

## CIVIL 1<sup>ST</sup> SEM TEACHING SCHEME

BRANCH CODE:06 DIPLOMA PROGRAMME IN CIVIL ENGINEERING										
SEMESTER -I										
COURSE CODE	COURSE TITLE	TEACHING SCHEME/WEEK			CREDITS (L+T+P)	EXAMINATION SCHEME				GRAND TOTAL
		L	T	P		THEORY		PRACTICAL		
						ESE	PA	ESE	PA	
3300001	BASIC MATHEMATICS	2	2	0	4	70	30	0	0	100
3300002	ENGLISH	3	2	0	5	70	30	20	30	150
3300003	ENVIRONMENT CONSERVATION & HAZARD MANAGEMENT	4	0	0	4	70	30	0	0	100
3300004	ENGINEERING PHYSICS ( GROUP-1)	3	0	2	5	70	30	20	30	150
3300007	BASIC ENGINEERING DRAWING	2	0	4	6	70	30	40	60	200
3300012	COMPUTER APPLICATION & GRAPHICS	0	0	4	4	0	0	40	60	100
		14	4	10						
TOTAL					28	350	150	120	180	800

COURSE TITLE: BASIC MATHEMATICS								
COURSE CODE: 3300001								
TEACHING SCHEME			TOTAL	EVALUATION SCHEME				TOTAL
THEORY	TUTORIAL	PRACTICAL		EXTERNAL	MID TERM	VIVA	PRACTICAL	
2	2	0	4	70	30	0	0	100

### Unit – I Logarithm

1.1 Solve simple problems using concepts of Logarithms. Concept ,Rules and related Examples

### Unit– II Determinants and Matrices

2.1 Solve simultaneous equations using concepts of Determinants and Matrices, Idea of Determinant and Matrix, Addition/Subtraction, Product, Inverse up to 3X3 matrix, Solution of Simultaneous Equations (up to three variables)

### Unit– III Trigonometry

3.1 Solve simple problems using concepts of Trigonometry, Units of Angles(degree and radian), Allied & Compound Angles, Multiple –Submultiples angles, Graph of Sine and Cosine, Periodic function, sum and factor formulae, Inverse trigonometric function

### Unit– IV Vectors

Solve simple problems using concepts of Vectors. Basic concept of Vector and Scalar, addition &

subtraction, Product of Vectors, Geometric meaning of Scalar and Vector Product. Angle between two vectors, Applications of Dot (scalar) and Cross (vector) Product, Work Done and Moment of Force.

**Unit-V Menstruation**

5.1 Calculate the surface area and volume of different shapes and bodies. Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle Surface & Volume of Cuboids, Cone, Cylinder and Sphere.

**REFERENCE BOOK:**

1. Applied Mathematics-I Sapna Publication by W R Neelkanth
2. Engineering Mathematics (third edition) Pearson Education by Anthony croft and others
3. Polytechnic Mathematics Pune Vidyarthi Gruh Prakashan by S P Deshpande
4. Getting Started with MATLAB-7 OXFORD University Press by Rudra Pratap

**SUGGESTED LIST OF EXERCISES**

1. Logarithms-Simple Examples related Definition and Rules
2. Examples on various types and Graphs
3. Determinants, Simple Examples on Matrix Addition/Subtraction and Product
4. Co-factors, Adjoint and Inverse of Matrix
5. Solution of Simultaneous Equation using 3X3 Matrix and its Applications
6. Practice Examples: Allied & Compound Angles
7. Practice Examples: Periodic functions, Sum/Diff and factor formulae, Inverse Trigonometric function etc.
8. Simple Graphs of Sine and Cosine Functions(Explain Spherical Trigonometry, if possible, for Applications)
9. Practice Simple Examples Vectors
10. Example related to Dot and Cross Products and Applications
11. Examples on Area
12. Surface Area & Volume and its Applications

<b>COURSE TITLE: ENGLISH</b>						
<b>COURSE CODE: 3300002</b>						
TEACHING SCHEME	TOTAL	EVALUATION SCHEME				
THEORY	TUTORIAL	PRACTICAL	5	EXTERNAL 70	MID TERM 30	VIVA PRACTICAL 20 30
3	2	0			TOTAL 20	150

