

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 helps 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
L	T	P		Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
0	0	4	4	0	0	40	60	

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	drawing area, UCS icon. <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.	Introduction to Basic Edit, Inquiry and display Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station: <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.	Introduction to Advanced Modify & other utility Commands in any Computer Aided Drafting software like Auto CAD Power draft, Micro station: <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 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	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 ACCTIVITY

Teachers can decide on their own the list of student activities to promote the intereste 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