J Nagrath, "Basic Electrical and Electronics Engineering" , McGraw Hill Education (India) Private Limited, Second Edition 2020.
3. Boylestad and Nashelsky, "Electronic Devices and Circuit Theory", Pearson Education, 11th Edition, 2013.

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*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

References:

1. V.N Mittal & Arvind Mittal, “ Basic Electrical Engineering”, TMH, Second Edition.
2. R.K Rajput, “Basic Electrical and Electronics Engineering” , University Science Press, Second Edition 2012.
3. J.B Gupta, “ Electronic Devices and Circuit”, S.K. Kataria & Sons, ,2013.

List of Experiments:

1. Verification of KCL and KVL.
2. Separation of resistance and inductance of choke coil.
3. Study of Transformer and its name plate rating.
4. Determination of Turns ratio and polarity of Single-Phase Transformer.
5. Determination of circuit parameters of a single-phase transformer by O.C. and S.C. tests.
6. Measurement of power in a three-phase circuit by two wattmeter methods.
7. Measurement of various line & phase quantities for a 3-phase circuit.
8. Study of No-load characteristics of D.C shunt Generators.
9. To determine and analyse the V-I characteristics of PN Junction diode and Zener Diode.
10. To determine input and output characteristics of transistor amplifiers in CE, CC and CB configurations.

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			THEORY			PRACTICAL		L	T	P	CREDITS
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BTCS101	BEC	COMPUTER PROGRAMMING-I	0	0	0	30	20	0	0	2	1

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Course Objectives:

1. To introduce the fundamental concepts of computer programming.
2. To design programs in C involving different data types, decision structures, loops and functions, arrays and pointers.
3. To equip students with techniques for developing structured computer programs.
4. To equip students with sound skills in C/C++ programming language.

Course Outcomes:


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

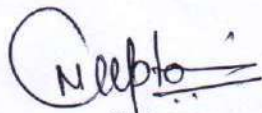
1. Understand the basic terminologies used in computer programming.
2. Be proficient in using the basic constructs of C/C++, to develop a computer program.
3. Understand the use of functions, pointers, arrays and files in programming.
4. Understand the fundamentals of object-oriented programming and be able to apply it in computer program development.

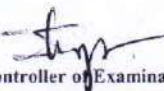
Syllabus

Unit - I

Introduction to Programming Languages: Introduction to Programming Language; Types of Programming Languages – Machine-level, Assembly-level and High-level Languages, Scripting Languages, Natural Languages, Advantages and Limitations of programming language, High-


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level Programming Language Tools – Compiler, Linker, Interpreter, Intermediate Language Compiler and Interpreter, Editor, MATLAB, GUI, Overview of some popular High level Languages – FORTRAN, COBOL, BASIC, Pascal, C, C++, JAVA, LISP, Characteristics of a Good Programming Language.


Unit - II

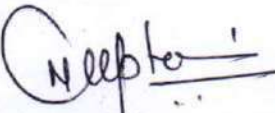
Design of Program: Introduction to Algorithms, Complexities and Flowchart, Introduction to Programming, Categories of Programming Languages, Program Design, programming language processing, Algorithm / pseudo code, program development steps, selecting a Language out of many Available Languages for Coding an Application, Subprograms and subroutines.


Unit - III


Basics of C language : Introduction to C language, Basic Programming concepts, Program structure in C ,header files, C preprocessor, Variables and Constants, Data types, User Defined Data Types – Structure and Union, Conditional statements, control statements, Functions, Arrays, Structures, pointers, strings, File Systems, c preprocessor and macro expansion.

Structure of C program, Expressions, type conversion, selection making decisions, initialization and updating, loops in C, Standard Library functions, Control Structures, Loop Structures, Functions, Scope Rule of Functions, Calling Convention, Advanced Features of Functions.


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Unit - IV


C Programming : Arrays - Pointers and arrays, two-dimensional arrays, arrays of pointer, String Manipulation functions, Structures & Unions, Processing and use of structures, arrays of structure.

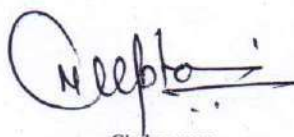
Pointers - Operations on Pointers, Pointers and Multidimensional Arrays, Array of pointers, pointers to pointers, bitwise operators, and dynamic memory managements functions.

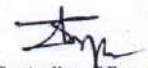
Files - File creation, File processing, Opening and closing a file, text files and binary files, streams, error handling.


Unit - V

C++ Programming: Introduction to C++, Tokens, expressions and control structures, Functions in C++, Basic principles of Object Oriented Programming.


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Text Books:


1. Fundamentals of Computers: E Balagurusamy, TMH
2. Fundamentals of Computers: V Rajaraman, PHI
3. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.
4. Robert Lafore, "Object Oriented Programming in C++", SAMS Publication.

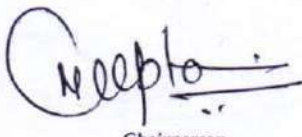
References:


1. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006
2. Herbert Schildt, "The Complete Reference", 4th Edition, MGH Publication.
3. Dromey R.G., "How to Solve it by Computer", Pearson Education, Fourth Reprint, 2007


Practical's List:

1. Study of procedural programming paradigm and object-oriented programming paradigm.
2. To demonstrate use of data types.


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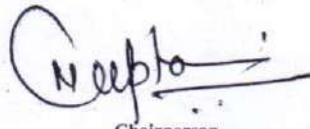
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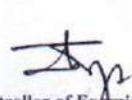
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3. Write a program on operators (Arithmetic Operator, Relational Operators and Conditional Operators etc.).
4. Write a program using decision making statements (switch case, if and if-else, nested structures).
5. Write a program using simple loops and nested loops.(For, While, Do-While Loop)
6. Write a program to user defined functions using C.
7. Write a program for recursive functions.
8. Write a program for array and multidimensional array (2-d arrays).
9. Write a program of pointers and strings (strings and pointers).
10. Write a program of dynamic memory allocation using calloc(), malloc() and realloc().
11. Write a program on structure and union.
12. Write a program in C++ using (i) if-then-else (ii) loops
13. Write a program illustrate Function in C++
14. Write a program for Operator overloading in C++.


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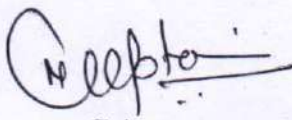
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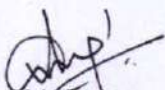
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15. Write a program for nested function call.
16. Write a program of call by value using C++
17. Write a program of call by reference using C++
18. Write a program for Inline Function.
19. Write a program for Friend Function.
20. Write a program of dynamic memory management using new and delete.
21. Write a program on file handling using C++ .


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