B.Tech. Mechatronics

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTMA 101		Applied Mathematics-1	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 (COs):

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

The 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

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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 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.

Texts:

1. *T. M. Apostol, Calculus, Volume I, 2nd Ed, Wiley, 1967.*
2. *T. M. Apostol, Calculus, Volume II, 2nd Ed, Wiley, 1969.*
3. *K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition (2004).*
4. *S. D. Conte and C. de Boor, Elementary Numerical Analysis - An Algorithmic Approach, McGraw-Hill,2005.*
5. *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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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	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;
Q/A – Quiz/Assignment/Attendance, MST Mid Sem Test.

*Teacher Assessment shall be based on following components: Quiz/Assignment/ Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Objectives:-

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:-

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 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

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Superconductors.

Unit-III: Nuclear Physics

Nuclear Structure & Properties Nuclear models: Liquid drop with semi-empirical mass formula & shell model. Particle accelerators: Cyclotron, Synchrotron, Betatron. Counters and Detectors: Giger-Muller counters, Bainbridge Mass Spectrograph and Auston Mass Spectrograph.

Unit-IV: Laser & Fibre Optics

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

Introduction to Optical fibre, Acceptance angle and cone, Numerical Aperture, V- Number, Ray theory of propagation through optical fibre, Pulse dispersion , 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, resolving power, Rayleigh criterion, Resolving power of grating, Concept of polarized light, Double refraction, quarter and half wave plate, circularly & elliptically polarized light.

References:

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

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List of Experiments (Any Ten)

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 'E_g' 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 (E_g) 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.
11. To study forward and reverse characteristics of P-N diode.
12. To study characteristics of Photo diode.
13. To study characteristics of LDR.
14. μ and ω of given prism using spectrometer
15. Measuring height of a given object using Sextant.

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCE 103		Applied Mechanics	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):

The Students (A) Will Be Able to familiarize with different branches of mechanics (B) with emphasis on their analysis and application to practical engineering problems(C) efficiently & effectively (D)

Course Outcomes (COs):

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

The students will be able to

1. To apply knowledge of mathematics, science in engineering.
2. To identify, formulate, and solve engineering problems
3. Demonstrate various types of forces and their analysis.
4. Demonstrate shear force and bending moment on structural member i.e. beams
5. Demonstrate centre of gravity and moment of inertia determination of different geometrical shaped figures.

Syllabus

Unit-I

Static & Dynamic Forces: Introduction to Engineering Mechanics, Classification of Engineering Mechanics, Statistics, Dynamics, Kinematics, Kinetics etc. Fundamental Laws of Mechanics. Introduction to Dynamics, Basic Concepts and Terms Used in Dynamics, Motion, Types of Motion.

Force, Pressure and Stress, Free Body Diagram , Bow's Notation, Characteristics and Effects of a Force, System of Forces, Resolution of a Force, Composition of Forces, Resultant / Equilibrant Force,

Unit-II

Law of Parallelogram of Forces, Law of Triangle of Forces, Polygon Law of Forces, Lami's Theorem, Equilibrium of a Body Under Two / Three/More Than Three Forces. Law of Superposition of Forces. Moment Force, of a Principle of Moments/ Varignon's Theorem, Parallel Forces, Resultant of Parallel Forces, Couple, Moment of a Couple, Resolution of Force into a Couple.

Unit-III

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Analysis of Framed Structure: Frame, Types of frame, Truss, Types of truss, Analysis of Truss, Various methods of Analyzing the truss, Numericals analysis of truss

Unit-IV

Beams: Types of Beams: Simply Supported Beam, Overhanging Beam, Cantilever Beam. Types of Supports of a Beam or Frame: Roller, Hinged and Fixed Supports. Load on the Beam or Frame: Different Types of Loading. Support Reaction of a Beam, Shear force, Bending Moment.

Unit-V

CG and MI: Centroid, Centre of Gravity, Determination of Centroid of Simple Figures, Centroid of Composite Sections. Centre of Gravity of Solid Bodies. Area Moment of Inertia: Basic Concept of Inertia, Definition of Moment of Inertia, Theorems of Moment of Inertia, Radius of Gyration, Polar Moment of Inertia of Standard Sections, Moment of Inertia of Composite Section, Principal Moment of Inertia , Mass Moment of Inertia.

References

1. *Prasad I.B., Applied Mechanics, Khanna Publication.*
2. *Shesha Prakash and Mogaveer; Elements of Civil Engg & Engg. Mechanics; PHI*
3. *S.P,Timoshenko, Mechanics of stricture, East West press Pvt.Ltd.*
4. *R.C. Hibbler – Engineering Mechanics: Statics & Dynamics.*
5. *A. Boresi & Schmidt- Engineering Mechines- statics dynamics, Thomson' Books*
6. *R.K. Rajput, Engineering Mechanics S.Chand & Co*

List of experiments.

1. To verify the law of Triangle of forces
2. To verify the Lami's theorem.
3. To verify the law of parallelogram of forces.
4. To verify law of polygon of forces
5. To determine support reaction and shear force at a given section of a simply Supported beam and verify in analytically using parallel beam apparatus.
6. To determine the moment of inertia of fly wheel by falling weight method.
7. To verify bending moment at a given section of a simply supported beam.
8. Study of Various Beams and their Loading conditions

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTME102		Fundamental of Mechanical Engg.	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):

To introduction with (A) Engineering Materials, (B) thermodynamics, heat engines, refrigeration & air conditioning, (C) Production.

