Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Name of Program: Bachelor of Technology in Electronics & Communication

SUBJECT CODE	Category	SUBJECT 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*				
BTPH101		Applied Physics	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To develop the comprehensive understanding of laws of physics.
2. To develop ability to apply laws of physics for various engineering applications.
3. To develop the experimental skills, ability to analyze the data obtained experimentally to reach substantiated conclusions.

Course Outcomes (COs):

1. Student will be able to comprehend laws of physics.
2. Student will be able to apply laws of physics for various engineering applications.
3. Student will be able to determine physical parameter experimentally and will be able to analyze the data obtained experimentally to draw substantiate conclusions.

Syllabus

UNIT I

Quantum Physics

Introduction to Quantum hypothesis, Matter wave concept, Wave Group and Particle velocity and their relations, Uncertainty principle with elementary proof and applications to microscope and single slit, Compton Effect, Wave function and its physical significance. Development of time dependent and time independent Schrodinger wave equation, Applications of time dependent and time independent Schrodinger wave equation

UNIT II

Solid State Physics

Free electron model, Qualitative Analysis of Kronig Penney Model, Effective mass, Fermi level for Intrinsic and Extrinsic semiconductors, P-N junction diode, Zener diode, Tunnel diode, Photodiode, Solar- cells, Hall Effect. Introduction to Superconductivity, Meissner effect, Type I & II Superconductors

UNIT III

Nuclear Physics

Nuclear Structure & Properties Nuclear models: Liquid drop with semi-empirical mass formula & shell model. Particle accelerators: Synchrotron, Betatron.

Counters and Detectors: Giger-Muller counters, Bainbridge Mass Spectrograph and Auston Mass Spectrograph.

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UNIT IV

Laser & Fibre Optics

Stimulated and Spontaneous Emission, Einstein's A&B Coefficients, Population Inversion, Pumping, Techniques of Pumping, Two three and four level lasers. Optical Resonator, Properties and Applications of Laser, Ruby, Nd:YAG, He-Ne, CO2 lasers.

Introduction to Optical fibre, Types of Optical fibre, Acceptance angle and cone, Numerical Aperture, V-Number, Fractional refractive index change Δ, Ray theory of propagation through optical fibre, Pulse dispersion and its types, Attenuation, losses and applications of optical fibre.

UNIT V

Wave Optics

Introduction to Interference, Fresnel's Bi-prism, Interference in Thin films, Newton's rings experiment, Michelson's interferometer and its application.

Introduction to Diffraction and its Types, Diffraction at single slit, double slit and diffraction grating. Rayleigh criterion, resolving power of grating.

Concept of polarized light, Brewster's laws, Double refraction, Nicol prism, quarter and half wave plate, circularly & elliptically polarized light.

Textbook Books:

1. Engineering Physics by Dr. S. L. Gupta and Sanjeev Gupta, Dhanpat Rai Publication, New Delhi.
2. Engineering Physics by Navneet Gupta, Dhanpat Rai Publication, New Delhi.
3. Engineering Physics by H. J. Sawant, Technical Publications, Pune, Maharastra.

References:

1. M.N. Avdhanulu & P.G. Kshirsagar, "Engg Physics" S.Chand & Co.Edition 2010.
2. Fundamentals of Physics by Halliday, Wiley, India.
3. Concepts of Modern Physics by Beiser, TMH, New Delhi.
4. Solid State Physics by Kittel ,Wiley, India.
5. Atomic and Nuclear physics by Brijlal and Subraminiyan.
6. Christopher C. Davis, "LASERSs and Electro Optics" Cambridge Univ. Press, 1996.
7. J.Wilson & J.F.B.Hawkes, "Optroelectronics an Introduction" Prentice-Hall II Edition.
8. A.K. Ghatak & Tyagarajan, "LASER theory and applications" 1984.
9. Optics By Ghatak, TMH.

List of Experiments:

1. Measurement of radius of curvature "R" of convex lens by Newton's ring experiment.
2. Measurement of Numerical aperture of fiber by LASER.
3. Determination of Energy band gap 'Eg' of Ge using Four Probe method.
4. Measurement of Frequency of A.C. mains by electrically maintained vibrating rod.
5. Measurement of Resolving Power of Telescope.
6. Measurement of "λ" of LASER light source using Diffraction Grating.
7. Determination of Planck's constant by using photocell.
8. Determination of Energy band gap (Eg) using PN Junction Diode.
9. To determine the mass of cane sugar dissolved in water using half shade polarimeter.
10. To study forward and reverse characteristics of Zener diode.

