Program: B. Tech. (Integrated)					**Semester:** I
Course: Communication Skills					**Code:** BTIAB01001
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutorials**	**Credit**	**Theory (3 Hrs, 100 Marks)**	**Internal Continuous Assessment (ICA) As per Institute Norms**
2	0	2	3	50	50*

Rationale:

Excellence in business communication is essential for prospective engineers to succeed in the modern workplace. In this course, students will study communication theory and learn techniques to improve communication, business correspondence and technical writing.

Course Objectives:

- To equip students with basic concepts, theories and barriers of communication
- To build learners confidence in interpersonal communication by reinforcing the basics of vocabulary building
- To enhance the learners communication skills by giving adequate exposure in reading, writing, listening and speaking skills along with the related sub-skills
- To strengthen their overall language and communication for better technical writing and presentations

Course Outcomes:

After successful completion of the course student will be able to:

- Identify, interpret and formulate appropriate responses to various forms of communication
- Apply spoken and written skills in the English language in different scenarios of interpersonal communication especially in the domain of technical and business communication
- Demonstrate good comprehension, inference making, vocabulary building, paraphrasing and summarizing
- Equipped for various professional challenges by effective practice of technical writing and presentations
- Communicate better through various methods as per the need of the hour

Detailed Syllabus:		
Unit	**Description**	**Duration**
1	**Understanding Communication**: 1.1 Need and nature of communication 1.2 Meaning, definitions and theories of communication 1.3 Elements and process of communication 1.4 Characteristics and objectives of communication 1.5 Methods of communication (oral, written, formal, informal, verbal, and non-verbal) 1.6 Networks of communication (horizontal, vertical, diagonal, and grapevine) **1.7** Barriers to communication	**12**
2	**Vocabulary Building:** 2.1 Word formation processes (prefix, suffix, acronyms) 2.2 Pairs of confused words 2.3 Antonyms and synonyms 2.4 One word substitutes 2.5 Proverbs	**03**
3	**Techniques to Improve Communication**: 3.1 Reading & comprehension skills (strategies for rapid reading, skimming, scanning, paraphrasing, inferring meanings from contexts) 3.2 Writing skills (7Cs of effective writing, development of paragraph, summary and precise writing, effective sentences 3.3 Listening skills (definition, process, benefits, types, poor listening habits, barriers, effective listening) 3.4 Speaking skills (extempore and prepared speaking, basics of making an effective business presentation)	**08**
4	**Letter Writing:** 4.1 Importance of formal written communication 4.2 Layouts (complete block, modified block, semi block) 4.3 Types (request, enquiry, order, complain, claims & adjustment, and replies to all these)	**05**
5	**Technical Writing**: 5.1 What is technical writing? 5.2 Framing definitions 5.3 Technical description of an object 5.4 Technical description of a process	**02**
Total		**30**

Text Books:

Dr. Meenakshi Raman and Dr. Sangceta Sharma, 'Communication Skills', Oxford University Press (Third Edition, 2012)

Reference Books:

1. Bovee Thill Schatzman, 'Business Communication Today', Pearson (Seventh Edition, 2012)
2. Fred Luthans : Organizational behavior, McGraw Hill (Twelfth Edition, 2013)
3. Dr. R.V. Lesikar and Dr. M.F. Flatley, 'Basic Business Communication', Tata McGraw Hill, (Tenth Edition, 2005)
4. Barun K. Mitra, 'Personality Development and Soft Skills', Oxford University Press (Fourth Edition, 2012)
5. R.C. Sharma & Krishna Mohan : Business Correspondence & Report writing, Tata McGraw Hill Publications. (Fourth Edition, 2010)

Term Work:

1. Three assignments on Theory of Communication
2. Two assignments on Vocabulary Building
3. Two practical sessions on speech
4. Two practical sessions on presentations
5. One practical session on writing
6. One practical session reading comprehension

A minimum of 10 assignments to be completed by each student

Note:

* ICA will be an aggregate of two class tests of 15 marks each and term work of 20 marks

Program: B. Tech. (Integrated)					**Semester :** I		
Course : Mathematics - I					**Code:BTIAB01002**		
Teaching Scheme				**Evaluation Scheme**			
Lecture	**Practical**	**Tutorial**	**Credit**	**Theory (3 Hrs, 100 Marks)**	**Continuous Assessment**		
					Test 1 (1 Hr)	**Test 2 (1 Hr)**	**Term work**
3	0	2	4	50	20	20	10

Pre-requisite: Knowledge of SSC (10th standard) level Mathematics.

