

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma Engineering

Level: Diploma

Branch: Ceramic Technology

Subject Code : DI04052091

Subject Name : Computer Applications and Graphics



w.e. f. Academic Year:	2025-26
Semester:	4 th
Category of the Course:	MOPEC

Prerequisite:	Basic understanding of computers
Rationale:	In this technological era, computers and digital tools are essential for engineers for documentation, data analysis, presentations, internet usage, and preparation of basic engineering drawings. This course aims to develop fundamental computer skills, effective use of MS Office tools, basic internet services, and introductory CAD drafting skills required for engineering applications, project work, and professional practice.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Explain fundamentals of computer systems, operating systems, and internet services	Understand
02	Use MS Word for professional documentation and report preparation.	Apply
03	Analyze and present data using MS Excel and charts.	Apply
04	Create effective presentations using MS PowerPoint.	Apply
05	Prepare basic 2D engineering drawings using CAD software	Apply

**Revised Bloom's Taxonomy (RBT)*

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Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE(E)	PA(M)	PA(I)	ESE(V)	
0	2	2	3	0	0	20	30	50

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Basics of Computer Systems and Internet: <ul style="list-style-type: none">• Introduction to a Computer, Generations of Computer, Operating system concepts, purpose and functions Operations of OS• Window Basic: Creating folder, Deleting, Renaming, Searching files/Folders, Overview of Control Panel and Taskbar, Installation of MS-office/any application software• Introduction to internet, Basic Internet Terminologies: Browser, Webpage, Website, URL, WWW, Introduction to Email• Gmail: Create an account; Adding Contacts; Composing an Email; Creating and Managing Labels, Filters and Signature,• Google Drive: Create a folder, Upload and Download Files/folders, Sharing Files/Folders, Forms: Create a Form; Validate a Form; Share a Form; Managing Response	05	17

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2.	<p>MS Word – Document Processing:</p> <ul style="list-style-type: none">• Functions and features of Word processor, Text Basics: Typing the text, Alignment of text, Editing Text: Cut, Copy, Paste, Select All, Clear, Find & Replace• Text Formatting and saving file: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Change the Text Case, Line spacing, Paragraph spacing, Shading text and paragraph, Working with Tabs and Indents• Table and its options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table.• Working with pictures, Inserting Pictures from Files.• Mail Merge• Printing Documents	05	17
3.	<p>MS Excel – Data Analysis and Charts:</p> <ul style="list-style-type: none">• Introduction to Excel interface, understanding rows and columns, Naming Cells, working with excel workbook and sheets• Perform Calculations with Functions: Creating Simple Formulas, Setting up your own formula, Date and Time Functions - date, today, now, date, if, Logical Functions -and, or, not, if, Lookup and Reference Functions- Vlookup, Mathematical Functions - sum, sum if, rand, round, floor, ceiling, Statistical Functions - min, max, average, small, large, count, count if, count, Text Functions - text, concatenate, trim, value ,upper, lower, exact.• Sort and Filter Data with Excel: Sort and filtering data, using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting• Create Effective pie and bar Charts to Present Data Visually• Page Setup and Printing Worksheets	05	17

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4.	MS PowerPoint – Presentation Tools <ul style="list-style-type: none">• Introduction to PowerPoint interface, Creating slides and applying themes: Inserting new slide, changing layout of slides, duplicating slides, Copying and pasting slide, applying themes to the slide layout, changing theme color, Slide background, Formatting slide background, Using slide views• Using slide Master: Using slide master, inserting layout option, creating custom layout, Inserting placeholders, Formatting placeholders• Slide show option: Start slide show, Start shows from the current slide, rehearse timing, Creating custom slide show	05	17
5.	Basic CAD – 2D Drafting <ul style="list-style-type: none">• Introduction to CAD, applications and advantages, CAD interface and drawing environment, Drawing settings: units, limits, grid, snap, ortho, zoom and pan, Coordinate systems: absolute, relative and polar• Basic drawing commands: point, line, polyline, circle, arc, rectangle, polygon• Editing commands: erase, move, copy, rotate, scale, mirror, trim, extend, offset• Object snap and selection methods, Layers, colors and line types, Text and dimensioning, Blocks and hatching (basic), Plotting and printing drawings, Preparation of simple 2D engineering drawings.	10	32
Total		30	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
0	0	0	0	0	0

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

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References/Suggested Learning Resources:

(a) Books:

1. Rajaraman V, Adabala N, “Fundamentals of Computers, Sixth Edition”, Prentice Hall India Learning Private Limited, ISBN: 8120350677
2. Wallace Wang, “MS-Office for Dummies”, Wiley India, New Delhi, ISBN: 9788126578559
3. Ned Snell, Bob Temple, Michael Clark, “Sams Teach Yourself Internet and Web Basics All in One”, Sams Publishing, Indiana, USA, ISBN:0672325330
4. George Omura, *Mastering AutoCAD*, McGraw-Hill Education, ISBN-10 : 9813091509, ISBN-13 : 978-9813091504

(b) Open source software and website:

1. <https://support.microsoft.com>
2. <https://edu.gcfglobal.org>
3. <https://www.autodesk.com/education>
4. <https://www.tutorialspoint.com/word/index.htm>
5. <https://www.tutorialspoint.com/excel/index.htm>
6. https://www.youtube.com/@TutorialsPoint_
7. <https://market.tutorialspoint.com/course/autocad-online-training/index.asp>
8. <https://www.tutorialspoint.com/powerpoint/index.htm>

Suggested Course Practical List:

1. Identify computer hardware components and perform basic operating system operations (file/folder creation, rename, delete, search).
2. Perform basic internet operations: web browsing, email creation, sending and receiving emails, file upload/download using cloud storage.
3. Create a formatted document using **MS Word** including text formatting, tables, images, page setup and printing.
4. Prepare an official letter or report using **MS Word** with proper layout and formatting.
5. Create a worksheet using **MS Excel** and perform basic calculations using formulas and functions.
6. Analyze data in **MS Excel** and represent it using charts (bar, pie, line).
7. Create a professional presentation using **MS PowerPoint** with text, images, charts, animations and slide transitions.
8. Identify AutoCAD interface elements and set drawing units, limits, grid and snap settings.

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9. Draw basic geometric shapes in **AutoCAD** using drawing commands (line, circle, arc, rectangle).
10. Modify drawings using editing commands (move, copy, trim, extend, mirror).
11. Apply layers, colors, line types, text and dimensioning in AutoCAD drawings.
12. Prepare and print a simple 2D engineering drawing using **AutoCAD**.

List of Laboratory/Learning Resources Required:

1. **Computer System** with basic configuration (minimum dual core processor, 4 GB RAM or higher).
2. **Operating System** (Windows or Linux) with graphical user interface support.
3. **Internet Facility** with web browser for accessing online learning resources and email services.
4. **MS Office Software** (MS Word, MS Excel, MS PowerPoint) or equivalent office suite.
5. **CAD Software** (AutoCAD or any equivalent 2D CAD software).
6. **Printer / Plotter** for printing documents and CAD drawings.
7. **Projector / Display Unit** for demonstrations and teaching.
8. **Uninterrupted Power Supply (UPS)** for laboratory systems.
9. **Learning Resources** such as user manuals, online tutorials, and reference books.
