

Course Name : All Branches Of Diploma in Engineering
Course Code : ET/ME/CO
Semester : First
Subject Title : Basic Physics
Subject Code : 1001

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
04	02	03	80	20	50*	--	--	150

Physics plays the primary role in all professional disciplines of Engineering

OBJECTIVES:

1. Measure given dimensions by using appropriate instruments accurately
2. Calculate Errors in measurements
3. Know fundamental laws of elasticity
4. Understand Phenomenon of surface tension & viscosity.
5. Will be familiar with 3 modes of transmission of heat ,gas laws
6. Know properties of light & understand wave theory
7. Get insight into different property of laser, their construction working and applications.
8. Define hologram
9. Know basic Concepts Of Quantum Physics
10. Define X-rays & Know properties & applicability of X-rays.

Prerequisites:-

- 1) Definition of unit , error & their importance
- 2) Basic concept of property of elasticity
- 3) Laws of reflection & refraction of light

UNIT

	CONTENT	HOURS	Marks
1.	<u>UNITS AND MEASUREMENTS</u> Need of Measurement, units-CGS,MKS and SI, Basic Measuring instruments-Vernier Caliper, Micrometer screw gauge, accuracy and precision.	06	08
2.	<u>GENERAL PHYSICS</u> Elasticity Force, Pressure, Stress and strain with their types, Hooke's law, Stress strain diagram, Young's modulus, Bulk modulus, Modulus of rigidity and relation between them(no derivation), (simple numericals). (Simple problems) Ultimate and breaking stress, Factor of safety.	04	08
	Surface Tension. Forces—cohesive and adhesive, shape of liquid surface in a capillary tube, capillary action with examples, (no derivation) (simple problem)	03	06
	Viscosity Newton's law of viscosity, (simple numericals) kinematics viscosity, Dynamic viscosity, Units	03	06

UNIT	CONTENT	HOURS	Marks
3	HEAT		
	Gas laws and specific heats of gases		
	Boyle's law, Charle's law, Gay Lussac's law, absolute temperature, Kelvin scale of temperature, general gas equation(no derivation)(simple problems),molar or universal gas constant, universal gas equation, standard or normal temperature and pressure (N.T.P.), specific heat of gases, relation between two specific heat (simple problems), first law of thermodynamics (statement & equation only), isothermal, isobaric, isochoric & adiabatic processes (difference among these processes and equations of state) (simple problems).	08	10
4	LIGHT		
	Properties of light		
	Reflection and, refraction, Snell's law, physical significance of refractive index (simple problems),	04	06
	Wave theory of light & Interference		
	Newton's corpuscles theory of light, Huygen's wave theory, wave front, Types of wave front-spherical, cylindrical and plane Huygen's principle of propagation of wave front, Principle of superposition of waves, Interference of light, constructive and destructive interference, Young's experiment. Analytical treatment of interference, conditions for stationary interference pattern.	06	10
	Laser	06	10
	Light amplification by stimulated emission of radiation, properties of laser, spontaneous and stimulated emission, population inversion, pumping methods, He-Ne laser- construction & working, recording and reconstructing of hologram by using He-Ne laser.		

UNIT	CONTENT	HOURS	Marks
5	MODERN PHYSICS.	04	08
	QUANTUM PHYSICS Plank's hypothesis, properties of photons, photo electric effect, laws and characteristics of photoelectric effect, Einstein's photoelectric equation,(simple problems), construction and working of photoelectric cell, applications of photoelectric cell	04	08
	X-rays Production of X-rays, types of X-ray spectra-continuous and characteristics, X-ray wavelength (simple problems), properties of X-rays, applications of X-rays-engineering, medicine and scientific research work.		
	TOTAL	48	80

Laboratory Experiments (Any ten experiments to be performed)

1. Use of vernier calipers for the measurement of dimensions of given object.
2. Use of micrometer screw gauge for the measurement of dimensions of given object
3. Determine the Young's modulus of material of wire using Searle's apparatus.
4. To observe rise in water level through capillaries of different bores.
5. Determine coefficient of viscosity of given oil using Stoke's Method.
6. Verification of Boyle's law.
7. Measurement of unknown temperature using thermocouple.
8. To observe the divergence of laser light with respect to distance.
9. Characteristics of photoelectric cell to find Plank's constant.

