GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I – Semester

Course Title: **Fundamentals of Computer**
(Course Code: 4310701)

Diploma programme in which this course is offered	Semester in which offered
Computer Engineering	First

1. RATIONALE

In any business organization the work of documentation, data analysis and presentation are typically carried out in an office set-up. There for it is necessary for students to learn various software tools to carry these activities accurately. The aim of this course is to develop students' fundamental IT skills and develop skills in using various components of MS-office, Internet and Google applications. It will enable them not only to carry out these tasks in their profession in future, but equally useful for making their project reports and presentations during their progression in diploma programme.

2. COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.

- **Use google applications, various IT software tools for word-processing, data analysis and preparing presentation.**

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

a) Use computer system and its peripherals.
b) Create Forms and sheets using Google Application.
c) Perform word processing and basic DTP operation using MS Word.
d) Use spreadsheet application for analyzing and representing data graphically.
e) Prepare electronic slideshow presentation using MS PowerPoint

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
CI	T	P	C	CA	ESE	CA	ESE	
0	0	4	4	0	0	25*	25	50

(*): For this practical only course, 25 marks under the practical CA has two components i.e. the assessment of micro-project, which will be done out of 10 marks and the remaining 15 marks are for the assessment of practical. This is designed to facilitate attainment of COs holistically, as there is no theory ESE.

***Legends: CI**-Class Room Instructions; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **CA** - Continuous Assessment; **ESE** - End Semester Examination.*

5. SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. *These PrOs need to be attained to achieve the COs.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Create and Manage Files & Folders	I	02
2	(a) Create Gmail Account and use its Features like adding contacts (b) Compose mail, create and manage labels, filters and signatures	II	02
3	Configure browser settings and use browsers.	II	02
4	Create and Manage Files and Folders in Google Drive	II	02
4	MS-Word: Create and Design Admission/Enquiry Forms for Students: use shapes, text boxes, colors, formatting options, tables, and horizontal lines etc.	III	02
5	MS-Word: Create bills/brochures for Company: Use Insert menu option, text adjustment between the table, page size, text boxes	III	02
6	MS-Word: Use smart art and create organization charts	III	02
7	MS-Word: Design E-book cover pages / Magazine front/ books front/back page: Header & Footer	III	02
8	MS-Word: Design a Happy Birthday Message by using Word Art and print it.	III	02
9	MS-Word: Design Newspaper advertisement: Use high-quality images, text, and layout	III	02
10	MS-Word: Create a chart and show the Results comparison between 2019, 2020, and 2021	III	02
11	MS-Word: Insert template in Microsoft Word from the Internet and edit those templates with your content.	III	02
12	MS-Word: Create Letter Head	III	02
13	Google document: Create Google Document for Resume	II	02
14	MS Excel: - Create Work book using basic features of Excel	IV	02
15	MS Excel: Create basic charts for 2020 Car sales	IV	02

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
16	MS Excel: Create Target Sheet for Company using Conditional Formula	IV	02
17	MS Excel: Create Company Salary Table using VLOOKUP	IV	02
18	MS Excel: Create Pivot Table and Pivot Chart For any Expense Sheet	IV	02
19	MS Excel: Create Worksheet using Macros	IV	02
20	MS Excel: Create Pay bills, pay slips, Electricity bills using Excel	IV	02
21	Google Sheet: Create Google Sheet for Results of Students	II	02
22	MS Power Point: Create Presentation with basic formatting features, insert and delete slides, using master slide	V	02
23	MS Power Point: Working with drawing tools, applying shape or picture styles, Applying object borders, object fill, object effects.	V	02
24	MS Power Point: Create Table and Charts in Presentation	V	02
25	MS Power Point: Create PPT with adding Sound, Video, Animation, Transition and Hyperlink in Presentation	V	02
27	Google Presentation: Create a Google Presentation comprising of all the features as mentioned in previous practicals.	II	02
28	Google Form: (a) Create google form for User's feedback (b) Create a sample quiz	II	02
	Total		56

Note

i. *More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*
ii. *Care must be taken in assigning and assessing study report as it is a first year study report. Study report, data collection and analysis report must be assigned in a group. Teacher has to discuss about type of data (which and why) before group start their market survey.*
iii. *The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.*

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Software Installation setup	10
2	Use of Internet Technology and Applications	10
3	Designing ability for given problem using related MS-Office component	40
4	Relevance and quality of output	30
5	Answer to sample questions	10
Total		**100**

6. MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators, so uniformity for conducting practical can be maintained across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer with basic configuration and Internet Facility	All
2	MS-OFFICE	All

7. AFFECTIVE DOMAIN OUTCOMES

The following ***sample*** Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfil the development of this competency.

a) Follow safety practices.
b) Practice good housekeeping.
c) Demonstrate working as a leader/a team member.
d) Maintain tools and equipment
e) Follow ethical practices.

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

i. 'Valuing Level' in 1st year
ii. 'Organization Level' in 2nd year.
iii. 'Characterization Level' in 3rd year.

8. UNDERPINNING THEORY

The major underpinning theory is given below based on the UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit –I: **Basics of Computer**	1a. List Generation of Computer 1b. Classify the given type of Device 1c. Describe functioning of CU, ALU and memory unit 1d. Differentiate various types of Storage Devices 1e. Classifying Computer Languages 1f. Explain various file handling operations	1.1 Introduction to a Computer 1.2 Generations of Computer 1.3 Computer Block Diagram: Input and output unit, CPU (ALU+CU) and Memory Unit 1.4 Input and Output Devices 1.5 Storage Devices: Primary and Secondary Storage Devices 1.6 Types of Software: Application and System 1.7 Computer Languages: Low- level and High-level Languages 1.8 Window Basic: Creating folder, Deleting, Renaming, Searching files/Folders, Overview of Control Panel and Taskbar, Installation of MS-office/any application software.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit– II: **Basics of Internet and Google Applications**	2a. Describe basic terminologies of Internet 2b. Write the procedure of creating Email Account. 2c. Explain different features of google drive 2d. Write the procedure to Create Google form with validation checks.	**Basics of Internet** 2.1 Introduction to internet 2.2 Basic Internet Terminologies: Browser, Webpage, Website, URL, WWW 2.3 Introduction to Email **Google Applications** 2.4 Gmail: Create an account; Adding Contacts; Composing an Email; Creating and Managing Labels, Filters and Signature 2.5 Drive: Create a folder, Upload and Download Files/folders, Sharing Files/Folders 2.6 Forms: Create a Form; Validate a Form; Share a Form; Managing Response
Unit– III: **MS-Word**	3a. Describe the given features of MS Word 3b. