VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Accredited by NBA &NAAC, Approved by AICTE & Permanently affiliated to JNTUH

Aziz Nagar Gate, C.B. Post, Hyderabad - 500 075, Telangana.

ACADEMIC REGULATIONS, COURSE STRUCTURE & SYLLABUS

For

B. Tech First Year (ECE, EEE, CIVIL & MECHANICAL)

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

B.TECHFIRST YEAR COURSE STRUCTURE & SYLLABUS
(Common for ECE& EEE)

B.Tech I Year I Semester

S.No	Course Category	Course Code	Course Title	L	T	P	Credits
1	BS-1	A41002	Mathematics-I	3	1	0	4.0
2	BS-2	A41004	Applied Physics	3	1	0	4.0
3	BS-Lab-1	A41082	Physics Lab	0	0	3	1.5
4	H&S-1	A41001	English	2	0	0	2.0
5	H&S Lab-1	A41081	English Language Skills Lab (ELSL)	0	0	2	1.0
6	ES-1	A41501	Programming for Problem Solving-I	2	0	0	2.0
7	ES Lab-1	A41581	Programming for Problem Solving Lab-I	0	0	2	1.0
8	ES-2	A41301	Engineering Graphics & Modeling	1	0	3	2.5
			Total	11	2	10	18

B.Tech I Year II Semester

S. No	Course Category	Course Code	Course Title	L	T	P	Credits
1	BS-3	A42007	Mathematics-II	3	1	0	4.0
2	BS-4	A42009	Chemistry	3	1	0	4.0
3	BS-Lab-2	A42086	Chemistry Lab	0	0	3	1.5
4	ES-3	A42202	Basic Electrical Engineering	3	0	0	3.0
5	ES-Lab-2	A42282	Basic Electrical Engineering Lab	0	0	2	1.0
6	ES Lab-3	A42382	Engineering Workshop	0	1	3	2.5
7	H&S Lab-2	A42084	English Communication Skills Lab (ECSL)	0	0	2	1.0
8	ES-4	A42502	Programming for Problem Solving-II	2	0	0	2.0
9	ES-Lab-4	A42582	Programming for Problem Solving Lab-II	0	0	2	1.0
			Total	11	3	12	20

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

B.TECH FIRST YEAR COURSE STRUCTURE & SYLLABUS
(Common for CIVIL& MECH)

B.Tech I Year I Semester

S. No	Course Category	Course Code	Course Title	L	T	P	Credits
1	B S – 1	A41002	Mathematics – I	3	1	0	4.0
2	B S – 2	A41003	Engineering Physics	3	1	0	4.0
3	BS Lab – 1	A41082	Physics Lab	0	0	3	1.5
4	H & S – 1	A41001	English	2	0	0	2.0
5	H&S Lab -1	A41081	English Language Skills Lab (ELSL)	0	0	2	1.0
6	E S -1	A41501	Progror Problem Solving – I	2	0	0	2.0
7	ES-Lab -1	A41581	Programming for Problem Solving Lab – I	0	0	2	1.0
8	E S – 2	A41301	Engineering Graphics & Modeling	1	0	3	2.5
			Total	**11**	**2**	**10**	**18**

B.Tech I Year II Semester

S .No	Course Category	Course Code	Course Title	L	T	P	Credits
1	B S - 3	A42007	Mathematics – II	3	1	0	4.0
2	B S - 4	A42009	Chemistry	3	1	0	4.0
3	BS Lab - 1	A42086	Chemistry Lab	0	0	3	1.5
4	E S - 3	A42303	Engineering Mechanics	4	0	0	4.0
5	ES Lab - 2	A42382	Engineering Workshop	0	1	3	2.5
6	H&S Lab - 2	A42084	English Communication Skills Lab (ECSL)	0	0	2	1.0
7	E S - 4	A42502	Programming for Problem Solving – II	2	0	0	2.0
8	ES Lab - 3	A42582	Programming for Problem Solving Lab – II	0	0	2	1.0
			Total	12	3	10	20

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

MATHEMATICS - I
(Matrices and Calculus)
(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

Course Code: A41002

L	T	P	C
3	1	0	4

Course Outcomes:

1. Write the matrix representation of system of linear equations and identify the consistency of the system of equations.
2. Find the Eigen values and Eigen vectors of the matrix and discuss the nature of the quadratic form.
3. Analyze the convergence of sequence and series.
4. Discuss the applications of mean value theorems to the mathematical problems, Evaluation of improper integrals using Beta and Gamma functions.
5. Examine the extrima of functions of two variables with/ without constraints.

UNIT-I:

Matrices and Linear System of Equations: Matrices and Linear system of equations: Real matrices Symmetric, skew symmetric, orthogonal. Complex matrices: Hermitian, Skew Hermitian and Unitary. Rank-Echelon form, Normal form. Solution of Linear Systems Gauss Elimination, Gauss Jordan & LU Decomposition methods.

UNIT-II:

Eigen Values and Eigen Vectors: Eigen values, Eigen vectors properties, Cayley-Hamilton Theorem (without Proof) Inverse and powers of a matrix by Cayley-Hamilton theorem Diagonalization of matrix Quadratic forms: Reduction to Canonical form, Nature, Index, Signature.

UNIT-III:

Sequences & Series:

Basic definitions of Sequences and series, Convergence and divergence, Ratio test, Comparison test, Cauchy's root test, Raabe's test, Integral test, Absolute and conditional convergence.

UNIT-IV:

Beta & Gamma Functions and Mean Value Theorems: Gamma and Beta Functions-Relation between them, their properties evaluation of improper integrals using Gamma / Beta functions. Rolle's Theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Generalized Mean Value theorem (all theorems without proof) Geometrical interpretation of Mean value theorems.

UNIT-V:

Functions of several variables: Partial Differentiation and total differentiation, Functional dependence, Jacobian Determinant- Maxima and Minima of functions of two variables with constraints and without constraints, Method of Lagrange Multipliers.

Text Books:

1. Higher Engineering Mathematics, B.S. Grewal, Khanna Publishers, 36th Edition, 2010
2. Advanced Engineering Mathematics by Jain &Iyengar NarosaPublications.

Reference Books:

1. Calculus and Analytic geometry, G.B. Thomas and R.L. Finney, 9th Edition, Pearson, Reprint, 2002.
2. Advanced Engineering Mathematics, Erwin Kreyszig, 9th Edition, John Wiley & Sons, 2006.
3. Advanced Engineering Mathematics (2nd Edition), MichaelD.Greenberg

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

APPLIED PHYSICS

(Common for ECE & EEE)

B.Tech I Year I Semester

Course Code: A41004

L	T	P	C
3	1	0	4

Course Outcomes:

1. Identify various optical phenomena of light
2. Discuss the basic principles of quantum mechanics
3. Classify solids based on the band theory
4. Elucidate the characteristics of semiconductors and semiconductor devices
5. Explain the working principle of optical fibers and lasers

UNIT – I:

Wave Optics: Principle of Superposition, coherence. Interference - Interference in thin films by reflection, Newton's Rings. Diffraction - Fraunhofer and Fresnel Diffraction, Farunhofer diffraction due to single slit, Plane Diffraction Grating, resolving power of grating (qualitative treatment). Polarization - Polarization of light waves, Plane of vibration, plane of polarization, Double refraction, Nicol's Prism, Applications of Polarization.

UNIT-II:

Free electron theory and Introduction to Quantum Mechanics: Classical free electron Theory, Electrical Conductivity and Ohm's Law -Drawbacks.Introduction to quantum physics: Black body radiation and Planck's Law(qualitative treatment), wave-particle duality, de-Broglie hypothesis of matter waves, Heisenberg uncertainty principle, time independent Schrodinger equation, Born interpretation of wave function, particle in an infinite potential well (one dimension).

UNIT-III:

Band theory of solids and Semiconductors: Kronig-Penny model(qualitative treatment), E-k diagram, Energy bands in solids, classification of materials into metals, semiconductors, and insulators, Effective mass, Densityof States(qualitative treatment), Fermi distribution function, Fermi level and its importance.Intrinsic semiconductors, carrier concentration in intrinsic semiconductors, energy band diagram and position of Fermi level in intrinsic semiconductors, equation for electrical conductivity of semiconductors, extrinsic semiconductors (qualitative treatment).

UNIT-IV:

Semiconductor Devices: Direct and indirect band-gap semiconductors, Formation of p-n junction, energy diagram of PN junction, I-V characteristics of PN junction diode, Photo diode, solar cell-

efficiency, light emitting diode and their characteristics, semiconductor laser: device structure and characteristics, Hall effect and its applications.

UNIT-V:

Fiber Optics and Lasers: Introduction, total internal reflection, acceptance angle and numerical aperture, step and graded index fibers, applications of optical fibers.Introduction to interaction of radiation with matter: stimulated absorption, spontaneous emission and stimulated emission, characteristics of a laser, population inversion, important components of a laser: active medium, pumping source, optical resonator. Construction and working of Ruby laser, He-Ne laser, applications of lasers.

Text Books:
1. Engineering Physics by P K Palanisamy, Scietech publication.
2. Engineering Physics by V Rajendran, McGraw Hill Education.

Reference Books:
1. Engineering Physics by S O Pillai, Sivakami, New Age International (P) Limited.
2. Physics Volume I & II, Resnick and Halliday, John Wiley and sons, Inc.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGINEERING PHYSICS

(Common for CIVIL & MECH)

B.Tech I Year I Semester

Course Code: A41003

L	T	P	C
3	1	0	4

Course Outcomes:

1. Explain the crystal structure of solids
2. Understand various optical phenomena of matter
3. Explain the working principle of optical fibers and lasers
4. Interpret forced damped harmonic oscillations
5. Apply the knowledge of magnetic behavior of materials

UNIT-I:

Crystallography: Space lattice, Unit cell, Lattice parameters, Crystal systems, Bravais lattices, Atomic radius, Co-ordination number, Structures and Packing fractions of Simple Cubic, Body Centered Cubic and Face Centered Cubic crystals. Miller Indices for Crystal planes and directions, Inter planar spacing of orthogonal crystal systems.

UNIT-II:

Wave Optics: Principle of Superposition, coherence. Interference - Interference in thin films by reflection, Newton's Rings. Diffraction - Fraunhofer and Fresnel Diffraction, Farunhofer diffraction due to single slit, Plane Diffraction Grating, resolving power of grating (qualitative treatment). Polarization - Polarization of light waves, Plane of vibration, plane of polarization, Double refraction, Nicol's Prism, Applications of Polarization.

UNIT-III:

Fiber Optics and Lasers: Introduction, total internal reflection, acceptance angle and numerical aperture, step and graded index fibers, applications of optical fibers. Introduction to interaction of radiation with matter: stimulated absorption, spontaneous emission and stimulated emission, characteristics of a laser, Population inversion, components of a laser: active medium, pumping source, optical resonator. Construction and working of Ruby laser and He-Ne laser. Applications of Lasers.

UNIT-IV:

Waves and Oscillations: Simple harmonic motion, equation of simple harmonic motion, Simple Pendulum, Torsional pendulum, damped harmonic motion-heavy, critical and light damping, energy decay in a damped harmonic oscillator (qualitative treatment), power dissipation, quality factor. Forced vibration, steady state motion of forced damped harmonic oscillator. Amplitude of forced vibration, Resonance.

UNIT-V:

Magnetic Properties of Materials: Introduction to magnetism - Basic definitions, Origin of magnetic moment, Bohr magneton. Classification of magnetic materials-Dia, Para, Ferro, Antiferro and Ferri magnetic materials, Domain theory of ferromagnetism, Hysteresis curve, Soft and Hard magnetic materials and their applications.

Text books:
1. Engineering Physics, Hitendra K Malik, A. k. Singh, Mcgraw Hill Edition Private Limited.
2. Engineering Physics, P K Palanisamy, Scietech publication.

Reference books:
1. A Text book of Engineering Physics, M N Avadhanulu, P G Kshrsagar, S Chand.
2. Physics Volume I & II, Resnick and Halliday, John Wiley and sons, Inc.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

PHYSICS LAB

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

Course Code: A41082

Course Outcomes:

L	T	P	C
0	0	3	1.5

1. Apply optical phenomena to characterize optical sources and components.
2. Characterize semiconductors and semiconductor devices.
3. Study transient response of RC circuit.
4. Study the properties and resonance mechanisms in mechanical and electrical systems.
5. Evaluate the magnetic Induction along the axis of current carrying coil.

List of Experiments

1. Newton's rings: Determination of the radius of curvature of a given lens by forming Newton's rings.
2. Diffraction grating: Determination of wavelength of a given source using a plane diffraction grating.
3. Dispersive power: Determination of dispersive power of given prism.
4. Single Slit Diffraction using Lasers- Determination of wavelength of a Monochromatic Source (LASER).
5. Energy gap of P-N junction diode: Determination of the energy gap of a semiconductor diode.
6. Light emitting diode: Study of V-I and P-I characteristics of a given light emitting diode.
7. Photo diode: Study of V-I characteristics of photo diode at different intensities.
8. Melde's Experiment: Determination of frequency of electrically maintained tuning fork.
9. Sonometer: Determination of frequency of AC source.
10. Torsional pendulum: Determination of rigidity modulus of a given material.
11. Fly-wheel: Determination of moment of inertia of flywheel.
12. Stewart & Gee's experiment - Determination of magnetic field along the axis of current carrying coil.
13. LCR Circuit- Determination of the resonance frequency of forced electrical oscillator.
14. RC- Circuit – Determination of the time constant of RC-circuit.
15. Optical fiber: Determination of the numerical aperture of optical fiber.

   Note: Any 10 experiments are to be performed.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGLISH

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

Course Code: A41001

L	T	P	C
2	0	0	2

Course Outcomes:

1. Infer the importance of scientific discoveries in promoting social responsibilities.
2. Comprehend the given texts and respond appropriately for technical and professional purposes.
3. Communicate confidently and transfer information into various forms of writing.
4. Understand the importance of health and nutrition for a better society.
5. Present various forms of business writing skills for successful careers.

UNIT-I:

'The Raman Effect' from the prescribed textbook **'English for Engineers'**

Grammar: Articles & Prepositions

Reading : Reading and Its Importance- Techniques for Effective Reading.

Writing : Organizing principles of paragraphs in documents.

Vocabulary: The concept of word Formation, synonyms, antonyms, and standard abbreviations.

UNIT-II:

'Ancient Architecture in India' from the prescribed textbook **'English for Engineers'**

Reading : Improving Comprehension Skills – Techniques for good comprehension

Writing :Sentence Structures, Use of phrases and clauses in sentences

Writing Formal Letters-Eg. Letter of Complaint, Letter of Requisition,

Job Application with Resume.

Vocabulary: Root words and acquaintance with prefixes and suffixes from foreign languages in English, to form derivatives

UNIT-III:

'Blue Jeans' from the prescribed textbook **'English for Engineers'**

      Grammar: Tenses: Types and uses.

      Reading : Sub-skills of Reading- Skimming and Scanning

      Writing :Identifying Common Errors in Writing

            Subject-Verb agreement in number, gender and person

         Information Transfer-Process writing

UNIT-IV:

'What Should You Be Eating' from the prescribed textbook **'English for Engineers'**

      Reading : Intensive Reading and Extensive Reading

      Writing :Nature and Style of Sensible Writing

         Describing & Defining

Identifying common errors in writing

UNIT-V:

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook **'English**

      for Engineers'

      Vocabulary : Technical Vocabulary and their usage

      Reading : Reading Comprehension-Exercises for Practice

      Writing : Cohesive Devices

      Précis Writing

      Technical Reports-Introduction, Characteristics of a Report –

      Categories of Reports, Formats- Structure of Reports (Manuscript

         Format) –Types of Reports - Writing a Report.

Text Books:

1. English for Engineers,Sudarshana, N.P. and Savitha, C. Cambridge University Press, 2018.

Reference Books:

1. Effective Technical communication, Muhammed Rizvi, TMH, 2008.
2. Advanced English Grammar, Hewings, Cambridge University Press, 2010.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGLISH LANGUAGE SKILLS LAB
(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

Course Code: A41081

L	T	P	C
0	0	2	1

Course Outcomes:

1. Reproduce speech sounds and improve fluency in language.
2. Understand syllables and consonant clusters for appropriate pronunciation.
3. Exhibit effective professional skills with rhetoric eloquence.
4. Deliver enthusiastic and well-practiced presentation.
5. Learn Task-Based Language Learning (TBLL) through various language learning activities effectively.

