

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Computer Application & Graphics
 (Code: 3300012)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---------------------------|
| Ceramic Engineering, Chemical Engineering, Civil Engineering, Environment Engineering, Fabrication Technology, Mining Engineering, Plastic Engineering, Textile Manufacturing Technology, Textile Processing Technology, Transportation Engineering | First Semester |
| Automobile Engineering, | Second Semester |

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.

3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | Total Marks |
|-------------------------------|---|---|--------------------------|--------------------|----|-----------------|----|-------------|
| | | | | Theory Marks | | Practical Marks | | |
| L | T | P | C | ESE | PA | ESE | PA | |
| 0 | 0 | 4 | 4 | 0 | 0 | 40 | 60 | 100 |

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P - Practical; C – Credit;
 ESE - End Semester Examination; PA - Progressive Assessment.

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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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. 3.6Close & save your work | <p>drawing area, UCS icon.</p> <ul style="list-style-type: none"> • 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 | 4.1Modify existing 2D entities. 4.2Use different arrays in existing 2D drawing. 4.3View given drawing entities properly. 4.4Enquire about various attributes of existing 2D entities. | <p>Introduction to Basic Edit, Inquiry and display Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station:</p> <ul style="list-style-type: none"> • 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 | 5.1Use layers for proper management of drawings. 5.2Set properties of existing drawing entities as per requirement. 5.3 Able to dimension given 2D entities with perfection. 5.4Use Blocks effectively to create perfect drawings. | <p>Introduction to Advanced Modify & other utility Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station:</p> <ul style="list-style-type: none"> • 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, Hatch styles, 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. |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|-------------|--------------------------------|--|
| | | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 • 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 | 3 | <ul style="list-style-type: none"> • 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. • Construc 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 | <ul style="list-style-type: none"> • List different properties of entities made in above activity slot. • Try viewing commands on entities made in above activity slot. |

| | | |
|---|---|---|
| | | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Basic civil structure • Water supply line • Electric supply • Toilet fittings • Furniture(using blocks) |

7. SUGGESTED LIST OF STUDENT ACTIVITY

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

8. SUGGESTED LEARNING RESOURCES

A. List of Books

| Sr. No. | Title of Book | Author | Publication |
|---------|------------------|---|---------------------------------|
| 1. | R Taxali | Computer Course | Tata McGraw Hills. New Delhi. |
| 2. | P. Nageswara Rao | AutoCAD For Engineering Drawing Made Easy | Tata McGraw Hill |
| 3. | George Omura | Mastering AutoCAD | BPB publication |
| 4. | Sham Tickoo | AutoCAD 2004 | Galgotia Publications,New Delhi |
| 5. | Devid Frey | AutoCAD 2000 | BPB publication |
| 6. | A. Yarwood | An Introduction to AutoCAD2000 | LongMan |
| 7. | Ron House | Using AutoCAD 2000 | Prentice Hall |
| 8. | Autodesk Inc. | Latest AutoCAD Manual | Autodesk Inc. |

B. List of Major Equipment/ Instrument

- Computer System
- Printer
- Flat Bed Plotter A4 size

C. List of Software/Learning Websites

- Latest Educational Network version of Auto CAD Software
- MS Office

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE**Faculty Members from Polytechnics**

- **Prof. H. L. Purohit**, Head of Civil Engineering Department, L. E. College, MORBI
- **Prof. B G RAJGOR**, HOD, Applied Mechanics Department , B & B Institute of Technology

Coordinator & Faculty from NITTTR Bhopal

- **Prof. Sanjay Agarawal**, Professor & Head Dept. of Computer Engg. & Application, NITTTR, Bhopal
- **Prof. Sharad Pradhan**, Associate Professor, Dept. of Mechanical Engg., NITTTR, Bhopal