**Unit – I Grammar**

**1.1 Tenses** - Present Tense (Simple, Continuous, Perfect, Perfect Continuous), Past Tense (Simple, Continuous, Perfect), Future Tense (Simple), **1.2 Determiners**- Articles (A, An, The) Some, Any, Much, Many, All, Both, Few, A few, the few, Little, A little, the little, Each, Every, **1.3 Modal Auxiliaries** Can, Could, May, Might, Shall, Should, Will, Would, Must, Have to, Need, Ought to, **1.4 Subject- Verb Agreement, 1.5 The Passive Voice** Simple Tenses, Perfect Tenses And Modal

Auxiliary Verbs, **1.6 Prepositions:** Time, Place and Direction, **1.7 Connectors:** And, But, Or, Nor, Though, Although, If, Unless, Otherwise, Because, as, Therefore, So, Who, Whom, Whose, Which, Where, When, Why.

**Unit – II Comprehension Passages**

**2.1 Comprehension Passages** - Lincoln’s Letter to His Son’s Teacher(Abraham Lincoln), What we must Learn from the West(Narayana Murthy), Dabbawallas: Mumbai’s Best Managed Business (Amberish K. Diwanji), Internet (Jagdish Joshi), **2.2 Vocabulary Items:** Matching items (word and its Meaning), One word Substitution- Phrases and idioms, Synonyms and Antonyms from given MCQs,

**Unit – III Short Stories**

My Lost Dollar by Stephen Leacock, The Snake in the Grass by R K Narayan, A Day’s Wait by Earnest Hemingway

**Unit – IV Writing Skills**

**4.1 Dialogue Writing, 4.2 Samples for Practice:** - Meeting and Parting, Introducing and Influencing, Requests, Agreeing and Disagreeing, Inquiries and Information **4.3 Letter:-**Placing an order, Letter to Inquiry, Letter of Complaint, Letter of Adjustment, Letter seeking permission

**Unit – V Speaking Skills**

**For 28 hours of practical periods,** digital language laboratory is recommended to be established in every polytechnic. But as polytechnics currently do not have digital language laboratories practical periods will be engaged encouraging the students to speak as per the text taught in the class.

**SUGGESTED LIST OF TUTORIAL EXERCISES**

**Unit No.I: - Conversation**

1. Introducing oneself, 2. Introduction about family, 3. Discussion about the weather, 4. Seeking Permission to do something, 5. Description about hobbies, 6. Seeking Information at Railway Station/ Airport, 7. Taking Appointments from superiors and industry personnel, 8. Conversation with the Cashier- College/ bank, 9. Discussing holiday plans, 10. Asking about products in a shopping mall, 11. Talking on the Telephonic, 12. Wishing Birthday to a Friend, 13. Talking about Favourite Sports.

**Unit No.2:- Presentation Skills**

General Presentations pertaining to Unit I, II, III

**REFERENCE BOOK:** Active English- Macmillan by Juneja and Querashi.

COURSE TITLE: ENVIRONMENT CONSERVATION AND HAZARD MANAGEMENT								
COURSE CODE: 3300003								
TEACHING SCHEME			TOTAL	EVALUATION SCHEME				TOTAL
THEORY	TUTORIAL	PRACTICAL		EXTERNAL	MID TERM	VIVA	PRACTICAL	
4	0	0	4	70	30	0	0	100

### **Unit – I Ecology and Environment**

1.1 Importance of environment and scope, 1.2 Engineering and environment issues, 1.3 The natural system, Biotic and a-Biotic components and processes of natural system, 1.4 Eco system, food chain and webs and other biological Systems,, 1.5 Causes of environmental pollution, 1.6 Pollution due to solid waste, 1.7 water pollution, air pollution, the Noise as pollution, 1.8 Pollution of land due to industrial and chemical waste, 1.9 Radiation and its effects on vegetables and animals.

### **Unit– II Sustainable Development**

2.1 Concept of sustainable development, 2.2 Natural resources, a-biotic and biotic resources, 2.3 Principles of conservation of energy and management, 2.4 Need of Renewable energy, 2.5 Growth of renewable energy in India and the world, 2.6 Concept of waste management and recycling.