Objectives:

1. To provide the understanding and use of trigonometry, derivatives and integration.
2. Acquire knowledge of basic techniques in mathematical process and basic facts in the field of analysis

Outcomes:

After successful completion of this course, students should be able to:

1. Define and study of functions and basics of integration.
2. Apply basic facts, concepts and principles of trigonometry.
3. Solve Engineering problems based on limits and derivatives.

Detailed Syllabus:

Unit	**Description**	**Duration**
1.	**Functions** Definition of function , types of functions	**2**
2.	**Trigonometry** Signs of trigonometric function and sketch of their graphs, conversion from degrees to radians and vice versa, factorisation and defactorisation, Inverse trigonometric functions.	**10**
3.	**Limits and continuity** Limits, Method of factorization, rationalisation , Infinity type , Limits based on formula, continuity	**6**
4.	**Derivatives and its applications** Derivatives for exponential, logarithmic, implicit, inverse, parametric, composite functions, increasing decreasing functions, maxima and minima, concavity and points of inflection.	**15**

5.	**Integration** Basic formulas, Using LIATE rule, Partial fraction, trigonometric, substitution method, Finding last term and solve, Definite Integrals, Properties of definite integrals, Application of definite integration- Area under the curve	**12**
	Total	**45**
	Note: All theorems without proof.	

Text Books:

1. Basic Mathematics by Patel Rawal

Reference Books:

1. Engineering Mathematics by Patel Rawal
2. Elementary Mathematics by B.S.Grewal
3. Mathematics for polytechnic students by S.P. Deshpande

Term Work:

Minimum ten tutorials to be taken.

Program: B. Tech. (Integrated)				**Semester I**	
Subject: Physics-I				**Code: BTIAB01003**	
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutorials**	**Credit**	**Theory (3 Hrs., 100 Marks)**	**Internal Continuous Assessment (ICA) As per Institute Norm**
2	**2**	**-**	**3**	**50**	**50**

Objectives

1. To enable the students to understand the basic principles of Physics
2. To enhance the student's ability to meet the needs of engineering applications.
3. To impart training to help the students develop skill sets for creating entities from basic and applied sciences.

Prerequisite: 10th Level Science

Outcomes

After the successful completion of this course, the student will be able to

1. Analyse dimensions of physical quantities and identify errors in measurements
2. Examine the forces acting on the bodies in the equilibrium state.
3. Evaluate a physical problem to determine the relevant parameters and approximation schemes to be used within the framework of the fundamental laws of nature.
4. Demonstrate use of appropriate mathematical techniques and concepts to obtain quantitative solutions to problems in physics.
5. Discuss the basic wave theory and the resonance phenomenon.

Unit	**Description**	**Duration (Hrs)**
1	**Physical World and Measurement:** Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.	**4**

2	**Laws of motion:** Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).	**6**
3	**Properties of matter:** Elasticity, Stress, Strain, Elastic coefficient, Hook's Law, Stress strain curve, **Modes of transformation of heat**: Conduction, law of thermal conductivity, coefficient of thermal conductivity, good conductors of heat & insulators with suitable examples, applications of conduction. Convection, applications of convection. Radiation, applications of radiation. **Gas laws:** Gas Laws: Boyle's law, Charles law, Gay lussac's law (Statement and mathematical equation only) Perfect gas equation (PV=RT) (No derivation), specific heat of a substance, SI unit, specific heat of gas at constant volume (CV) specific heat of gas at constant pressure (CP), ratio of specific heat, Mayer's relation between CP and CV, isothermal process, adiabatic process, difference between isothermal process and adiabatic process**.**	**7**
4	**Properties of Liquids:** **Fluid friction:** Pressure, pressure-depth relation ($P = \rho h g$), atmospheric pressure, Pascal's law, Archimedes's principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit. Streamline and turbulent flow with examples, critical velocity, Reynold's number and its significance. Up thrust force, terminal velocity, Stokes law, and derivation of coefficient of viscosity by Stoke's method, effect of temperature and adulteration on viscosity of liquid. **Surface tension:** Cohesive and adhesive force, Laplace's molecular theory of surface tension, Surface Tension: definition and unit, effect of temperature on surface tension. Angle of contact, Capillarity and examples of capillary action, derivation of expression for surface tension by capillary rise method, applications of surface tension.	**7**