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 understand the need of engineering materials, and its property, need and defects.
2. Student would be able to analyses basics of thermodynamics and able to understand various mechanical instruments.
3. Students would be able to understand I C engines, their working and operating conditions.
4. Students will be able to understand the basics of refrigeration & air conditioning.
5. Student would be able to recognize production methodology and their need.
6. Students would be able to demonstrate various case studies based on heat engines, basics of thermodynamics, productions, etc.

Syllabus

Unit - I

Introduction to Engineering Materials: Introduction, classification materials, need of engineering materials, important properties of materials. Atomic structure, crystal geometry & structure, crystal imperfection, deformation of materials, phase transformation and mechanical properties.

Unit - II

Introduction to Thermodynamics: Definition of thermodynamics, thermodynamic systems, Macroscopic and Microscopic views, thermodynamic equilibrium, properties of system, point & path function, Temperature & pressure terminology and its measurement, laws of thermodynamics.

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Unit - III

Introduction to Heat Engines: Introduction, need of heat engines, types of heat engines.

IC Engines: Introduction, terminology of IC engine, cycles used in IC engine, two and four stroke engines, latest technologies used in engines of vehicle.

Boilers: Introduction, steam, types of steam, properties of steam, boilers, types of boilers, terminology related to steam and boilers, boiler mountings & accessories.

Unit - IV

Introduction to Refrigeration & Air Conditioning: Introduction, need of refrigeration, fundamentals of refrigeration, refrigeration systems, refrigerants.

Introduction, need of air conditioning, air conditioning systems, equipment's, components and control.

Unit-V

Introduction to Manufacturing: Material properties, Definition and classification of basic manufacturing process, introduction to casting, Rolling, Extrusion, welding, Brazing, Soldering.

References

1. *Mechanical Engineering by R. K. Rajput*
2. *Basic Mechanical Engineering by D. K. Gupta*
3. *Basic Mechanical Engineering (MP) by Domkundwar*
4. *Mechanical Engineering Handbook (CRC Press)*
5. *Mechanical Engineering Reference Book by E.H. Smith*
6. *An Introduction to Mechanical Engineering by Wickert/Lewis*
7. *Engineering Fundamentals: An Introduction to Engineering by Moaveni*

List of Experiments

1. To perform tensile test, plot the stress-strain diagram and evaluate the tensile properties of a given metallic specimen.
2. To calculate Mechanical Advantage, Velocity Ratio and Efficiency of various temperature and pressure measuring devices and plot graphs.
3. To study Four-Stroke Diesel Engines.
4. To study Four-Stroke Petrol Engines.
5. To study the fire tube boiler, water tube boiler.
6. To study the working and function of mountings and accessories in boilers.
7. To study the Refrigeration System.
8. To study the functioning of Window Room Air Conditioner.

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEE 102		Fundamental of Electrical Engg.	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 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 (COs):

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

The students will be able to

- Understand and Analyze basic circuit concepts.
- Apply knowledge of mathematics to analyze and solve electrical circuit problems.
- Understand the AC fundamentals.
- Illustrate basic knowledge about the Electric and Magnetic circuits.
- 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,

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Faradays's law, self and mutual inductance. Energy stored in a magnetic field, Hysteretic and Eddy current losses. Electro-mechanical energy conversion.

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.

References

- *D.P Kothari & I.J Nagrath, Basic Electrical engineering, TMH, Second Edition.*
- *V.N Mittle & Arvind Mittal, Basic Electrical Engineering, TMH, Second Edition.*
- *Vincent.D.Toro, Electrical Engineering Fundamental, Pearson Education, Second Edition*

List of experiments.

11. Verification of KCL and KVL Law's.
12. Separation of resistance and inductance of choke coil.
13. Study of Transformer, name plate rating.
14. Determination of Turns ratio and polarity of Single Phase Transformer.
15. Determination of equivalent circuit parameters of a single phase transformer by O.C. and S.C. tests.
16. Measurement of power in a three phase circuit by two wattmeter method.
17. Measurement of power in a three phase circuit by three wattmeter method
18. Measurement of various line & phase quantities for a 3-phase circuit.
19. Study of No load characteristics of D.C shunt Generators.
20. Study of comparative features of Synchronous Machine and Induction Machine.

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS 101		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 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 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.

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.

UNIT-III

Basics of C language : Introduction to C language, Basic Programming concepts, Program structure in

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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. 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.
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++
15. Write a program for nested function call.

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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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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTHU 101		Communication Skill	0	0	0	0	50	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):

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

Course Outcomes (COs):

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

The students will be able to

6. Enhance confidence in their ability to read, comprehend, organize, and retain written information.
7. Improve upon their language skills, oral communication skills, group discussion, personal development and confidence level..
8. Bridge the language gap vital to their success. Know the numerical solution of the system of linear algebraic equations.
9. 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

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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.

Unit V

Vocabulary Building: Synonyms, antonyms, idioms and proverbs.

References

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8. *R.K. Bansal and IB Harrison. Spoken English . Orient*
9. *Joans and Alexander. New International Business English .Longman.; OUP.*
10. *Ashraf Rizvi.(2005).Effective Technical Communication. New Delhi:Tata Mc Graw Hill*

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