### **Unit – III Wind Power**

3.1 Growth of wind power in India, 3.2 Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT), 3.3 Types of HAWTs – drag and lift types , 3.4 Working of large wind turbines, 3.5 Aerodynamic control of large and small wind Turbines, 3.6 Types of electrical generators used in small and large wind turbines.

### **Unit – IV Solar Power**

4.1 Features of solar thermal and PV systems, 4.2 Types of solar cookers and solar water heaters, 4.3 Solar PV systems and its components and their working, 4.4 Types of solar PV cells, 4.5 Solar PV and solar water heaters, rating and costing.

### **Unit – V Biomass energy**

5.1 Types of Biomass Energy Sources, 5.2 Energy content in biomass of different types, 5.3 Types of Biomass conversion processes, 5.4 Biogas production.

### **Unit – VI Seismic Engineering and disaster management**

6.1 Introduction of seismic engineering and its application civil engineering designs, 6.2 Features of disasters such as Floods, Earthquakes, Fires, Epidemics, Gas/radioactive leaks etc., 6.3 Management and mitigation of above disasters.

### **REFERENCE BOOK:**

Environment studies by an anditabasak.(pearson publication).

### **SUGGESTED LIST OF STUDENT ACTIVITIES**

- i. Prepare paper on various sustainable developments
- ii. Make a report after gathering information the values of water, noise pollution and air pollution in your city/town and compare the values in other cities and towns in India with respect to environmentally acceptable levels.
- iii. Prepare a paper on air and water pollution in an industry/institute
- iv. Undertake some small mini projects in any one of the renewable energies
- v. Visit an energy park and submit project on various sources of energy
- vi. Prepare PowerPoint on clean and green technologies
- vii. Prepare a list of do's and don'ts applicable during disasters
- viii. Submit a report on garbage disposal system in your city/town

<b>COURSE TITLE: ENGINEERING PHYSICS GROUP 1</b>
<b>COURSE CODE: 3300004</b>

TEACHING SCHEME			TOTAL	EVALUATION SCHEME				TOTAL
THEORY	TUTORIAL	PRACTICAL		EXTERNAL	MID TERM	VIVA	PRACTICAL	
3	0	2	5	70	30	20	30	150

### Unit – I SI Units & Measurements

1.1 Need of measurement and unit in engineering and science, definition of unit , requirements of standard unit, systems of units-CGS,MKS and SI, fundamental and derived quantities and their units, 1.2 Least count and range of instrument, least count of vernier caliper, micrometer screw gauge, 1.3 Definition of accuracy, precision and error, estimation of errors -absolute error, relative error and percentage error, rules and identification of significant figures. (Numerical on above topics)

### Unit– II Force and Motion:

Recapitulation of equations of motion, Newton’s I<sup>st</sup> law of motion, Force, basic forces in motion, gravitational force, electrostatic force, electromagnetic force, nuclear force, Inertia, types of inertia (inertia of rest, inertia of motion, inertia of direction ), Momentum, Newton’s II<sup>nd</sup> law of motion, measurement of force using second law, simple problems on  $F = ma$  and equations of motion, Impulse of force, Impulse as the product of force and time, impulse as the difference of momentum, examples of impulse, simple problems on impulse, Newton’s III<sup>rd</sup> law of motion and its examples. Law of conservation of momentum, Statement, simple problems (Numerical on above topics)

### Unit– III General Properties of matter

**3.1 Elasticity** - Deforming force, restoring force, elastic and plastic body, stress and strain with their types. elastic limit, Hooke’s law, Young’s modulus, bulk modulus, modulus of rigidity and relation between them (no derivation), stress strain diagram. behavior of wire under continuously increasing load, yield point, ultimate stress, breaking stress, factor of safety.**3.2 Surface Tension** - Molecular force, cohesive and adhesive force, Molecular range, sphere of influence, Laplace’s molecular theory, Definition of surface tension and its S.I. unit, angle of contact, capillary action with examples, shape of meniscus for water and mercury, relation between surface tension , capillary rise and radius of capillary (noderivation),effect of impurity and temperature on surface tension, **3.3 Viscosity** - Fluid friction, viscous force, Definition of viscosity,velocity gradient, Newton’s law of viscosity, coefficient of viscosity and its S.I. unit, streamline and turbulent flow with examples, critical velocity, Reynolds’s number and its significance, free fall of spherical body through viscous medium (no derivation), up thrust force, terminal velocity, Stokes law (statement and formula).(Numericals on Above topics)