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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*				
BTMA101		Applied Mathematics -I	60	20	20	0	0	3	1	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

To introduce the students with the Fundamentals 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 basics of the differential calculus.
2. know the fundamental principles of the integral calculus and apply them.
3. apply the techniques in the numerical analysis.
4. know the numerical solution of the system of linear algebraic equations.
5. understand and apply the basics of the vector calculus.

Syllabus:

UNIT I

Differential Calculus

Limits of functions, continuous functions, uniform continuity, montone 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 normals. 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

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.

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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 Siedal; 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.

Text Books:

1. T. M. Apostol, Calculus, Volume I, 2nd Ed, Wiley, 1967. B
2. K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition (2004).
3. S. D. Conte and C. de Boor, Elementary Numerical Analysis -An Algorithmic Approach, McGraw-Hill,2005.
4. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi

References:

1. R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.
2. J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.
3. J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, 2nd Edition, Texts in Applied Mathematics, Vol. 12, Springer Verlag, 2002.
4. J. D. Hoffman, Numerical Methods for Engineers and Scientists, McGraw□Hill, 2001.
5. 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.
6. S. C. Chapra, Applied Numerical Methods with MATLAB for Engineers and Scientists, McGraw□Hill 2008.

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Name of Program: Bachelor of Technology in Electronics & Communication

SUBJECT CODE	Category	SUBJECT 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*				
BTEE102		Fundamentals of Electrical Engineering	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

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 DC machines, AC machines.

Course Outcomes(CO's):-

Students will be able to:

1. Understand and Analyze basic circuit concepts.
2. Apply knowledge of mathematics to analyze and solve electrical circuit problems.
3. Understand the AC fundamentals.
4. Illustrate basic knowledge about the Electric and Magnetic circuits.
5. Distinguish the working Principles of various Electrical Machines.

Syllabus

UNIT I

Electrical circuit analysis- Definition of electric circuit, network, linear circuit, non-linear circuit, bilateral circuit, unilateral circuit. Kirchhoff's law. Voltage and current sources, dependent and independent sources, source conversion, DC circuits analysis using mesh & nodal method, Thevenin's theorem, Norton's theorem, Superposition theorem, star-delta transformation.

UNIT II

A C Fundamentals- Production of alternating voltage, waveforms, average and RMS values, peak factor, form factor, phase and phase difference, phasor representation of alternating quantities, phasor diagram, behavior of AC series, parallel and series parallel circuits, power factor, power in AC circuit, 1-phase AC circuits under sinusoidal steady state, active, reactive and apparent power, physical meaning of reactive power, power factor, 3-phase balanced and Unbalanced supply, star and delta connections.

UNIT III

Electromagnetism: Biot-savart law, Ampere's circuital law, field calculation using Biot-savart and ampere's circuital law. Magnetic circuits, Analogous quantities in magnetic and electric circuits, Faradays's law, self and mutual inductance. Energy stored in a magnetic field, Hysteretic and Eddy current losses. Electro-mechanical energy conversion.

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UNIT IV

Transformers-Review of laws of electromagnetism, mmf, flux, and their relation, analysis of magnetic circuits. Single-phase transformer, basic concepts and construction features, voltage, current and impedance transformation, equivalent circuits, phasor diagram, voltage regulation, losses and efficiency, OC and SC test.

UNIT V

Basic concepts of Rotating Electric machines- Constructional details of DC machine, Basic concepts of winding (Lap and wave). Principle of operation, EMF equation, characteristics (open circuit, load). DC motors: Principle of operation, Speed-torque Characteristics (shunt and series machine), starting (by 3 point starter), speed control (armature voltage and field control).

Induction machine and Synchronous machine, Working principle of 3-Phase Induction motor, Emf equation of 3-Phase induction motor, Concept of slip in 3- Phase induction motor, Explanation of Torque-slip characteristics of 3-Phase induction motor. Principle of operation of Synchronous Machine.

Text Books:

1. Basic Electrical engineering, D.P Kothari & I.J Nagrath, TMH, Second Edition.
2. Basic Electrical Engineering, V.N Mittle & Arvind Mittal, TMH, Second Edition.

References

1. Electrical Engineering Fundamental, Vincent.D.Toro, Pearson Education, Second Edition.

List of Experiments:

1. Verification of KCL and KVL Law's.
2. Separation of resistance and inductance of choke coil.
3. Study of Transformer, name plate rating.
4. Determination of Turns ratio and polarity of Single Phase Transformer.
5. Determination of equivalent 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 method.
7. Measurement of power in a three phase circuit by three wattmeter method
8. Measurement of various line & phase quantities for a 3-phase circuit.
9. Study of No load characteristics of D.C shunt Generators.
10. Study of comparative features of Synchronous Machine and Induction Machine.