Recommended Books:

Sr. No.	Name of book	Author	Publisher & Address
1.	Physics-I	V. Rajendran	Tata McGraw- Hill raw- Hill publication, New Delhi
2.	Applied physics	Arthur Beiser	Tata McGraw- Hill raw- Hill publication, New Delhi
3.	Engineering Physics	by R.K.Gaur and S.L.Gupta	Dhanpat Rai Publication, New Delhi.
4.	Physics	Resnick and Halliday.	--

Course Name : All Branches Of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : Basic Chemistry

Subject Code : 1002

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
04	02	03	80	20	50*	--	--	150

OBJECTIVES:

1. Know about atomic structure of different elements.
2. To understand process of Electrolysis.
3. To understand the metals alloys & their engineering applications.
4. To understand the properties of non metallic materials and their engineering applications.
5. To understand basics of environmental chemistry.

PRE-REQUISITES:

1. Composition of Matter.
2. Concept of Electrolyses & electrolytes.
3. States of matter – Solid, liquid, gases

Content: Theory

Name of the Topic

UNIT		Hours	Marks
	Atomic Structure		
01	<p>Definition of Atom, Fundamental Particles of Atom - their Mass, Charge, Location, Definition of Atomic no, Atomic Mass no., Isotopes & Isobars, & their distinction with suitable examples, Bohr's Theory, Definition, Shape & Distinction between Orbits & Orbitals, Hund's Rule, Filling Up of the Orbitals by Aufbau's Principles (till Atomic no. 30), Pauli's exclusion principle Valency - Definition, types (Electrovalency & Covalency), Distinction, Octet Rule, Duplet Rule, Formation of Electrovalent & Covalent</p> <p>Compounds e.g. NaCl, CaCl₂, MgO, AlCl₃, CO₂, H₂O, Cl₂, NH₃, C₂H₄, N₂, C₂H₂.</p>	08	12
	Electrochemistry		
02	<p>Atom, Ion, Theory of Ionisation & Electrolytic Dissociation,</p> <p>Electrolyte, Non Electrolyte, Electrolysis, Electrolytic Cell, Electrodes, Current Density, Temperature, Mechanism of Electrolysis - Primary & Secondary Reactions at Cathode & Anode, Electrochemical Series for Cations & Anions, Electrolysis of CuSO₄ Solution by using Cu Electrode & Platinum Electrode, Electrolysis of NaOH solution & fused NaCl, Faraday's first & second law of Electrolysis & Numericals, Electrochemical Cells & Batteries, Definition, Types (Primary & Secondary Cells), e.g. Construction, Working & Applications of Dry Cell / Laclanche Cell & Lead - Acid Storage Cell, Applications of Electrolysis such as Electroplating & Electro refining, Electrometallurgy & electrotyping Conductivity of Electrolyte - Ohms Law, Definition & Units of Specific Conductivity, Equivalent Conductivity, specific resistance</p>	09	12
	Metals & Alloys		
	Metals		
03	<p>Occurrence of Metals, Definition Metallurgy, Mineral, Ore, Gangue, Flux & Slag, Mechanical Properties, Processing of Ore, Stages of Extraction of Metals from its Ores in Detail i.e. Concentration, Reduction, refining in Fe. Physical Properties & Applications of some commonly used metals such as Fe, Cu, Al, Cr, Ni, Sn, Pb, Zn, Co, Ag, W.</p>	11	10
	Alloys		
	<p>Definition of Alloy, Purposes of Making alloy Preparation Methods, Classification of Alloys such as Ferrous & Non Ferrous, examples. Composition, Properties & Applications of Alnico, Copper and Al Alloys.</p>		

04	<p>Non Metallic Materials</p> <p>Plastics Definition of Plastic, Formation of Plastic by Addition & Condensation Polymerisation by giving e.g. of Polyethylene & Backelite plastic Respectively, Types of Plastic, Thermosoftening & Thermosetting Plastic, e.g., Compounding of Plastics - Resins, Fillers, Plasticizers, Acceleraters, Pigments, Engineering Applications of Plastic based on their Properties.</p> <p>Rubber Natural Rubber: Its Processing, Drawbacks of Natural rubber Vulcanisation of Rubber with Chemical Reaction. Synthetic rubber: Definition, Distinction between Natural & synthetic Rubber.</p>	07	10
	<p>Thermal Insulating Materials Definition, Characteristics & Applications of Glass Wool, Thermocole, Asbestos, Cork.</p>		
05	<p>Environmental Effects (Awareness Level) Introduction, Definition, Causes of Pollution, Types of Pollution, Such As Air & Water Pollution</p> <p>Air Pollution Definition, Types of Air Pollutions their Sources & Effects, Such as Gases, Particulates, Deforestation, Radio Active Gases, Control of Air Pollution, Air Pollution Due to Internal Combustion Engine & Its Control Methods, Causes & Effects of Ozone Depletion & Green House Effects.</p> <p>Water Pollution Definition, Causes & Methods of Preventing Water Pollution, Types of Waste such as Domestic Waste, Industrial Waste, their Physical & Biological Characteristics, BOD, COD, Biomedical Waste & E - Waste, their Origin, Effects & Control Measures. Preventive Environmental Management (PEM) Activities.</p>	13	10