### Unit– IV Heat Transfer

4.1 Three modes of transmission of heat -conduction, convection and radiation, good and bad conductor of heat with examples, law of thermal conductivity, coefficient of thermal conductivity and its S.I. unit., 4.2 Heat capacity and specific heat of materials, 4.3 Celsius, Fahrenheit and Kelvin temperature scales and their conversion formulae (Numericals on above topics)

### Unit– V Waves and Sound

Definition of wave motion, amplitude, period, frequency, and wavelength, relation between velocity, frequency and wavelength, longitudinal and transverse wave, principle of superposition of waves, definition of resonance with examples, Formula for velocity of sound in air and various factors affecting it, **Ultrasonic Waves**- Definition, Properties of ultrasonic waves Uses of

ultrasonic waves.. **Acoustics Of Building-** Importance of Reverberation, Reverberation time, Optimum time of Reverberation, Coefficient of absorption of Sound, Sabine's formula for Reverberation time,

Factors affecting Reverberation time and acoustics of building. (Numericals on above topics)

#### **Unit- VI Light and Nanotechnology**

Properties Of Light, Electromagnetic spectrum, Reflection, refraction, snell's law, diffraction, polarization, interference of light, constructive and destructive interference (Only definitions), physical significance of refractive index, dispersion of light Introduction to Nanotechnology (Numericals on above topics)

#### **Unit – VII Radioactivity**

**7.1 Radioactivity-** Definition, Natural & Artificial radioactivity, Units and Laws of Radioactivity, Half Life, Average Life & Decay Constant, **7.2 Radioactive Rays -** Properties and uses of alpha particles, beta particles and gamma rays (Numericals on Above topics)

**REFERENCE BOOK:** Engineering Physics-Gaur and Gupta(Dhanpatrai Publication)

#### **SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS**

Linear Measurement by Vernier calipers

Linear Measurement by Micrometer screw

Measurement of Surface tension

Measurement of Viscosity

Measurement of Young's Modulus

To determine Force constant with the help of periodic time of oscillations of spring

Measurement of specific gravity

To calculate refractive index of material of prism using spectrometer device.

Joule's mechanical equivalent of heat

Measurement of co-efficient of thermal conductivity

To study the relation between the length of a stretched string and the tension in it with the help of a sonometer.

To calculate SA/V ratio of simple objects to understand nanotechnology

**REFERENCE BOOKS:**

Engineering Physics-Gaur and Gupta(Dhanpatrai Publication)

#### **SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES**

Following is the list of proposed student activities like:

Laboratory based mini projects:

1. To calculate acoustics of given class room

2. To prepare models of Vernier calipers, micrometer screw gauge and travelling microscope

And many more Teacher guided self learning activities:

1. To prepare a chart of applications of nanotechnology in engineering field

2. To prepare models to explain different concepts

And many more Course/topic based seminars:

Seminar by student on any relevant topic

**COURSE TITLE: BASIC ENGINEERING DRAWINGS**

COURSE CODE: 3300007								
TEACHING SCHEME			TOTAL	EVALUATION SCHEME				TOTAL
THEORY	TUTORIAL	PRACTICAL		EXTERNAL	MID TERM	VIVA	PRACTICAL	
2	0	4	6	70	30	40	60	200

### Unit – 1 ENGINEERING DRAWING AIDS

1.1 Drawing equipments, instruments and materials. (a) Equipments-types, specifications, method to use them, applications. (b) Instruments-types, specifications, methods to use them and applications. (c) Pencils-grades, applications, types of points and applications. (d) Other materials-types and applications.

### Unit– 2

#### PLANNING, LAYOUT AND SCALLING OF DRAWING

2.1 I.S. codes for planning and layout, 2.2 Scaling technique used in drawing.

### Unit– 3

#### LINES, LETTERING AND DIMENSIONING

3.1 Different types of lines. 3.2 Vertical capital and lower case letters. 3.3 Inclined capital and lower case letters. 3.4 Numerals and Greek alphabets. 3.5 Dimensioning methods. (a) Aligned method. (b) Unilateral with chain, parallel, progressive and combined dimensioning.