Exercise-I:
CALL Lab
Introduction to Pronunciation- Speech Sounds, Vowels and Consonants- Practice for Listening
ICS Lab:
Ice-Breaking activity and JAM session

Exercise-II:
CALL Lab
Silent Letters, Consonant Clusters, Homographs
ICS Lab:
Common Everyday Situations: Conversations and Dialogues

Exercise-III:
CALL Lab
Syllables
ICS Lab
Communication at Workplace, Social and Professional Etiquette

Exercise-IV:

CALL Lab:

Word Accent and Stress Shifts

ICS Lab:

Formal Presentations, Visual Aids in Presentations

Exercise-V:

CALL Lab:

Intonation, Situational dialogues for practice

ICS Lab:

Interviews, Types of Interviews

Reference Books:

1. A textbook of English Phonetics for Indian Students, T. Balasubramanian, Macmillan Publishers, 2010.
2. Speaking English Effectively, Mohan, Macmillan Publishers, 2010.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

PROGRAMMING FOR PROBLEM SOLVING-I

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

L	T	P	C
2	0	0	2

Course Code: A41501

Course Outcomes:

1. Design Algorithms and Flowcharts for real world applications using 'C'.
2. Know the usage of various operators in Program development.
3. Design programs involving decision and iteration structures.
4. Apply the concepts code reusability using Functions.
5. Analyze various searching and sorting techniques using Arrays.

UNIT-I:

Problem Solving Using Computers: Introduction, Algorithms, Flowcharts and Pseudo code, Applications of C language.

Overview of C Language: Introduction, Salient Features of C Language, Structure of a "C" Program.

C Language Preliminaries: Keywords and Identifiers, Constants, Variables, Data Types, and Input/ Output Statements with suitable illustrative "C" Programs.

UNIT-II:

Operators: Assignment Operators, Relational and Logical Operators, Increment and Decrement Operators, Bitwise Operators, Ternary Operator, Type Conversion, Precedence and Associativity with suitable illustrative "C" Programs.

UNIT-III:

Statements in C:Conditional/Decision Statements: if, if-else, Nested if-else, else-if ladder, and Switch-Statement with suitable illustrative "C" Programs.

Loop Control Statements: while, do-while and for with suitable illustrative "C" Programs.

UNIT-IV:

Functions: Introduction to Functions, benefits of functions, types of functions, Function calls, return vs exit( ), Parameter Passing mechanism: Call-by-Value, Recursion, Storage Classes.

UNIT-V:

Arrays: Introduction to Arrays, One-Dimensional Arrays, Two-Dimensional Arrays, Arrays and Functions.

Searching and Sorting: Linear Search, Binary Search, Bubble Sort, Insertion Sort.

Text Books:

1. COMPUTER SCIENCE: A Structured Programming Approach Using C, B.A.Forouzon and R.F. Gilberg Third edition, CENGAGE Learning, 2016.
2. C and Data Structures, Ashok N. Kamthane, "Pearson Education. 2010.

Reference Books:

1. Problem Solving Using C, M.T.Somashekara, PHI, 2nd Edition 2009.
2. Computer Fundamentals and Programming in C, A.K.Sharma, 2nd Edition, University Press.
3. Programming in C 2/e, Pradip Dey and Manas Ghosh, Oxford University Press, 2nd Edition 2011.
4. The Fundamentals of Computers Rajaraman V.,, 4th Edition, Prentice Hall of India, 2006.
5. Programming in C, R S Bichker, University Press, 2012.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

PROGRAMMING FOR PROBLEM SOLVING LAB – I
(Common for ECE, EEE, CIVIL & MECHANICAL)

	L	T	P	C
B.Tech I Year I Semester	0	0	2	1

Course Code: A41581

Course Outcomes:

1. Apply the specification of syntax rules for numerical constants and variables, data types.
2. Know the Usage of various operators and other C constructs.
3. Design programs on decision and control constructs.
4. Develop programs on code reusability using functions.
5. Implement various searching and sorting techniques using arrays.

Week 1

Ubuntu and Linux Commands.

Week 2

Designing of flowcharts and algorithms using raptor tool

1. Areas of Polygons.

2. Calculation of Simple and Compound Interest.

3. Swapping of Two numbers with and without temporary variable.

4. Checking whether a number is even or odd.

5. Sum of first 'n' natural numbers.

6. Checking a number whether it is divisible by any given number.

7. Evaluation of mathematical expressions.

8. Programs using scanf( ) and printf( ) statements.

Week 3

Programs on operators. (Minimum 4 Programs)

Week 4, 5 & 6

Programs on Conditional Statements. (Minimum 12 Programs)

Week 7,8 & 9

Programs on Control Statements. (Minimum 12 Programs)

Week 10 &11

Programs on Functions. (Minimum 6 Programs)

Week 12

Programs on One Dimensional Arrays. (Minimum 3 Programs)

Week 13

Programs on Two Dimensional Arrays. (Minimum 2 Programs)

Week 14

Implementation of Linear Search and Binary Search.

Week 15

Implementation of Bubble Sort and Insertion Sort.

Week 16

Review

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGINEERING GRAPHICS & MODELING

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year I Semester

L	T	P	C
1	0	3	2.5

Course Code: A41301

Course Outcomes:

1. Understand the concepts of engineering drawing of planes, solids and the CAD drawing software.

2. Conceptualize and draw the projections of points and straight lines.

3. Visualize and project different views of a planes and solids.

4. Analyze given solids and represent sectional views.

5. Generate isometric and corresponding orthographic views of any given component.

UNIT- I:

Introduction to Engineering Drawing: Principles of engineering graphics and their significance, usage of drawing instruments, conic sections, including the rectangular hyperbola general method only. Cycloid, Epicycloid, Hypocycloid. Scales plain & diagonal only.

Introduction to CAD: Introduction to CAD software and its importance, standard toolbar/menus and navigation tools used in the software, using basic commands limits ,units, grid, test , move, offset ,mirror, rotate, trim, extend, fillet etc. drawing lines using line command. Drawing spline, ellipse, circle, rectangle etc.. Concept of layers and dimensioning.

UNIT- II:

Principles of Orthographic Projections: Conventions. Projections of points, projections of lines (first angle projection) inclined to both planes (traces and midpoint problem to be excluded).

Implementation of CAD: Drawing orthographic projections of points and lines using a CAD package.

UNIT – III:

Projections of the Planes: Projections of regular planes inclined to both the planes.

Projections of Solids: Projections of regular solids inclined to both the planes (prisms, pyramids, cones and cylinders, Change of potion method only).

Implementation in CAD: Drawing orthographic projection of planes and regular solids using a CAD package.

UNIT- IV:

Sections and Sectional Views of Right Angular Solids: Prism, Cylinder, Pyramid, Cone. Development of surfacesof right regular solids - Prism, Pyramid, Cylinder and Cone.

Implementation in CAD: Concept of hatching, drawing sectional views of solids and the development of right regular solids using a CAD package.

UNIT-V:

Principles of Isometric projection: Isometric scale, isometric views, conventions, isometric views of lines, planes, simple solids, conversion of isometric views to orthographic views and vice-versa, conventions.

Implementation in CAD: Drawing isometric views of simple solids. Drawing isometric views from giving orthographic views and vice-versa using a CAD package.

Note: Implementation in CAD (For Internal Evaluation Weightage Only)

Text Books:

1. Engineering Drawing, Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Charotar Publishing House.

Reference Books:

1. Engineering Graphics, Agrawal B. & Agrawal C. M. (2012), TMH Publication Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers.
2. Engineering Drawing and Computer Graphics, Shah, M.B. & Rana B.C. (2008), Pearson Education.
3. http://docs.autodesk.com/ACDMAC/2013/ENU/PDFs/acdmac_2013_users_guide.pdf

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

MATHEMATICS - II

(Ordinary Differential Equations and Vector Calculus)

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
3	1	0	4

Course Code: A42007

Course Outcomes:

1. Classify the various types of differential equations of first order and first degree and apply the concepts of differential equations to the real world problems.

2. Solve higher order differential equations and apply the concepts of differential equations to the real world problems.

3. Find the Laplace Transform of various functions and apply to find the solutions of differential equations.

4. Evaluate the multiple integrals and identify the vector differential operators physically in engineering problems.

5. Evaluate the line, surface and volume integrals and converting them from one to another by using vector integral theorems.

UNIT-I:

First order Ordinary Differential Equations and their Applications: Formation of Differential equations, Differential equations of first order and first degree: exact, linear and Bernoulli, Applications of ODE: Newton's law of cooling, law of natural growth and decay, orthogonal trajectories.

UNIT-II:

Higher Order Linear Differential Equations: Linear differential equations of second and higher order with constant coefficients, RHS term of the type f(X) = $e^{ax}, \sin ax, \cos ax \text{ and } x^k, e^{ax}V(x), x^kV(x)$. Method of variation of parameters

UNIT-III:

Laplace transforms: LaPlace transform of standard functions- Inverse transform- first shifting Theorem, Transforms of derivatives and integrals- Unit step function- second shifting theorem- Dirac's delta function -Convolution theorem Periodic function - Differentiation and integration of transforms.Application of Laplace transforms to ordinary differential equations.

UNIT-IV:

Multiple Integrals & Vector Differentiation:

Multiple integrals -double and triple integrals -change of order of integration (Only Cartesian form)- change of variables (Cartesian to Polar for double integral, Cartesian to Spherical for triple integral).

Gradient- Divergence- Curl and their related properties- Potential function Laplacian and second order operators.

UNIT-V:

Vector Integration: Line integral, work done, Surface and Volume integrals. Vector integrals theorems: Green's, Stoke's and Gauss Divergence Theorems (Only Statements & their Verifications).

Textbooks:

1. Higher Engineering Mathematics, B.S. Grewal, Khanna Publishers, 36th Edition, 2010
2. Advanced Engineering Mathematics by Jain &Iyengar NarosaPublications.

Reference Books:

1. Calculus and Analytic geometry, G.B. Thomas and R.L. Finney, 9th Edition, Pearson, Reprint, 2002.
2. Advanced Engineering Mathematics, Erwin Kreyszig, 9th Edition, John Wiley & Sons, 2006.
3. Advanced Engineering Mathematics (2nd Edition),MichaelD.Greenberg

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

CHEMISTRY

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

Course Code: A42009

L	T	P	C
3	1	0	4

Course Outcomes:

1. Acquire knowledge of atomic, molecular and electronic changes related to conductivity.

2. Apply the various processes of treatment of water for both domestic and industrial purpose.

3. Apply the knowledge of electrode potentials for the protection of metals from corrosion.

4. Analyze the major chemical reactions that are used in the synthesis of compounds.

5. Apply the knowledge of polymers in every day's life.

UNIT (I)
Atomic and molecular structure

Introduction, Concept of atomic and molecular orbitals, Crystal field theory- Crystal field splitting patterns of transition metal ion d- orbital- tetrahedral & octahedral geometries.
LCAO, Molecular orbitals of di-atomicmolecules, Molecular orbital energy level diagrams of diatomic molecules (N_2, O2& F_2). Pi-molecular orbitals of butadiene and benzene.

UNIT II:
Water Technology

Hardness of water, expression of hardness ($CaCO_3$ equivalent), units and types of hardness. Estimation of temporary and permanent hardness of water by EDTA method. Numerical problems based on hardness of water. Potable water: characteristics, treatment of water for domestic supply. Desalination of brackish water: reverse osmosis. Alkalinity of water and its determination. Boiler feed water and its treatment: Internal treatment (colloidal, phosphate calgon conditioning of water). External treatment (ion –exchange process).

UNIT (III):
Electrochemistry and corrosion

Electrode, electrode potential, galvanic cell, cell reactions and cell notation, cell EMF, types of electrodes (Calomel electrode and Quinhydrone electrode),Determination of P^H using quinhydrone electrode. Nernst equation, Numerical problems.
BATTERIES: Introduction to cell and battery, Primary (lithium cell) and secondary cells, (lead-Acid cell, and lithium-ion cells). Fuel cells – Methanol – Oxygen fuel cell, advantages and engineering applications of fuel cells.