5	**Wave Motion:** Definition of a wave, wave motion, wave velocity, wave period, wave frequency, wave length, vibratory motion, periodic motion, amplitude of a vibrating particle, derivation of $v = n\lambda$. Simple harmonic motion (SHM), examples of SHM, equation of SHM, expression of velocity and acceleration of a body executing SHM. Types of progressive waves: transverse and longitudinal waves with Examples. Stationary wave, formation of stationary wave, examples of stationary wave, characteristics of stationary waves, free and forced vibrations with examples. **Resonance:** definition of resonance, examples of resonance, formula to calculate velocity of sound by resonance tube method.	**6**
		30

Text Books:

1. R.K.Gaur and S.C.Gupta, Engineering Physics, Dhanpat Rai & Co., New Delhi, 2008
2. Paul G. Hewitt, Conceptual Physics, Pearson education 12th edition, 2014

Reference Books:

1. David Halliday, Robert Resnick, Jearl Walker, Fundamentals of Physics, Asian Books Pvt. Ltd., New Delhi, 14th edition, 2009.
2. Verma, H.C., Concepts in Physics, Bharti Bhawan Ltd., New Delhi, 3rd edition, 2010.

Term work:

Term work should consist of following

1. Report of minimum seven experiment
2. Report of minimum two assignment covering the prescribed syllabus
3. Viva

List of Experiments:

1. To find the thickness of wire using a screw gauge.
2. To find volume of solid cylinder and hollow cylinder using a vernier caliper.
3. To find the surface tension of a liquid by capillary rise method.
4. Determination of coefficient of viscosity using Stokes' method,
5. Using a simple pendulum,plot L-T and $L-T^2$ graphs. Hence find the effective length of seconds
   pendulum using appropriate graph
6. Calculate velocity of sound by resonance tube method.
7. Experiment based on gas laws.

Program: B. Tech. (Integrated)				**Semester I**	
Subject: Chemistry-I				**Code: BTIAB01004**	
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutorials**	**Credit**	**Theory (3Hrs, 100 Marks)**	**Internal Continuous Assessment As per Institute Norms**
2	**2**	**-**	**3**	**Scale down to 50**	**50**

Prerequisite: 10th Level Science

Objectives

1. To introduce basic principles of chemistry- atom structure, acid-base theories, electrochemistry.
2. To familiarize with the concepts and applications of water technologies, engineering materials like metals, alloys and understand corrosion.

Outcomes

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

1. Develop interest in the fundamental structure of matter, which governs the properties of matter.
2. Interpret the acid-base theories for solving various chemical reactions.
3. Apply principles of electrochemistry in various real time problems.
4. Understand water technologies applied in industries.
5. Examine the nature of engineering materials like metals and alloys along with their composition.
6. Describe concepts of corrosion theories and various methods to control corrosion.

Detailed Syllabus:

Unit	**Description**	**Duration**
1	**Atom Structure:** Dalton's Atomic Theory, Rutherford's Scattering Experiment, Bohr's Theory of an atom, Orbits and orbitals, shapes of s, p, d orbitals, Pauli's exclusion principle, Hund's rule, Aufbau principle, Electronic configuration of first twenty elements, Definition and types of valency - electrovalency, covalency, co-ordinate valency.	**07**
2	**Water:** Sources of water, Impurities in water, hardness of water, causes of hardness, Numerical problems based on hardness calculations, Estimation of hardness of water by EDTA method, Numerical problems based on EDTA method. Disadvantages of hard water – for domestic and industrial purposes, Steam generation in Boilers – Boiler Corrosion, Scales & Sludges, Caustic Embrittlement, Priming & Foaming.	**06**

3	**Electrochemistry:** Nernst theory, Mechanism of electrolysis, degree of ionization. Faraday's Laws of Electrolysis-Statements and numerical problems. Electroplating-Theory and applications.	**04**
4	**Metals and Alloys:** Types of metals, properties of metals-Hardness, Ductility, Malleability, Tensile Strength, Machinability, Weldability, Soldering. Alloys: Introduction, Alloys of Al, Cu (brass, bronze) (Composition, properties and uses)	**04**
5	**Corrosion:** Introduction, Dry or Chemical corrosion, Wet or Electro chemical corrosion. Types of corrosion: concentration cell corrosion, galvanic corrosion, differential aeration, waterline, stress corrosion. Factors influencing rate of corrosion. Corrosion control: i. Cathodic protection techniques. ii. Protective coatings: Metallic coatings (galvanizing, tinning, sherardizing).	**05**
6	**Acids and Bases:** Theories of Acids and bases-Arrhenius theory, Bronsted-Lowry concept, Lewis theory, advantages of Lewis concept, Concept of pH, pH scale, buffers. Numerical problems based on hydrogen ion and hydroxyl ion concentration.	**04**
	Total	**30**

Text Books:

1. Jain. P. C& Jain. M, Engineering Chemistry, Dhanpat Rai Publishing Co. New Delhi, 15th Edition, 2012.
2. Rao. A. A, Polytechnic Chemistry (Theory and Practical), New Age International, 2007.
3. Shete. S. D, Applied Chemistry, S. Chand & Co, 2011.

Reference Books:

1. Ball. R.G, Chemistry-Principles and Practice, Cengage Learning Inc, 3rd edition, 2009.
2. Weiner. S. A, Harrison. B, Introduction to Chemical Principles-A Laboratory Approach, 7th edition, Cengage Learning, 2010

Term work consists of the following:

1. Two class tests.
2. Minimum eight lab experiments.

Practical Experiments:

Sr. no	List of Experiments
1	Use of Analytical Balance and titrimetric glassware.
2.	Titration between Strong Acid and Strong Base using Phenolphthalein as indicator.
3.	Titration between $KMnO_4$ and Mohr's Salt [$FeSO_4.(NH_4)_2SO_4.6H_2O$]
4.	To determine totalhardness of water sample.
5.	To determine chloride content in a given water sample.
6.	Determination of pH of different solutions.
7.	Drawing of electronic configuration of elements from Z = 1 to Z = 20. Drawing of Molecular structures of electrovalent and covalent compounds and + ve and ±ve ions
8.	Preparation of various buffer solutions.
9.	To study corrosion of a given metal work piece.
10.	To determine Fe/Ni in steel sample.
11.	To determine iodine content in given table salt sample.
12.	To determine Zinc in brass sample.

Program: B. Tech. (Integrated)				**Semester :** I	
Course : Basics of Computer System				**Code :** BTIAB01005	
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutoria l**	**Credit**	**Theory (3 Hrs, 100 Marks)**	**Internal Continuous Assessment (ICA) As per Institute Norms**
2	2	0	3	-	50

Objectives:

1. To create Awareness of information systems along with computer hardware, software and basic networking concepts.
2. To familiarize with computer programming fundamentals and logic building.
3. To create awareness of World Wide Web.

Outcomes:

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

1. Differentiate different types of hardware and software.
2. Understand the basic concepts of computer networks, operating systems, information systems and Internet.
3. Convert between different number systems.
4. Illustrate flowchart, algorithm and pseudo code for a given problem
5. Apply concepts of MS-Office to create documents and presentations, analyzing, sharing and managing information for accounting purpose.