### Unit– 4

#### GEOMETRIC CONSTRUCTION

4.2 Geometric construction related with line like bisecting a line, to draw perpendicular with a given line, divide a line, etc. 4.3 Geometric construction related with angle like bisect an angle, trisect an angle, etc. 4.4 To construct polygon. a: Triangle b: Square / Rectangle. c: Pentagon with special method.d: Hexagon with special method. 4.5 To draw tangents. 4.6 Geometric construction related with circle & arc.

### Unit– 6

#### PROJECTION OF POINTS, LINES AND PLANES

6.1 Reference planes, orthographic projections. 6.2 Concept of quadrant. 6.3 1st angle and 3rd angle projection and their symbols. 6.4 Projection of points. 6.5 Projection of lines – determination of true length and inclinations for following cases. (a) Line parallel to one or both the plane. (b) Line perpendicular to one of the plane. (c) Line inclined to one plane and parallel to another. (d) Line inclined to both the planes. 6.6 Projection of Planes. (a) Types of planes. (b) Projection of planes parallel to one of the reference planes. (c) Projection of plane inclined to one reference plane and perpendicular to another. (d) Projection of planes inclined to both reference planes. Note : Triangle, Square / rectangle, pentagon, hexagon and circle shape should be included in various plane problems.

### Unit– 7 ORTHOGRAPHIC PROJECTIONS

7.1 Types of projections-orthographic, perspective, isometric and oblique: concept and applications.7.2 Various term associated with orthographic projections. (a) Theory of projection. (b) Methods of projection. (c) Orthographic projection. (d) Planes of projection. 7.3 Conversion of simple pictorial views into Orthographic views. Illustrative problems on orthographic projection. 7.4 B.I.S. code of practice.Note : (1) Problem should be restricted up to four views-Front view/Elevation, Top view/Plan and Side views only. (2) Use First Angle Method only.

## Unit- 8 ISOMETRIC PROJECTIONS

8.1 Draw the isometric view from orthographic views of object/s containing lines, circles and arcs.

8.2 Isometric axis, lines and planes. 8.3 Isometric scales. 8.4 Isometric view and isometric drawing.

8.5 Difference between isometric projection and isometric drawing. 8.6 Illustrative problems limited to objects containing lines, circles and arcs shape only.

**REFERENCE BOOKS:**ENGG. DRAWING BY N.D. BHATT Author- N D BHATT

### LIST OF STUDENT ACTIVITIES:

1. Sketch the combinations of set squares to draw angles in step of 150 .( 150 , 300 , 450 , 600 , 750 ,900 , 1050 , 1200 , 1350 , 1500 , 1650 , 1800 ).
2. Solve all problems for all sheets number 1 to 8 in sketch book (with dimensions).
3. List the shapes you are observing around you in real life with place/item. (For ellipse, parabola and hyperbola).
4. Take two simple objects. Sketch isometric of them. Also draw orthographic projections of them (all views).
5. Take one circular shape. Assume one point on circumference and mark it. Roll that shape on flat and circular surface. Observe the path of point.
6. List at least two questions individually which you would like to ask for followings:
  - a: Ellipse.
  - b: Involute of circle.
  - c: Perspective projections.
  - d: Use of geometric constructions.
  - e: Quadrants

COURSE TITLE: COMPUTER APPLICATION AND GRAPHICS								
COURSE CODE: 3300012								
TEACHING SCHEME			TOTAL	EVALUATION SCHEME				TOTAL
THEORY	TUTORIAL	PRACTICAL		EXTERNAL	MID TERM	VIVA	PRACTICAL	
0	0	4	4	0	0	40	60	100

### 1. RATIONALE

This subject envisages making the student know the fundamentals of Computer Application. It will also help the student to have hands on experience on different application software used for office automation like MS-Word day-to-day problem solving, in particular for creating business documents, data analysis and graphical representations. Computer Application & Graphics is a course where student will be able to write, Draw, Tabulate, Report, Store and Retrieve and also print on Computer using various Hardware and Software.

