



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma Engineering

Level: Diploma

Branch: Mechatronics Engineering

Subject Code:DI04020011

Subject Name: Computer Aided Graphics

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

Prerequisite:	Zeal to Learn New Soft skills.
Rationale:	The objective of this subject is to make the students understand and apply the functioning of office application software, basic engineering drafting software. It will provide the student hands-on experience on different application software used for office automation and improve day-today problem-solving skills using online resources for creating business documents, data analysis, graphical representations and creating, editing and printing technical drawings. It will also enable the student to use Internet services for different communication. Development of sketching ability strengthens effective engineering communication & presentation. This course helps to develop the skills in student to generate various digital production drawings as required in industry using various CAD software.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Utilize various computer hardware, peripheral devices and software tools.	U
02	Draw simple Mechanical components/assembly in 2D using CAD software.	A
03	Create professional documents, analyzing data and presentation using various IT Software.	A
04	Interpret cyber security in use of internet services for various applications.	R/A

**Revised Bloom's Taxonomy (RBT)*

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	0	6	3	00	00	20	30	50



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Basics of Computer Systems & Internet and applications	08	9
2.	Documentations, Spread sheet & Presentation using Software.	20	22
3.	Information Security.	04	5
4.	Creating digital drawings using Computer Aided Drafting (CAD) Software. Editing Drawing using CAD software.	36	40
5.	Advance editing of a drawing using a CAD Software.	16	18
6.	Seminar/ PPT Presentation/ Mini project	06	6
	Total	90	100

SUGGESTED PRACTICAL EXERCISES:

Sr. No.	Suggested Practical	Unit No	Approx. Hrs. Required
1	Identify and prepare report document including sample specifications that contains brief information regarding various components of computer systems and peripheral devices available in the institute's computer labs.	01	02
2	Demonstrate the installation procedure of computer peripheral devices/software in Desktop/Laptop from the following list: - Computer Mouse & Keyboard (Wired/Wireless) - Webcam - Microphone - Scanner - Printer - Projector - Data Storage Devices (USB/Portable Hard Disk drive) - Operating systems/software tools	01	04
3	Demonstrate participation in any three Digital India Platforms from the following list. Digital India Platforms: BHIM, Dig-Locker, mParivahan, The Unique Identification Authority of India (UIDAI), Digital Gujarat.	01	02
4	Create a text document incorporating various page setup feature, font, language and character feature, pictures-shape-icons-smart- art feature, header-footer with page number feature, using an equation and symbols, plot data table and chart/graph with referring published technical paper or any technical survey/Project report.	02	08



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	Submit the completed report in PDF format.		
5	Create spread sheet document with use of sort & filter features, conditional formatting features, font & alignment setting, cell property and formatting features, analyze data using formulas and functions and present it through charts with referring student's results data sheet. Submit the completed spread sheet in PDF format.	02	06
6	Create slide presentation of relevant topic using basic formatting features, insert and design slide, drawing tools, shape and picture style, object fill and effects, data table or 2D-3D charts, animation and transition effects, short media clip and hyperlink. Submit the completed presentation in PDF format.	02	06
7	Study of the features of firewall in providing network/cyber security and to set Firewall Security in computer operating system and visit site https://cert-in.org.in/	03	04
8	Draw and edit 4 simple problems of different geometrical shapes in AutoCAD software using Drawing Tools, Modifying tools, Dimensioning tools, etc. Submit the completed drawings in PDF format. Write steps to prepare each drawing. Steps must include followings. A. Sketch of components at each step with dimensions. B. Sequence of commands with name, options and values.	04	18
9	Prepare orthographic production drawings of minimum four mechanical components with all necessary views, dimensions, tolerances, notes, title block, etc. using CAD software (Real industrial component may be selected by student as student activity and approved / assigned by teacher.) Submit the completed drawings in PDF format. Write steps to prepare each drawing/component. Steps must include followings. A. Sketch of components at each step with dimensions. B. Sequence of commands with name, options and values.	04	18
10	Prepare 2D drawings of minimum one mechanical assembly and its components with all necessary views, dimensions, tolerances, notes, title block, etc. using CAD software. (Following are some samples for reference; teacher may assign any other branch specific assembly). Take print out of the same using printer/plotter. 1. Drawing of cotter joint assembly 2. Drawing of knuckle joint assembly 3. Drawing of Flanged coupling assembly	05	16
11	Prepare a detailed report/ PPT/ PDF on given topic.	06	06



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References/Suggested Learning Resources:

(a) Books:

Sr. No.	Title of Book	Author	Publication
1.	Fundamentals of Computers, Sixth Edition	Rajaraman V, Adabala N	Prentice Hall India Learning Private Limited. ISBN: 8120350677
2.	Computer Course	R Taxali	Tata McGraw Hills. New Delhi. ISBN: 9780070700376
3.	INFORMATION TECHNOLOGY	Dennis P. Curtin, Kim Foley, Kunal Sen, Cathy Morin	Tata McGraw Hills Publication. ISBN: 978-0074635582
4.	MS-Office for Dummies	Wallace Wang	Wiley India, New Delhi. ISBN: 9788126578559
5.	Sams Teach Yourself Internet and Web Basics All in One	Ned Snell, Bob Temple, Michael Clark	Sams Publishing, Indiana, USA, ISBN:0672-32533-0
6.	Computer Fundamentals	R.S. Salaria	Khanna Book Publishing Company ISBN: 978-9381068533
7.	Machine Drawing including AutoCAD	Ajeet Singh	McGraw hill
8.	Production Drawing	KL Narayan	New Age Publication
9.	Fundamental of Geometric Tolerance and dimensioning	Alex Krulikowski	Cengage Learning
10.	Engineering Graphics with AutoCAD	Sarkar.A.K	PHI india
11.	Essentials of Engineering Drawing and Graphics using AutoCAD	Jeyapoovan	Vikas publication
12.	AutoCAD User Guide	Autodesk	Autodesk Press.

(b) Open-source software and website:

a. <https://www.tutorialspoint.com>

b. https://edu.google.com/intl/ALL_in/teacher-enter/products/forms/?modal_active=none

c. www.w3schools.com

d. <https://support.microsoft.com/en-us/training>

e. <https://edu.gcfglobal.org/en/topics/googleapps/>



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- f. <https://www.udemy.com>
g. <https://www.coursera.org/>
h. <https://www.digitalindiaportal.co.in/>
i. <https://getintopc.com/>
j. <https://nptel.ac.in/>
k. <https://magazine.opensourceforu.com/>
l. <https://www.electronicsforu.com/>
m. <https://www.redhat.com/en>
n. <https://www.netacad.com/>
o. <https://www.cert-in.org.in/>
p. https://www.youtube.com/results?search_query=engineering+drawing
q. <https://www.youtube.com/c/MechanicalEnggSubjectsGTU/playlists>
r. <https://youtu.be/MT1T31GtGpg>
s. <https://youtu.be/WEwkepkv6mg>
t. <https://youtu.be/trJQIvatIpI>
u. <https://nptel.ac.in/courses/112/103/112103019>
v. <https://nptel.ac.in/courses/112/105/112105294>
w. https://en.wikipedia.org/wiki/Engineering_drawing
x. <https://www.slideshare.net/search/slideshow?searchfrom=header&q=engineering+drawing>
y. https://www.scribd.com/search?content_type=tops&page=1&query=engineering%20drawing&content_types=tops,books,audiobooks,summaries,articles,documents,sheet_music,podcasts
z. <http://www.cognifront.com/tools.php>
aa. <https://www.youtube.com/watch?v=bmAlJAMndwM>
bb. https://www.youtube.com/watch?v=904_RPjGJg4
cc. <https://www.youtube.com/watch?v=jzIDouas0Wc>
dd. <https://www.youtube.com/watch?v=VuHdV38fyjc>
ee. https://www.youtube.com/watch?v=iOzlIJge_G0
ff. <https://www.youtube.com/watch?v=-l0iRdH3MbA>
gg. <https://www.youtube.com/watch?v=vI5xhCD5mXQ>
hh. <https://www.youtube.com/watch?v=GDrD9nEZ9LY>

List of Laboratory/Learning Resources Required:

This major equipment with broad specifications for the PrOs is a guide to procure them by the Administrators to use in uniformity of practical in all institutions across the state.

Sr. No.	Equipment/instrument name with broad specification	Pro No.
1.	Computer system with latest configuration.	All
2.	Related software. (OS, open office, CAD software, MS office, Auto CAD, Anti-Virus software, Gujarati-Hindi language input tool software etc.).	All



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Suggested Activities for Students:

Other than the laboratory learning, following are the suggested student-related co-curricular activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

- a) Undertake micro-projects in team/individually.
- b) Encourage Students for creating and designing forms related to Departmental work.
- c) Prepare a portfolio for the Digital India platform and identify digital services for Indian citizens.
- d) Students are encouraged to register themselves in *various MOOCs such as: Swayam, edx, Coursera, Udemy etc. to further enhance their learning.*
- e) Select at least four simple mechanical components each made up of minimum 5-6 manufacturing operations. Get them approved by teacher. Measure and sketch them in report pages with dimensions. (For Ex.No 09).
- f) Select at least one simple mechanical assembly in group of 5-6 students, each made up of minimum 5-6 components. Get them approved by teacher. Measure and sketch them in report pages with dimensions. (For Ex.No.10).
- g) Bring Actual assembly from workshop/industry, measure dimensions, sketch it and make 2D production drawing for the same.(For Ex.No.11)

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