06	Corrosion Corrosion, types of corrosion and its mechanism, factors affecting Rate of corrosion, process of protection of metals from corrosion, such as galvanizing, tinning, examples of non-corrosive materials. Paints.	10
07	Lubricants Lubricants, types, types of Lubrication, Characteristics of lubricants, viscosity, viscosity-index, oiliness, volatility, flash and fire point, cloud and pour point, selection of lubricants for various types of machineries.	08
08	Fuels Types, properties of fuel, characteristics of good fuel, coal and its types, analysis of coal, petroleum, and their applications, gaseous fuel.	08
List of Experiments:		Total 48
01 - 07	Qualitative Analysis of Seven Solutions , Containing One Basic & One Acidic Radical Listed below Basic Radicals: $\text{Pb}^{+2}, \text{Cu}^{+2}, \text{Al}^{+3}, \text{Fe}^{+2}, \text{Fe}^{+3}, \text{Cr}^{+3}, \text{Zn}^{+2}, \text{Ni}^{+2}, \text{Ca}^{+2}, \text{Ba}^{+2}, \text{Mg}^{+2}, \text{K}^{+}, \text{NH}_4^{+}$ Acidic Radicals: $\text{Cl}^{-}, \text{Br}^{-}, \text{I}^{-}, \text{CO}_3^{-2}, \text{SO}_4^{-2}, \text{NO}_3^{-}$	80
06	To Determine E.C.E. of Cu by Using CuSO_4 Solution & Copper Electrode	
07	To Determine the % of Fe in the Given Ferrous Alloy by KMnO_4 Method.	
08	To Prepare a Chart Showing Application of Metals like Fe, Cu, Al, Cr, Ni, Sn, Pb, Co.	
09	To Prepare Phenol Formaldehyde Resin (Bakelite)	
10	To Determine Carbon Monoxide Content in Emission from Petrol Vehicle.	
11	To Determine Dissolved Oxygen in a Water Sample.	
		13
Recommended Books:		13
		10

SrNo.	Author	Name of the book	Publisher
01	Jain & Jain	Engineering Chemistry	Dhanpat Rai and Sons
02	S. S. Dara	Engineering Chemistry	S. Chand Publication
03	B. K. Sharma	Industrial Chemistry	Goel Publication
04	S. S. Dara	Environmental Chemistry & Pollution Control	S. Chand Publication

Course Name : All Branches Of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : Mathematics I

Subject Code : 1003

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
04	--	03	80	20	--	--	--	100

Pre-requisites:

Students must be familiar with the following topics:

1. Factorization of polynomials
2. Laws of Indices, Logarithm.
3. Formulae of factorization & expansion.
4. Basic formulae of Trigonometry.
5. Basic properties of Triangle.
6. Formulae of Co-ordinate Geometry.
7. Rules of algebraic expressions for the numbers with positive and negative signs.

Objectives:

1. This subject helps the students to develop logical thinking, which is useful in Comprehending the principles of all other subjects.
2. Analytical and systematic approach towards any problem is developed through learning of this subject.

UNIT	NAME OF TOPICS	Hours	Marks
	<i>ALGEBRA</i>		
1.	INTRODUCTION Laws of Indices Formula of factorization and expansion ((a^2-b^2) , $(a+b)^2$ etc.) Laws of logarithm with definition of Natural and Common logarithm.	02	--
	PARTIAL FRACTION Definition of polynomial fraction proper & improper fractions and definition of partial fractions. To Resolve proper fraction into partial fraction with denominator containing non repeated linear factors, repeated linear factors and irreducible non repeated quadratic factors. To resolve improper fraction into partial fraction.	04	08
	DETERMINANT AND MATRICES. Determinant ----- 4 Marks Definition and expansion of determinants of order 2 and 3. Cramer's rule to solve simultaneous equations in 2 and 3 unknowns.		
	Matrices----- 12Marks Definition of a matrix of order m X n and types of matrices. Algebra of matrices such as equality, addition, Subtraction, scalar multiplication and multiplication. Transpose of a matrix. Minor, cofactor of an element of a matrix, adjoint of matrix and inverse of matrix by adjoint method. Solution of simultaneous equations containing 2 and 3 unknowns by matrix inversion method.	10	16
	BINOMIAL THEOREM Definition of factorial notation, definition of permutation and combinations with formula. Binomial theorem for positive index. General term. Binomial theorem for negative index. Approximate value (only formula)	04	04