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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*				
BTEC102	EC	Fundamentals of Electronics Engineering	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:-
The subject aims to provide the student with:

1. An understanding of basic Electronics Engg. abstractions on which analysis and design of electronic circuits and systems are based, basic devices(analog and digital) and instrumentation abstractions.

Course Outcomes:-
Students will:

1. Learn how to develop and employ circuit models for elementary electronic components, e.g., resistors, sources, inductors, capacitors, diodes and transistors;
2. Become adept at using various methods of circuit analysis, including simplified methods such as series-parallel reductions, voltage and current dividers, etc.
3. Develop the capability to analyze and design simple circuits containing non-linear elements such as transistors using the concepts of load lines, operating points and incremental analysis;
4. Learn how the primitives of Boolean algebra are used to describe the processing of binary circuits and to use electronic components as building blocks in electronically implementing binary functions;

Syllabus

UNIT-I

Evolution and Impact of Electronics in industries and in society, Familiarization with Resistors, Capacitors, Inductors, Transformers and Electro mechanical components, PN Junction diode: Structure, Principle of operation, various types of Diode, Solar cell.

UNIT-II

Rectifiers: Half wave and full wave rectifiers, capacitive filter, Zener voltage regulator. Bipolar Junction Transistors: Structure, Principle of operation, and its CB, CC, CE configuration.

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UNIT-III

Basic electrical parameter measuring Instruments: voltmeters & ammeter, wattmeter, energy meter, Basics of CRO (analog & digital).

UNIT-IV

Number System: Introduction to binary, octal, decimal & hexadecimal systems, representation of negative numbers, 1's, 2's, 9's, 10's complement and their arithmetic. Introduction, Definitions, Principle of Duality, Basic Theorems, Applications of Boolean Algebra, Boolean Functions, Complement of Boolean Function. Logic Gates (Symbol, Truth Table, Logic Diagram): And, OR, NOT, NAND, NOR, XOR, XNOR. Universal Gates: NAND Gate and NOR Gate implementation.

UNIT-V

SIGNALS: Introduction, Representation of Discrete-time Signals: Graphical Representation, Functional Representation, Tabular Representation, and Sequence Representation. Elementary Signals: Unit Step Function, Unit Ramp Function, Unit Parabolic Function, Unit Impulse Function, Sinusoidal Signal, Real Exponential Signal, Complex Exponential Signal, Rectangular Pulse Function, Triangular Pulse Function and their energy and power calculation

Text Books:

1. Boylested, R. L. and Nashelsky, L., Electronic Devices and Circuit Theory, Pearson Education
2. Bell, D. A., Electronic Devices and Circuits, Oxford University Press
3. Digital Design M. Morris Mano and Michael D. Ciletti, Pearson Education
4. A Anand Kumar, Signals and Systems, PHI.

References

1. Vijay Baru, Rajendra Kaduskar, Sunil T. Gaikwad, Basics of Electronics Engineering, Wiley India Pvt. Ltd
2. Rodger E. Ziemer/William H Tranter/D. R. Fannin Signals and Systems: Continuous and Discrete (4th Edition)
3. A.K Sawhney, A Course on Electrical and Electronics Measurement and Measuring Instruments Dhanpat Rai pub.

List of Experiments.

1. Familiarization with Laboratory Instruments (Oscilloscope, Function Generator, Digital Multimeter, DC Power Supply)
2. Characterization of Passive Circuit Elements (R, L, C)
3. Time & Frequency Response of RC and RL Circuits
4. V-I curve for P-N Junction Diodes.
5. V-I curve for Zener Diode.
6. Zener as a voltage regulator
7. Half-Wave and Full-Wave(Center tapped and Bridge) Rectifiers
8. Bipolar Junction Transistor (BJT) Circuits (Inverter, Common Emitter Amplifier)
9. Conversion of number system
10. Basic Combinatorial Circuits.

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B. Tech. in Mechanical Engineering

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM UNIVERSITY EXAM	TWO TERM EXAM	TEACHER ASSESSTMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSTMENT*				
BTME101		ENGINEERING DRAWING	60	20	20	30	20	2	0	4	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 20 marks.

Course Educational Objectives (CEOs):

To familiarize with concepts of(A) scale, conic sections and engineering curves (B) projections of points and line in all quadrants; (C)construction of geometrical figures& solids, with its orientation on horizontal and vertical planes, and its projection; section of solid, (D)development of solid and isometric projection view.