Detailed Syllabus:

Unit	**Description**	**Duration**
1.	**Introduction to Computer:** Introduction, Digital and Analog computers, Characteristics of Computer, History of computer, Generation and classification of computers, The computer system, Applications of computer	**2**
2.	**Computer System Hardware:** Introduction, CPU, Memory Unit, Interconnection the units of computer, Inside a computer cabinet, Memory representation, Memory Hierarchy, CPU registers, Cache memory, Primary memory, Secondary Memory, Magnetic Tapes, Magnetic Disks, Optical Disks, Magnet0-Optical Disk, Input Output Unit, Input Devices and Output Devices.	**4**
3.	**Data Representation:** Introduction, Number System, Conversion from decimal to binary, octal, hexadecimal, Conversion of binary, octal, hexadecimal to decimal, Conversion of binary to octal, hexadecimal, Conversion of octal, hexadecimal to Binary.	**3**

4.	**Computer Network and Internet:** Introduction, Network Types –LAN, MAN, WAN, Network topologies, Network Devices, Wireless Networking, History of Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Use of Internet	**4**
5.	**Interaction of User and Computer:** Introduction, Types of Software, System Software, Application Software, Software Acquisition	**2**
6.	**Operating System:** Objectives of operating system, Types of Operating Systems, Functions of OS, Examples of Operating Systems – MS-DOS, Windows family of OS, Linux OS. Windows XP – Introduction, Features, Desktop, Structure, Explorer.	**4**
7.	**Information Systems:** Data, Information Knowledge, Characteristics of Information, Information Systems, Computer based information systems, Need for efficient IS, Categories of IS – Operations support systems, Management support systems, specialized information systems (ERP). Basics of database.	**4**
8.	**Computer Programming Fundamentals:** Introduction, Program Development Life Cycle, Algorithm, Control Structures, Flow chart and Pseudo code.	**4**
9.	**Introduction to Application Software:** **MS-Word:** Introduction, Starting MS-Word, MS-Word screen and its components, Office button and Ribbon. **MS-Excel:** Introduction, Basics of Spreadsheet, Start MS-Excel, MS-Excel screed and its components, Office button and Ribbon. **MS-PowerPoint:** Introduction, Basics of PowerPoint, Start MS-PowerPoint, MS-PowerPoint screen and its components, Office button and Ribbon.	**3**
	Total	**30**

Text Books:

1. Anita Goel, Computer Fundamentals, Pearson Publication, First Edition, 2010

Reference Books:

V. Rajaraman, Fundamentals of Computers, PHI, Fifth Edition, 2010

Term Work: Minimum ten lab experiments and Minimum 2 Assignments

Program: B. Tech. (Integrated)				**Semester :** I	
Course: Engineering Drawing - I				**Code:** BTIAB01006	
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutorials**	**Credit**	**Practical (2 Hrs, 50 Marks)**	**Internal Continuous Assessment (ICA) As per Institution Norms**
2	2	0	3	50	50
*** Practical Examination conducted by school level.**					
Pre-requisite: Nil					

Objectives:

1. To describe scientific facts, principals and technique of drawing in order to visualize and express the ideas.
2. To know different curves used in engineering
3. To acquire the concepts of projections of an object

Outcomes:

After successful completion of this course students will be able to

1. Visualize the role on shop floor, design department and inspection department.
2. Draw the different curves used in engineering
3. Draw the projections of points and lines
4. Draw the projections of solids and Orthographic Projection.

Detailed Syllabus

Unit	Description	Duration
1	**Introduction:** Importance of Engineering Drawing for the study of technical course, Types of lines and dimensioning. **Curves:** Conics-Parabola, Ellipse (Arc's of circle, rectangle and concentric circle method), Hyperbola and Parabola(Eccentricity, rectangular method). Involute of circle and polygon. **Cycloidal Curves:** Cycloid, Epicycloid, Hypocycloid.	**08**
2	**Projection of Lines:** Projections of lines inclined to both the reference planes (No traces and both ends of lines in one quadrant only). **Projection of Planes:** Inclined to both the Reference Planes for regular polygons and circles.	**08**

3	**Projection of Solids:** Projection of solid likes Prisms, Pyramids, Cylinders, Cones inclined to both the reference Planes. **Section of solids:** Sections of Prism, Pyramid, cylinder and cone.	**08**
4	**Orthographic projections:** Projections of various objects having flat and curved surfaces using 1st angle projection method only.	**06**
	Total	**30**

Text Books:

1. M. B. Shah and B. C. Rana , "Engineering Drawing", *Pearson Education,* 2010.

Reference Books:

1. N. D. Bhat , "Elementary Engineering Drawing", *Charotar Publishing House,* 2013.
2. K. Venugopal , "Engineering Drawing and Graphics", *New Age International Publishers,* 2007.
3. Giesecke, Mitchell, Spencer and Hill , "Technical Drawing", *Macmillan Publishing Co. Inc. New York,* 2008.