02	TRIGONOMETRY.		
	INTRODUCTION		
	Measurement of an angle (degree and radian). Relation between degree and radian.	02	04
	Trig ratios of 0° , 30° , 45° etc.		
	Fundamental identities.		
	TRIGONOMETRIC RATIOS OF ALLIED, COMPOUND, MULTIPLE & SUBMULTIPLE ANGLES	08	08
	(Questions based on numerical computations, which can also be done by calculators, need not be asked particularly for allied angles).		
	FACTORIZATION AND DEFACTORIZATION FORMULAE	04	04
	INVERSE TRIGONOMETRIC RATIOS		
	Definition of inverse trigonometric, ratios, Principal values of inverse trigonometric ratios.	02	04
	Relation between inverse trigonometric ratios.		
	PROPERTIES OF TRIANGLE		
	Sine, Cosine, Projection and tangent rules (without proof)	02	04
	Simple problems.		
03	COORDINATE GEOMETRY		
	POINT AND DISTANCES	04	04
	Distance formula, Section formula, midpoint, centroid of triangle.		
	Area of triangle and condition of collinearity.		
	STRAIGHT LINE		
	Slope and intercept of straight line.		
	Equation of straight line in slope point form, slope-intercept form, two-point form, two-intercept form, normal form. General equation of line.	06	10
	Angle between two straight lines condition of parallel and perpendicular lines.		
	Intersection of two lines.		
	Length of perpendicular from a point on the line and perpendicular distance between parallel lines.		
	CIRCLE		
	Equation of circle in standard form, centre - radius form, diameter form, two - intercept form.	06	06
	General equation of circle, its centre and radius.		

04 VECTORS

Definition of vector, position vector, Algebra of vectors (Equality, addition, subtraction and scalar multiplication)	04	04
Dot (Scalar) product with properties.		
Vector (Cross) product with properties.		
Applications		
Workdone and moment of force about a point & line	04	04
TOTAL	62	80

RECOMMENDED BOOKS:

Sr. No.	Title	Authors	Publications
1	Mathematics for polytechnic	S. P. Deshpande	Pune Vidyarthi Griha
2	Trigonometry	S. L. Loney	S. Chand Publication
3	Higher Algebra	H. S. Hall & S. R. Knight	Metric edition, Book Palace, New Delhi
4	College Algebra	Frc.G. Valles	Charotar Publication
5	Matrices	Ayres	Schuam series, McGraw hill
6	Higher Engineering Mathematics	B. S. Grewal	Khanna publications New Dehli
7	Engineering Mathematics	S. S. Sastry	Prentice Hall of India

Course Name : All Branches Of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : English

Subject Code : 1004

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
02	02	03	80	20	--	--	25*	125

PRE-REQUISITES :

1. Students must know basic English of 10th std. level

OBJECTIVES :

1. Comprehend the given passage
2. Answers correctly the questions on seen & unseen passages
3. Increase Vocabulary
4. Apply rules & grammar for correct writing.

Name of Topic	Hours	Marks
PART I: TEXT		
<ul style="list-style-type: none"> Vocabulary - Understanding meaning of new words from text Comprehension - Responding to the questions from text Identifying parts of speech 	12	30
PART II -Application of grammar		
<ul style="list-style-type: none"> Verbs Tenses Do as directed (active /passive, Direct/indirect, affirmative/negative/assertive, question tag, remove too, use of article, preposition ,conjunctions, interjections, punctuation)	16	12
PART III - Paragraph writing		
<ul style="list-style-type: none"> Definition - Types of paragraphs How to write a paragraph 	08	10
PART IV - Vocabulary building		
<ul style="list-style-type: none"> Word formation Technical jargon Use of synonyms /antonyms/Homonyms/ paroxysm One word substitute 	12	28
	Total 48	80

List of Assignments:

- 1 Building of Vocabulary -- (4 Hours) (2 assignments)
 - a) 25 words for each assignment from the glossary given in the text book at the end of each chapter
 - b) Technical Jargons -- (2 Hours) (1 assignment)
 - 2 Identify 10 technical words from the respective branches.
 - a) Resource -- (Encyclopedia/Subject Books)
 - b) Grammar (4 Hours) 2 assignments.
 - 3 Insert correct parts of speech in the sentences given by the teachers. (16 sentences--Two each, from the different parts of speech)
 - a) Punctuate the sentences given by the teachers. (10 sentences)
 - b) Conversational skills: Role plays (8 hours)
 - 4 Students are going to perform the role on any 6 situations, by the teacher.
 - a) Dialogue writing for the given situations. (2 assignments)
 - 5 Write Paragraphs on given topics (6 hours) (2 assignments)
 - a) Four types of paragraphs to be written in **two assignments** covering two types in one assignment.
 - b) News paper report writing (4hours) (2 assignments)
 - 6 Write any two events from the news paper as it is.
 - a) Write any two events on the situations given by the teacher.
 - Errors in English (4 hours) (2 assignments)
 - Find out the errors and rewrite the sentences given by the teacher. (20 sentences)

Recommended Books:

Sr. No.	Title	Author	Publisher
01	Contemporary English grammar, structures and composition	David Green	Macmillan
02	English grammar and composition	R. C. Jain	Macmillan
03	Thesaurus	Rodgers	Oriental Longman
04	Dictionary	Oxford	Oxford University
05	Dictionary	Longman	Oriental Longman
06	English for practical Purposes	Z. N. Patil et al	Macmillan
07	English at Workplace	Editor - Mukti Sanyal	Macmillan

Course Name : All Branches Of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : Engineering Graphics

Subject Code : 1005

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
02	04	--	--	--	--	50**	50*	100

PRE-REQUISITES :

1. Knowledge of geometry necessary
2. Logical thinking required
3. Knowledge of handling geometrical instruments.

OBJECTIVES : The students should able to

1. Draw different engineering curves.
2. Draw orthographic projections of different objects.
3. Visualize three dimensional objects and draw Isometric Projections.
4. Use Auto CAD drafting packages.

Chapter	Name of Topic	Hours
1.	Introduction Letters and numbers (single stroke vertical) Convention of lines and their applications. Scale (reduced, enlarged & full size) plain scale and diagonal scale. Sheet layout. Introduction to CAD (Basic draw and modify Command). Geometrical constructions.	05
2.	Engineering curves . To draw an ellipse by Directrix and focus method Arcs of circle method. Concentric circles method. To draw a parabola by: Directrix and focus method Rectangle method To draw a hyperbola by: Directrix and focus method To draw involutes of circle & polygon (up to hexagon) To draw a cycloid, epicycloid, hypocycloid	09
3.	Projection of Straight Lines and Planes. (First Angle Projection Method only) Lines inclined to one reference plane only and limited to both ends in one quadrant.	
4.	Projection of simple planes of circular, square, rectangular, rhombus, pentagonal, and hexagonal, inclined to one reference plane and perpendicular to the other.	
5	Orthographic projections 3.1 Introduction to Orthographic projections. 3.2 Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only)	06
6	Isometric projection 4.1 Isometric scale 4.2 Conversion of orthographic views into isometric View/projection(Simple objects)	05 07
Total		32

PRACTICALS:

List of Practicals	Skills to be developed	
1. Introduction to graphics - (1 Sheet)	Intellectual skills	Motor Skills
Draw the following using CAD	1. To develop ability to solve problems on geometrical constructions.	1. To develop ability to draw the geometrical constructions by computer.
1.1 Rectangle with given dimensions		
1.2 Circle with given dimensions and hatch		
1.3 Pentagon with line command		
1.4 Hexagon with given dimensions		
1.5 Draw one figure containing circle tangent, arc and dimensioning.		
2. Engineering curves & Loci of points - (1 Sheet)	1) To develop ability to differentiate between conic and curves. 2) To develop ability to identify the type of locus from the nature of surface and the position of generating circle. 3) Able to interpret the given mechanisms and locus of points.	1. To develop ability to draw different types of curves.
i) Three different curves are to be draw using any one method.		
ii) Draw locus of point on any one mechanism		
3. Orthographic projections - (Total 2 Sheets)	1) Develop ability to interpret first angle projection method. 2) To interpret and able to solve problem on orthographic projection of given object.	1. Develop ability to draw orthographic projections by first angle projection method
Two objects by first angle projection method - (1 Sheet)		
Redraw the same sheet using CAD - (1 Sheet)		
4. Isometric projection - (Total 2 sheets)	1) Develop ability to differentiate between isometric view and isometric projections. 2) To differentiate between Isometric scale and true scale.	1. Develop ability to draw isometric views and isometric projections from given orthographic views of an object using computer.
Two objects one by true scale and another by isometric scale.		
(simple objects) - (1 sheet)		
Redraw the same sheet using CAD - (1 sheet)		

5. Projections of line and planes. - (1 Sheet)

Two problems on Projection of lines and two problems on Projection of Planes.