Moreover the market driven economy demands frequent changes in product design to suit the customer needs. With the introduction of computers the task of incorporating frequent changes as per requirement is becoming simpler. Some units in this course has been introduced at Diploma



level in order to develop the skills in student so that they can generate various digital drawings as required using various CAD software.

## **2. LIST OF COMPETENCIES**

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.

**i. Use MS word software for word processing applications.**

**ii. Use relevant software for drafting and editing 2D entities.**

## **4. DETAILED COURSE CONTENTS**

### **Unit Major Learning Outcomes Topics and Sub-topics**

#### **Unit – I Basics of Computer System**

- 1.1 Describe computer hardware and software
- 1.2 Identify I/O devices
- 1.3 Describe functioning of CU ALU and memory unit
- 1.4 Differentiate various types of printers
- 1.5 Explain use of OS
- 1.6 Demonstrate various file handling operations

#### **Basics of Computer System**

- Concept of Hardware and Software
- Computer block diagram
- Input Output unit
- CPU, Control Unit, Arithmetic logic Unit (ALU), Memory Unit
- Monitor, Printers: Dot matrix, Laser, Inkjet, Plotters, Scanner
- System software and Application Software
- Operating system concepts, purpose and functions
- Operations of Windows OS.
- Creating and naming of file and folders
- Copying file, renaming and deleting of files and folders,
- Searching files and folders, installation application, creating shortcut of application on the desktop
- Overview of control Panel, Taskbar.

#### **Unit– II**

#### **Using MS -Word 2007**

- 2.1 Use basics text formatting features
- 2.2 Manipulate text
- 2.3 Use page Setup features
- 2.4 Use spell and grammar utility
- 2.5 Work with graphics/ clipart
- 2.6 Create and manipulate table
- 2.7 Use auto shapes and its formatting with text

#### **Using MS - Word 2007**

- Overview of Word processor
- Basics of Font type, size, colour,
- Effects like Bold, italic, underline, Subscript and superscript,
- Case changing options,
- Inserting, deleting, undo and redo, Copy and Moving (cutting) text within a document,
- Formatting Paragraphs and Lists

- Setting line spacing; single
- Page settings and margins including header and footer
- Spelling and Grammatical checks
- Table and its options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table.
- Working with pictures, Inserting Pictures from Files,
- Using Drawings and WordArt; Lines and Shapes, Modifying Drawn Objects, Formatting Drawn Objects, options for Creating and Modifying a WordArt Object

### **Unit– III**

#### **Creating digital drawings using a Computer Aided Drafting(CAD) Software**

3.1 Start Computer aided drafting software AutoCAD).

3.2 Invoke commands in AutoCAD.

3.3 Set limits & Coordinate systems.

3.4 Use object selection methods.

3.5 Create basic & advance 2D Introduction to Basic Draw Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station:

- System requirement & Understanding the interface.

- Components of a CAD software window: Such as Title bar, standard tool bar, menu bar, object properties tool bar, draw tool bar, modify toolbar, cursor cross hair. Command window, status bar,

#### **Unit Major Learning Outcomes Topics and Sub-topics**

entities.

3.6 Close & save your work drawing area, UCS icon.

- File features: New file, Saving the file, Opening an existing drawing file, Creating Templates, Quit.

- Setting up new drawing: Units, Limits, Grid, Snap,

- Methods of Specifying points- Absolute coordinates and Relative Cartesian & Polar coordinates.

- Using Object Snap like Endpoint, Midpoint, Intersection, Center Point, Quadrant Point, Nearest, Perpendicular, Apparent Intersection

- SNAP, GRID, OTRACK, LINE, PLINE, ARC, CIRCLE, Ellipse, DONUT, Polygon, Region, File Commands: New, Open, Templates Save, Exit,

- Standard sizes of sheet. Selecting Various plotting parameters such as Paper size, paper units, Drawing orientation, plot scale, plot offset, plot area, print preview

- Concept of model space and paper space.