Course Outcomes (COs):

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 draw scale, conic sections and engineering curves.
2. Student would be able to draw projection of point and line; identify the use of these concepts in practical life.
3. Students would be able to understand plain &3D model at various orientations and draw their projection.
4. Student would be able to draw the projections of with and without sectioning of solid models and surface development.
5. Students would be able to understand the difference between orthographic view and isometric projections.

Syllabus

Unit - I

Scales, Conic Section & Engineering Curves Scales: Representative Factor, types of scales, principle and construction of different scales

Conic Section: Construction of ellipse, parabola and hyperbola by different methods; Normal and Tangent

Engineering Curves: Cycloid, Epicycloids, Hyper cycloid, Involutes, Archimedean and Logarithmic spirals.

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Unit - II

Projection of Points & Line Projection: Introduction to projection, Types of projection, terminology, first angle and third angle

Projection of Points: Introduction of point, conventional representation

Projection of Lines: Introduction of straight line, orientation of straight line, true inclination and true length, concepts of end projectors, plan and traces and auxiliary planes

Unit - III

Projections of Planes: Introduction of planes, types of planes, orientation of planes, projection of planes in different positions, traces of planes

Projection of Solids: Introduction of solids, classification of solids, recommended naming of corners of solids, orientation of solids

Unit - IV

Section of Solids & Development of Surfaces Section of Solids: Introduction of section of solids, terminology, types of section planes, section of prisms, section of pyramid and section of composite solids

Development of Surfaces: Introduction of development of surfaces, classification of surfaces, methods of development, development of prisms, pyramids, cylinder and cone, anti-development

Unit - V

Isometric Projections: Introduction of isometric projection, terminology, isometric projections and isometric views, isometric views of planes, right solids, truncated solids and composite solids.

Reference Books:

1. *"Engineering Graphics", by Varghese*
2. *"Engineering Drawing", by Leonel Zurbito*
3. *"Engineering Drawing", by N.D. Bhatt.*
4. *"Engineering Drawing", by C. Agarwal & Basant Agarwal.*
5. *"Engineering Drawing", by P.S. Gill.*

List of Experiments

1. Drawing various types of scales using representative fraction.
2. Drawing various conics section.
3. Projection of points in all quadrants.
4. Projection of straight lines in all quadrants in various orientations.
5. Projection of geometrical planes with various orientations.
6. Projection of solid models with various orientations.
7. Projection of section of solids by using various types of cutting planes.
8. Drawing development of surface using various methods of prisms, pyramids, cone,

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cylinder, etc.

9. Drawing anti- development of surfaces.
10. Drawing isometric projections using various methods and isometric views.

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Name of Program: Bachelor of Technology in Electronics & Communication

SUBJECT CODE	Catego-ry	SUBJECT 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		Communication Skills	60	20	20	0	20	1	0	2	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):-

1. To develop, enhance and demonstrate LSRW Skills.
2. To enable students to acquire oral presentation skills.
3. To prepare students to become more confident and active participants in all aspects of their undergraduate programs.

Course Outcomes (COs):-

1. The students will be able to enhance confidence in their ability to read, comprehend organize, and retain written information.
2. The students will be able to improve upon their language skills, oral communication skills, group discussion, personal development and confidence level.
3. The students will be able to bridge the language gap vital to their success.
4. The students will be able to communicate effectively.

Syllabus

UNIT I
Listening Skills
Listening: Process, Types of Listening: Active, Passive, Pseudo, Evaluative, Difference between listening and hearing. Listening Comprehension exercises.

UNIT II
Speaking Skills
Extempore, Debates, Oral Presentation, Just a Minute.

UNIT III
Linguistics and Phonetics:
Consonants and vowel symbols, CV structure, Place and Manner of articulation.

UNIT IV
Developing Reading Skills:
Reading Comprehension, Process, Active & Passive Reading, Reading Speed Strategies, Benefits of effective reading, Reading comprehension of Technical material and SQ3R reading technique.

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UNIT V

Vocabulary Building: Synonyms, antonyms, idioms and proverbs.

References :

1. Sharma. Business Correspondence and Report Writing.; TMH.
2. R.K. Bansal and IB Harrison. Spoken English . Orient
3. Joans and Alexander. New International Business English .Longman.; OUP.
4. Ashraf Rizvi.(2005).Effective Technical Communication. New Delhi:Tata Mc Graw Hill

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SUBJECT CODE	Category	SUBJECT 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*				
BTCS101		Computer Programming-I	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

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 (COs):

Upon completion of the subject, 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 : What is a 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-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.

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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.

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.

Text Books:

1. E Balagurusamy, "Fundamentals of Computers", TMH
2. V Rajaraman, "Fundamentals of Computers" , 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

List of Experiments:

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