- 1) To develop ability to differentiate between true length and apparent length.
- 2) To interpret the position lines and plane with reference plane.

1) Able to draw Orthographic Projections of line and planes.

List of Practice Oriented Projects: -

- 1) To draw layout of visited Industry, College using CAD
- 2) To draw orthographic projection of given machine element using CAD

Recommended Books: -

Sr. No	Author	Title	Publication
1	N. D. Bhatt	Engineering Drawing	Charotar Publishing House
2	K. Venugopal	Engineering Drawing and Graphics+ AutoCAD	New Age Publication
3	R. K. Dhawan	Engineering Drawing	S. Chand Co.
4	P. J. Shah	Engineering Drawing	---
5	K. R. Mohan	Engineering Graphics	Dhanpat Rai and Publication Co.

Course Name : All Branches of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : Computer Fundamentals

Subject Code : 1006

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
--	04	--	--	--	50**	--	25*	75

PRE-REQUISITES:

Students should have

1. Basic knowledge of English.
2. Basic knowledge of logic and mathematical operation.

OBJECTIVES:

The students should able to :-

1. Know basic concept of Hardware and Software.
2. Know concept of Operating system.
3. Understand types of networks i.e LAN, WAN, MAN

Note: Contents of theory are to be taught in Practical Period

Unit	Name of the Topic
1	Basics of computer Hardware: Components of PC, CPU, Memory, I/O devices, Bits and Bytes, RAM, ROM, Monitors Software: Definition, types of software. Mouse, Keyboard, Disk, Printer, Scanner, Modem, Video, Sound cards, Speakers Applications of computers in various fields
2	Introduction of operating Systems , definition, Types of operating systems, DOS commands like : COPY, CLS, Rename, Delete, Type, Ver, mkdir, CD, Dir, Format, etc. Case study: windows 2000/XP Working with window Desktop Components of window Menu bar option Starting window Getting familiar with desktop Moving from one window to another Reverting windows to its previous size Opening task bar buttons into a windows Creating shortcut of program Quitting windows
3	GUI Based Editing, Spreadsheets, Tables & Presentation Application Using MS Office 2000 & Open Office.Org Menus Opening of menus, Toolbars: standard toolbars, formatting toolbars & closing of menus Quitting Document, Editing & designing your document Spreadsheets Working & Manipulating data with Excel: Preparation of charts, use of macros. Changing the layout Working with simple graphs & Presentation Working With PowerPoint and Presentation: Preparation of slides, animation effects etc.
4	Basics of Internet: Types of Networks: LAN, WAN, MAN What is Internet? Equipment Required for Internet connection Sending & receiving Emails Browsing the WWW Creating own Email Account Internet chatting
5	Usage of Computer System in various Domains Computer application in Offices, books publication, data analysis ,accounting , investment, inventory control, graphics, database management, Instrumentation, Airline and railway ticket

Unit	Name of the Topic
	reservation, robotics, artificial intelligence, military, banks, design and research work, real-time, point of sale terminals, financial transaction terminals.
6	Information technology for benefits of community Impact of computer on society Social responsibilities Applications of IT Impact of IT Ethics and information technology Future with information technology

Sr. No	List of Practicals
	Working with Windows 2000 desktop ,start icon, taskbar, Recycle Bin, My Computer
1.	icon ,The Recycle Bin and deleted files Creating shortcuts on the desktop The Windows 2000 accessories
2.	WordPad - editing an existing document Use of Paint - drawing tools The Calculator, Clock The Windows Explorer window, concept of drives, folders and files?
3.	Folder selection techniques, Switching drives, Folder creation Moving or copying files, Renaming, Deleting files ,and folders Printing Installing a printer driver
4.	Setting up a printer Default and installed printers Controlling print queues Viewing installed fonts The clipboard and 'drag and drop' Basic clipboard concepts Linking vs. embedding
5.	Moving through a Word document menu bar and drop down menus toolbars
6.	Entering text into a Word 2000 document, selection techniques Deleting text
7.	Font formatting keyboard shortcuts
8.	* Paragraph formatting Bullets and numbering
9.	* Page formatting What is page formatting? Page margins Page size and orientation Page breaks, Headers and footers
10.	Introducing tables and columns
11.	Printing within Word 2000 Print setup Printing options Print preview * Development of application using mail merge
12.	Mail merging addresses for envelopes Printing an addressed envelope and letter
13.	Creating and using macros in a document * Creating and opening workbooks
14.	Entering data Navigating in the worksheet Selecting items within Excel 2000
15.	Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook

16. Formatting and customizing data
17. Formulas, functions and named ranges
18. Creating, manipulating & changing the chart type
19. Printing, Page setup, Margins
Sheet printing options, Printing a worksheet
* Preparing presentations with Microsoft Power Point.
20. Slides and presentations, Opening an existing presentation , Saving a presentation
Using the AutoContent wizard ,Starting the AutoContent wizard
Selecting a presentation type within the AutoContent wizard
21. Presentation type
Presentation titles, footers and slide number
* Creating a simple text slide
Selecting a slide layout
Manipulating slide information within normal and outline view
Formatting and proofing text
Pictures and backgrounds
22. drawing toolbar
AutoShapes
Using clipart
Selecting objects
Grouping and un-grouping objects
The format painter
* Creating and running a slide show
Navigating through a slide show
23. Slide show transitions
Slide show timings
Animation effects
* Microsoft Internet Explorer 5 & the Internet
Connecting to the Internet
24. The Internet Explorer program window
The on-line web tutorial Using hyper links
Responding to an email link on a web page
Searching the Internet
Searching the web via Microsoft Internet Explorer
25. Searching the Internet using Web Crawler
Searching the Internet using Yahoo
Commonly used search engines
Favorites, security & customizing Explorer
26. Organizing Favorite web sites
Customizing options - general, security, contents, connection, programs, advanced
* Using the Address Book
Adding a new contact
27. Creating a mailing group
Addressing a message
Finding an e-mail address
Using electronic mail
Starting Outlook Express
Using the Outlook Express window
28. Changing the window layout
Reading file attachment
Taking action on message-deleting, forwarding, replying

- * Email & newsgroups
 - Creating and sending emails
 - Attached files
- 29. Receiving emails
 - Locating and subscribing to newsgroups
 - Posting a message to a newsgroup
 - Chatting on internet
- 30. Understanding Microsoft chat environment
 - Chat toolbar

Note : Term work will include printout of Exercises of practicals marked with asterisks (*)

Recommended Books:

Sr. No.	Author	Title	Edition	Publisher
01	Vikas Gupta	Comdex Computer Course Kit	First	Dreamtech
02	Henry Lucas	Information Technology for management	7 th	Tata Mc-Graw Hills
03	B.Ram	Computer Fundamentals Architecture and Organisation	Revised 3 rd	New Age International Publisher

Course Name : All Branches Of Diploma in Engineering

Course Code : ET/ME/CO

Semester : First

Subject Title : Basic Workshop Practice

Subject Code : 1007

Teaching and Examination Scheme:

Teaching Scheme		Examination Scheme						
TH	PR	PAPER HRS	TH	INT	PR	OR	TW	TOTAL
--	04	--	--	--	--	--	50*	50

PRE-REQUISITES:

1. Awareness of safety
2. Handling the workshop equipments.

OBJECTIVES:

The students should able to;

1. Know basic Workshop Processes.
2. Identify select & use various marking, measuring and striking and cutting tools & equipments wood working and sheet metal shops.
3. Operate , Control different machines & equipments.
4. Select proper welding rods & fluxes.
5. Inspect the job for specified dimensions.
6. Produce jobs as per specified dimensions.
7. Adopt safety Practices while working on various machines.

Contents: Theory (PART A)

Sr.No.	Topic	Hours
01	CARPENTRY SHOP	
	Introduction	
	Various types of woods.	05
	Different types of tools, machines and accessories.	
02	FITTING SHOP:	
	Introduction	
	Various marking, measuring, cutting, holding and striking tools.	
	Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc.	05
	Working Principle of Drilling machine, Tapping dies its use.	
	Safety precautions and safety equipments.	
03	SHEET METAL SHOP.	
	Introduction	
	Various types of tools, equipments and accessories.	
	Different types of operations in sheet metal shop.	06
	Soldering and riveting.	
	Safety precautions.	