Corrosion: Introduction, types of corrosion: chemical and electrochemical corrosion, factors affecting the rate of corrosion: nature of the metal, position of metal in galvanic series, purity of metal, nature of corrosion product, nature of environment: effect of temperature, effect of pH, humidity. Corrosion control methods: Cathodic protection: sacrificial anode method and impressed current cathode method. Protectivecoatings: metallic coatings (anodic and cathodic), methods of application on metals-electroless plating of Ni.

UNIT (IV):
Stereochemistry

Structural isomers and stereoisomers, configurations,symmetry and chirality, enantiomers, diastereomers, optical activity. Conformations of n-butane.
Organic reactions and synthesis of a drug molecule

Introduction to reactions involving substitution(SN1 & SN2), addition(addition of HBr to propene, Markownikoff and Anti Markownikoff addition), elimination, oxidation(oxidation of alcoholsusing $KMnO_4$& CrO_3), reduction(reduction of carbonyl compounds by $LiAlH_4$& $NaBH_4$). Synthesis of a commonly used drug molecule- paracetamol and Asprin.

UNIT (V):
Polymer Chemistry

Introduction, classification of polymers, types of polymerization (addition and condensation, mechanisms not included). Plastics- types of plastics -thermoplastics and thermosetting plastics. Preparation, properties and engineering applications of PVC, Teflon and Bakelite. Fibers: Nylon 6, 6 and Terelene (Dacron). Elastomers: natural rubber, structure, vulcanization. Synthetic rubbers: Buna-S& Butyl rubber.Conducting polymers: classification, polyacetylene and applications.
Biodegradable polymers: Types, examples: Polyhydroxy butyrate (PHB),Polyglycolic acid (PGA), Polylactic acid (PLA). Applications of biodegradable polymers.

Text Books:
   (i)   Engineering Chemistry by P.C Jain & Monica Jain, Dhanpat Rai Publishing Company.
   (ii)   Engineering Chemistry by Shashi Chawla, Dhanpat Rai Publishing Company.

Reference Books:
   (i)   Physical Chemistryby P. W. Atkins, W. H. Freeman and Company.
   (ii)   Text book of Engineering Chemistry byDr.M.Tirumala Chary& Dr. E.Laxminarayana, Scitech Publications (India) Pvt Ltd.
   (iii)   Engineering Chemistry (NPTEL Web-book)by B.L. Tembe, Kamaluddin and M.S.Krishnan

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

CHEMISTRY LAB

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
0	0	3	1.5

Course Code: A42086

Course Outcomes:

1. Determination of parameters like hardness, alkalinity and chloride content in water.
2. Estimation of rate constant of a reaction from concentration-time relationships.
3. Determination of physical properties like adsorption, surface tension and viscosity.
4. Synthesize a small drug molecule and analyze a salt sample.
5. Calculation of strength of compound using instrumentation techniques.

Choice of 10-12 experiments from the following:

1. Estimation of total hardness of water by EDTA method.

2. Determination of alkalinity of water.

3. Determination of chloride content of water.

4. Estimation of HCl by conductometric titration.

5. Estimation of mixture of acids by conductometric titration.

6. Estimation of HCl by potentiometric titration.

7. Estimation of Fe^{2+} by potentiometry using $KMnO_4$.

8. Determination of the rate constant of a reaction.

9. Determination of surface tension.

10. Determination of viscosity of a lubricant.

11. Chemical analysis of a salt.

12. Synthesis of a polymer/drug.

13. Adsorption of acetic acid by charcoal.

14. Determination of Saponification /acid value of an oil.

TEXT BOOKS:

1. Vogel's Textbook of Quantitative Chemical Analysis

2. Essentials of experimental engineering chemistry, Shashi Chawla, Dhanpat Rai & Co

REFERENCE BOOKS:

1. Text Book of engineering chemistry by R. N. Goyal and Harrmendra Goel.

2. A text book on experiments and calculations. S.S. Dara.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY
BASIC ELECTRICAL ENGINEERING
(Common for ECE & EEE)

B.Tech I Year II Semester

L	T	P	C
3	0	0	3

Course Code: A42202

Course Outcomes: At the end of the course the student will be able to

1. Understand the fundamentals of basic circuit components and their characteristics.
2. Analyze basic electrical circuits with A.C excitation.
3. Understand the concepts of magnetic circuits and transformers.
4. Acquire the basic concepts of electrical motors.
5. Understand the concept of A.C generator and low voltage electrical installations.

UNIT I:
Introduction to Electrical Engineering And Dc Circuits: Basic definitions, types of elements, types of sources, Kirchhoff's Laws, resistive networks, inductive networks, series, parallel circuits, Star- Delta and Delta- Star transformation, Network theorems- Superposition, Thevenin's - simple problems.

UNIT II:
Ac Circuits: Representation of sinusoidal waveforms, peak, RMS and average values Elementary treatment of single-phase AC circuits consisting of R, R-L, R-C, R-L-C combinations (series and parallel) Phase representation, real power, reactive power, apparent power, resonance concept. Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT III:
Magnetic Circuits &Transformers:
Magnetic circuits: Magnetic materials, Faraday's laws of Electromagnetic Induction, BH characteristics, Magnetic Circuits - concept of Self & Mutual Inductance.
Transformers: Ideal and practical single phase transformer, OC-SC tests, equivalent circuit, losses in transformer, regulation and efficiency - simple problems.

UNTI IV:

Dc Machines and Induction Motors: DC Machines: Construction, Principle and Operation of DC Motor, Voltage- torque equations - simple problems.

Three Phase Induction Motor: Construction, Principle and working of three phase Induction Motor, torque slip characteristics, - simple problems.