Term Work:

A2 size drawing sheets having 02- 03 problems on each unit (Minimum five).

Program: B. Tech. (Integrated)				**Semester: I**	
Subject: Workshop Practice - I				**Code: BTIAB01007**	
Teaching Scheme				**Evaluation Scheme**	
Lecture	**Practical**	**Tutorials**	**Credit**	**Theory (3 Hrs, 100 Marks)**	**Internal Continuous Assessment (ICA) As per Institute Norms**
1	**2**	**0**	**2**	**--**	**50**

Pre-requisite: Nil

Objectives:

1. To impart hand on safety precaution of different workshop practices on various trades.
2. To impart knowledge of basic tools used for different workshop jobs.
3. To familiarize students with assembling and troubleshooting of PC.

Outcomes : After successful completion of the course, students should be able to

1. Differentiate various tools used in workshop for fitting, welding and carpentry.
2. Follow the appropriate safety methods for handling of tools in workshop.
3. Assemble all components to build the Personal Computer functional.
4. Troubleshoot problems of computer system.
5. Maintain Personal Computer system.

Detailed Syllabus:

Unit	**Description**	**Duration**
1.	**Introduction** to various workshop trades. General instructions for safety in various Workshop Trades.	**1**
2.	**Safety Measures for Workshop Trades**: **Fitting Shop**: Introduction to fitting shop tools, common materials used in fitting shop. Description and demonstration of various types of safety precaution while work on benches, holding devices, files and hack-sawing. **Welding Shops:** Introduction to welding and its importance in engineering practice; Welding screens and other welding related equipment, accessories and gloves. Safety precautions during welding. Hazards of welding and its remedies. Precautions while using electric arc welding, Practice in setting current and voltage for striking proper arc. Earthling of welding machine. **Carpentry Shop**: Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed. Marking, sawing, planning and chiseling & their practice.	**5**

3.	**Safety Measures for Electric Devices :** Study of electrical safety measures and demonstration about use of protective devices such as fuses, MCBs, ELCBs and relays including earthing.	**2**
4.	**Assembling and Configuring PC** : Introduction, Components of PC, Caution and safety, Setting up the cabinet, Installing power supply unit, Installing CPU, Installing heat sink and cooling fan, Installing memory module, Mounting motherboard, Installing hard disk, Installing optical drive, Connecting motherboard power supply cables, Connecting to front panel, Connecting mouse, keyboard and monitor, Switching on the computer, Configuring BIOS, Installing operating system, Installing device drivers, Installing ad-on cards.	**4**
6.	**Troubleshooting and Maintenance:** Safety precautions, Configuring using BIOS parameters, Power on self test, Devices and drivers, Working with windows registry, Performance improving steps, Overclocking the system, Diagnosing general problems, Computer system: common problems and solutions, Preventive maintenance, Replacing CMOS battery, Clearing BIOS password, Flashing BIOS	**3**
	Total	**15**

Text Books:

1. K. C. John, "Mechanical Workshop Practice", Edition-2, PHI Learning Pvt. Ltd., 2010**.**
2. K. L. Jame, "Computer Hardware": Installation, Interfacing, Troubleshooting and Maintenance, PHI Publication, 2013

Reference Books:

1. Hajra Choudhary S. K., Bose S. K., Hajra Choudhary A. K., Roy Nirjhar, "Elements of *Workshop Technology-I"*, Media promoters and *Publications, 2013.*

2. Anita Goel, "Computer Fundamentals", Pearson Publication First Edition, 2010.

Term Work:

1. Demonstration and study on safety measures on various workshop trades like fitting, welding and carpentry shop.
2. Demonstration and study on Assembling of components of PC with proper configuration.
3. Report on industry **/** Safety Training Institute visit conducted in relevance with syllabus.