- Creating view ports in model space and creating floating viewport in paper space. Shifting from model space to paper space and vice versa

#### **Unit – IV Editing & viewing a Digital Drawing using a CAD software**

4.1 Modify existing 2D entities.

4.2 Use different arrays in existing 2D drawing.

4.3 View given drawing entities properly.

4.4 Enquire about various attributes of existing 2D entities. Introduction to Basic Edit, Inquiry and display

Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station:

- Copy, Rotate, Move, Erase, Mirror, Array, Trim, Break, Extend, Chamfer, Fillet

- Zoom window, Zoom in-out, PAN

- List, Dblist, Area, Massprop

### Unit – V

#### Advance editing of a digital drawing using a CAD Software

5.1 Use layers for proper management of drawings.

5.2 Set properties of existing drawing entities as per requirement.

5.3 Able to dimension given 2D entities with perfection.

5.4 Use Blocks effectively to create perfect drawings. Introduction to Advanced Modify & other utility

Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station:

- Properties, Line type, colour, line weight

- Concept of Layers: Creating Layers, Naming layers, Making layers ON/OFF, Freeze-Thaw layers, Lock/Unlock Layers. Setting the properties

- of layers like Color, Line type, Line weight

- Concept of Blocks: Local block, global block. Creating, inserting, redefining & exploding blocks.

- Concept of Hatch: Selecting Hatch pattern, Hatchstyles, Hatch Orientations. Associative Hatch. Boundary Hatch, Hatching Object.

- Dimensioning: Types of dimensioning: Linear-Horizontal, Vertical, Aligned, Rotated, Baseline, Continuous, Diameter, Radius, Angular Dimensions.

- Dim scale variable.

- Editing dimensions .Computer Application & Graphics Course Code: 3300012GTU/ NITTTR Bhopal/12 Gujarat State

#### Unit Major Learning Outcomes Topics and Sub-topics

- Text: Single line Text, Multiline text.

- Text Styles: Selecting font, size, alignment etc.

#### 5. SPECIFICATION TABLE (for theory)

There is no theory paper and hence specification table for theory is not applicable

#### 6. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

#### S.No. Unit No. Practical Exercises

1 1 •Create and manage files and folder tree

- Use accessories utilities of windows OS

- Identify icons, processes going on, messages and interpretation

- Write given text using WORD software and beautify

- Plot and Print drawing, text on suitable paper

- Prepare report using stored text and drawing

2 2 •Entering and editing text in document file.

- Apply formatting features on Text like Bold, Italics, Underline, font type, colour and size. Apply features like bullet, numbering

- Create documents, insert images, format tables Create and manipulate tables

- Students will prepare File for the above mentioned practical and assignments on individual basis.

- Students will collect photographs from internet which are related to field application of topics.

**3** •Study of different types of drafting packages related to 2D e.g. AutoCAD, Power draft, Micro station.

- Creating a new folder in the computer for saving your practical work.
- Draw any three complicated 2D shapes using lines only following Absolute, Relative coordinate systems and object snaps.
- Draw Five problems on different geometrical shapes in AutoCAD software using Lines, Polylines, Polygon, Circles, Arcs, Ellipse AutoCAD commands.
- Construct a common templates for all the following assignments with institutes logo & standard title block.
- Plot one drawing using above template and containing some 2D entities on suitable size of paper(A4).

**4 4** •List different properties of entities made in above activity slot.

- Try viewing commands on entities made in above activity slot.

Computer Application & Graphics Course Code: 3300012

GTU/ NITTTR Bhopal/12 Gujarat State

- Create drawing of three different Doors & Windows (Elevations).
- Create drawing of a modern Study table (Elevations).
- Create drawing of a modern sofa Set (Plan).
- Draw three problems with polar & rectangular Arrays.
- Create Top view of a circular and a rectangular Dining Table with six chairs using Polar and Rectangular array concept respectively.
- Create plan & elevation of a primary school building.
- Create plan & elevation of a medium size modular kitchen.

**5 5** •Convert above door, windows, Bed, Dinning table into Blocks and use these blocks in following activities.

- Three problems on 2D entity generation, which involve the use of layers, blocks and hatching.
- Dimensioning of above figures.
- Create your own text style (individually)
- Draw two sheets on template developed at serial no.-3 and Create a plan & elevation of a Duplex Bungalow with following layers:
  - Basic civil structure
  - Water supply line
  - Electric supply
  - Toilet fittings
  - Furniture(using blocks)

## **7. SUGGESTED LIST OF STUDENT ACCTIVITY**

Teachers can decide on their own the list of student activities to promote the interested students in use of computers and develop the competencies