Single Phase Induction Motor: Single phase Induction Motor construction and working principle, capacitor start - applications

UNIT V:

Ac Generator & Electrical Installation: AC Generator: Construction, Principle of operation of Synchronous Generator, Pitch Factor- Distribution Factor (or winding factor) - EMF equation simple problems.

Electrical Installation: Fuse, Circuit breakers, difference between fuse and circuit breaker, Types of Batteries, battery backup.

Text Books:

1. Basic Electrical Engineering, D.P Kothari & I.J Nagrath, Tata McGraw Hill Publishing Company Limited-2nd Edition.
2. Basic Electrical Engineering, T.K. Nagsarkar and M.S. Sukhija, Oxford University Press-3rd Edition.

Reference Books:

1. Circuits and Networks, A.Sudhakar&ShyamMohan.S, Tata McGraw Hill Publishing Company limited, 5th Edition.
2. Basic Electrical Engineering, K.Uma Rao and A.Jayalakshmi, Pearson Publications.
3. Basic Electrical Engineering by D C Kulshreshtha, McGraw Hill Education Private limited, 1st Edition.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

BASIC ELECTRICAL ENGINEERING LAB

(Common for ECE & EEE)

B.Tech I Year II Semester

Course Code: A42282

L	T	P	C
0	0	2	1

Course Outcomes:

1. Get an exposure to basic electrical laws.

2. Understand the response of different types of electrical circuits to different excitations.

3. Understand the measurement, calculation and relation between the basic electrical parameters.

4. Understand the performance characteristics of D.C electrical machines.

5. Understand the performance characteristics of A.C electrical machines.

List of experiments/ demonstrations

Any 5 experiments from Part-A and Part-B should be conducted (Total 10 Experiments)

Part A

1. Verification of Ohms law

2. Verification of KVL and KCL

3. Verification of Thevenin's Theorem

4. Verification of Superposition Theorem

5. Transient Response of Series R- L and R - C circuits using DC excitation

6. Determination and Verification of Impedance and Current of RL and RC series circuits

Part B

1. Transient Response of R-L-C Series circuit using DC excitation

2. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)

3. OC & SC Test on Single phase transformer

4. Brake test on DC shunt motor

5. Brake test on Three Phase Squirrel cage induction motor.

6. OCC of Three phase alternator.

Reference Books:

1. Circuits and Networks by A.Sudhakar&ShyamMohan.S, Tata McGraw Hill Publishing Company Limited, 5th Edition.

2. Basic Electrical Engineering - by T.K. Nagsarkar and M.S. Sukhija, Oxford University Press, 3rd Edition

3. Basic Electrical Engineering by D.P Kothari & I.J Nagrath, Tata McGraw Hill Publishing Company Limited, 2nd Edition

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGINEERING MECHANICS

(Common for CIVIL & MECH)

B.Tech I Year II Semester

Course Code: A42303

L	T	P	C
4	0	0	4

Course Outcomes:

1. Understand and apply the concepts of force, moment and their resolutions.

2. Analyze and apply the concepts of friction.

3. Calculate area and mass Moment of Inertia for given cross-sections.

4. Analyze the motion of bodies considering the cause of motion. Appreciate and apply the concept of Work-Energy method.

5. Understand the kinetics of rigid body in translation and rotation

UNIT-I:

Introduction to Engineering Mechanics Force Systems: Basic concepts, particle equilibrium in 2D & 3D, rigid body equilibrium, system of forces, coplanar concurrent forces, components in space, resultant, moment of forces and its application, couples and resultant of force system, equilibrium of system of forces, free body diagrams, equations of equilibrium of coplanar systems.

UNIT-II:

Friction: Types of friction, limiting friction, laws of friction, static and dynamic friction, motion of bodies, wedge friction.

UNIT-III:

Centroid and Centre of Gravity: Centroid of lines, areas and volumes from first principle, centroid of composite sections, centre of gravity and its implications. Theorem of Pappus.

UNIT-IV:

Area Moment of Inertia: Definition, Moment of inertia of plane sections from first principles, theorems of moment of inertia, moment of inertia of standard sections and composite sections, Parallel Axis Theorem, Perpendicular Axis Theorem

Mass Moment of Inertia: Mass moment of inertia of composite bodies.

UNIT-V:

Review of Particle Dynamics: Rectilinear motion, Plane curvilinear motion, Relative motion, Work-kinetic energy, power, potential energy.

Kinetics of Rigid Bodies: Basic terms, general principles in dynamics, types of motion, D'Alembert's principle.

Text Books:

1. Engineering Mechanics, S.S Bhavikatti& K. G. Rajashekarappa New Age International Publishers.

Reference Books:

1. Engineering Mechanics, Timoshenko S.P and Young D.H., McGraw Hill International Edition, 1983.
2. Engineering Mechanics, Tayal A.K., - Statics & Dynamics, Umesh Publications, 2011.
3. Engineering Mechanics, Shames and Rao (2006), Pearson Education.
4. Singer's Engineering Mechanics: Statics & Dynamics, K.Vijaya Kumar Reddy and J.Suresh Kumar. B.S.Publications, 3rd edition 2013.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGINEERING WORKSHOP

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
0	1	3	2.5

Course Code: A42382

Course Outcomes:

1. Understanding the tools and methods of using to fabricate engineering components

2. Applying the measuring techniques to verify the dimensional accuracy

3. Evaluating various methods and trades of workshop in the component building

(i) Lectures & videos:

Detailed contents:

1. Manufacturing Methods- Metal Forming, Machining, Advanced manufacturing methods (2 lectures)

2. CNC machining, Additive manufacturing (2 lectures)

3. Fitting operations & power tools (1 lecture)

4. House wiring (1 lecture)

5. Carpentry (1 lecture)

6. Plastic moulding(1 lecture)

7. Metal casting (1 lecture)

8. Welding (1 Lecture)

(ii) Workshop Practice:

Detailed contents:

1. Machine shop (Lathe machine)

2. Fitting shop

3. Carpentry

4. House Wiring

5. Welding shop (Arc welding)

6. Tin Smithy

Reference Books:

1. Elements of Workshop Technology, Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.

2. Manufacturing Engineering and Technology, Kalpakjian S. And Steven S. Schmid, 4th edition, Pearson Education India Edition, 2002.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

ENGLISH COMMUNICATION SKILLS LAB

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
0	0	2	1

Course Code: A42084

Course Outcomes:

1. Understand the variants in pronunciation.

2. Identify the diverse purposes of listening and speaking.

3. Discuss ideas in diverse communicative settings.

4. Exhibit increased confidence in public speaking.

5. Display critical thinking, problem solving and decision making skills through GD's

Exercise-I:

CALL Lab:Spoken vs. Written language-Formal and Informal English- Introducing Oneself and Others.

Exercise-II:

CALL Lab:Listening Skill- Its importance Purpose- Process- Types- Barriers- Effective Listening.

ICS Lab: Features of Good Conversation – Strategies for Effective Communication Role-Play-Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise-III:

CALL Lab: Information Transfer

ICS Lab: Descriptions-Narrations-Giving Directions and Guidelines-Giving Instructions-Seeking Clarifications-Asking for and Giving Directions-Thanking and Responding-Agreeing and Disagreeing-Seeking and Giving Advice-Making Suggestions.

Exercise-IV:

CALL Lab: Past Tense Marker and Plural Marker

ICS Lab: Public Speaking- Exposure to Structured Talks - Non-verbal Communication- Making a Short Speech - Extempore

Exercise-V:
CALL Lab: Intonation- Sentence Stress -Weak Forms and Strong Forms.
ICS Lab: Group Discussion, Mock Group Discussion sessions

Reference Books:

1. A textbook of English Phonetics for Indian Students, T. Balasubramanian, Macmillan Publishers, 2010.
2. Speaking English Effectively, Mohan, Macmillan Publishers, 2010.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

PROGRAMMING FOR PROBLEM SOLVING-II

(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
2	0	0	2

Course Code: A42502

Course Outcomes

1. Identify various string handling functions in 'C'.
2. Develop programs with user defined data types.
3. Use Dynamic memory allocation functions with pointers.
4. Distinguish between Stacks and Queues.
5. Analyze various Dynamic Data Structures.

UNIT – I

Overview of Arrays and Functions.

Strings: Introduction to Strings, String I/O, String Operations with and without built-in functions (strlen( ), strcmp( ), strcat( ),strcpy( ) and strrev( )).

UNIT -II

Structures: Definition and Initialization of Structures, Accessing structure members, Nested Structures, Array of Structures, Structures and Functions, Unions, typedef, Enumerated Data types.

UNIT-III

Pointers: Introduction to Pointers, Pointer Arithmetic, Pointers and Arrays, Pointer to Structure, Pointers and Strings, Parameter passing mechanism: Call by Reference, Pointer to Pointer, Dynamic Memory Allocation.

UNIT-IV

Introduction to Data Structures: Lists and Operations, Linear and Nonlinear Data structures.

Stacks- Introduction to Stacks, Operations, Implementation of Stack using Arrays.

Queues- Introduction to Queues, Operations, Implementation of Queue using Arrays.

UNIT-V

Linked Lists: Introduction to Linked List, Operations on Single Linked List (search, Insertion & Deletion).

Files: Introduction to Files, File Operations (Open, Close, read &Write).

Text Books:

1. COMPUTER SCIENCE: A Structured Programming Approach Using C, B.A.Forouzon and R.F. Gilberg Third edition, CENGAGE Learning, 2016.
2. C and Data Structures, Ashok N. Kamthane, "Pearson Education. 2010.

Reference Books

1. Problem Solving Using C, M.T.Somashekara, PHI, 2nd Edition 2009.
2. Computer Fundamentals and Programming in C, A.K.Sharma, 2nd Edition, University Press.
3. Programming in C 2/e, Pradip Dey and Manas Ghosh, Oxford University Press, 2nd Edition 2011.
4. The Fundamentals of Computers Rajaraman V.,, 4th Edition, Prentice Hall of India, 2006.
5. Programming in C, R S Bichker, University Press, 2012.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

PROGRAMMING FOR PROBLEM SOLVING LAB – II
(Common for ECE, EEE, CIVIL & MECHANICAL)

B.Tech I Year II Semester

L	T	P	C
0	0	2	1

Course Code: A42582

Course Outcomes:

1. Build programs on various string handling functions.
2. Develop applications on user defined data types.
3. Apply dynamic memory allocation through pointers.
4. Implement linear data structures through stacks and queues.
5. Create linked list dynamically through stacks and queues.

Week 1

Programs on Arrays and Functions. (Minimum 3 Programs)

Week 2 & 3

Programs on Strings with and without string built-in Functions. (Minimum 6 Programs)

Week 4

Programs on Accessing Structures and Nested Structures. (Minimum 3 Programs)

Week 5 & 6

Programs on Array of Structures, Structures and Functions. (Minimum 5 Programs)

Week 7

Programs on Unions, typedef and enum. (Minimum 4 Programs)

Week 8

Programs on Pointers, pointer arithmetic, pointer expression, One Dimensional and Two-dimensional arrays. (Minimum 4 Programs)

Week 9

Programs on Pointer to structure, Call by Reference, Pointer to Pointer. (Minimum 3 Programs)

Week 10

Programs on Dynamic Memory Allocation Functions. (Minimum 3 Programs)

Week 11

Programs on Stacks and Queues using Arrays.

Week 12 & 13

Programs on Single Linked List.

Week 14 & 15

Programs on File Operations. (Minimum 6 Programs)

Week 16

Review