Total = 16

Note: Details of on example job for each shop is given below:

Sr. No.	Details Of Practical Contents (PART A)
01	CARPENTRY SHOP: <ul style="list-style-type: none">• Demonstration of different wood working tools / machines.• Demonstration of different wood working processes, like planing, marking, chiseling, grooving, turning of wood etc.• One simple job of preparing switch board or any other similar job
02	FITTING SHOP: <ul style="list-style-type: none">• Demonstration of different fitting tools and drilling machines and power tools• Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc.• One simple fitting job involving practice of filing, drilling, tapping, cutting etc. Such as Transistor Heat Sink or any other similar job
03	SHEET METAL SHOP: <ul style="list-style-type: none">• Demonstration of different sheet metal tools / machines.• Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing , soldering and riveting.• One simple job involving sheet metal operations and soldering and riveting. Such as Battery Eliminator Box or any other similar job

TOOLS & EQUIPMENT

- 1) Steel Rule
- 2) Try square
- 3) Marking Gauge
- 4) Jack Plane
- 5) Hand Saw
- 6) Carpentry Vice
- 7) Wooden Mallet / Hammer

- 8) Firmer Chisel
- 9) Jig Saw Machine
- 10) Marfa file
- 11) Numbering

SEQUENCE OF OPERATIONS

- 1) Measuring
- 2) Planning
- 3) Marking
- 4) Cutting
- 5) Chiseling
- 6) Corner joint with nail
- 7) Sun mica Pasting (Fevicolor similar adhesive)
- 8) Marking for slot cutting
- 9) Jig Saw cutting
- 10) Numbering
- 11) Polishing

Recommended Books:

Sr. No.	Name of the Author	Name of the Book	Publisher
01	S.K. Hajara Chaudhary	Workshop Technology	Media Promotors and Publishers, New Delhi
02	B.S. Raghuwanshi	Workshop Technology	Dhanpat Rai and Sons, New Delhi
03	R K Jain	Production Technology	Khanna Publishers, New Delhi
04	H.S.Bawa	Workshop Technology	Tata McGraw Hill Publishers, New Delhi
05	--	Kent's Mechanical Engineering Hand book	John Wiley and Sons, New York

**CONTENTS: Theory
(PART B)**

Sr. No	Topic/Subtopic	Hours
4.	Introduction to Various External Peripheral Devices	04
	1.1 Different types of keyboards	
	1.2 Different types of Mouse	
	1.3 Different types of Scanners	
	1.4 Different types of Modems	
	1.5 Different types of printers	
	1.6 CD writers, speakers, CD read /write drive	
	1.7 Microphones, LCD projectors, Pen drives, DVD drive	
	1.8 Different types of Monitors	
5.	Introduction to Various Internal Devices	05
	2.1 Different makes of hard disks	
	2.2 Different types of network Interface cards	
	2.3 Different types of cables such as data cables ,printer cables ,network cables ,power cables etc.	
	2.4 Different types of floppy disk	
	2.5 Motherboard connection	
	2.6 Graphics Card connection	
	2.7 Network Interface card connection	
6.	Physical Connections of different peripheral Devices	07
	3.1 Connection of Mouse to different ports	
	3.2 Connection of keyboards to different ports	
	3.3 Connection of Monitors	
	3.4 Connection of Printers	
	3.5 Different switch settings of printers	
	3.6 Printer's self test	
	3.7 Jumper settings of hard disks	
	3.8 Attaching FDD,HDD and CD drives	
	3.9 Attaching Pen Drives and DVDs	
	3.10 Attaching Scanners	

ASSIGNMENTS:

1. Observe all the peripheral devices available in the lab. Describe them in detail.
2. Demonstration of system configuration using CMOS setup.
3. Study of different ports such as serial, parallel, PS/2, NIC ports.
4. Assignment on how to write data on CDs
5. Observe different printer settings on different types of printers available in your lab. Write down the function of each switch.
6. Demonstration of printer's self test.
7. Assignment on connection of speakers and microphones.
8. Assignment on different types of cables in your lab.
9. Assignment on cleaning procedures of Mouse, Keyboard and motherboard.
10. Assignment on how to connect scanner and scan document and pictures on the scanner available in your lab.
11. Assignment on making jumper settings on hard disk.
12. Assignment on different types of cards such as graphics card, LAN card, multimedia cards etc.

Recommended Books:

Sr.

No.	Author	Title	Publisher
01	Mr. David Stone & Alfred Poor	Troubleshooting Your PC	Prentice Hall India
02	David Groth	A+ Complete	BPB Publication
03	Balasubramaniam	Computer Installation and servicing	Tata McGraw Hill
04	Manuals	Reference Manuals of PC troubleshooting and maintenance	--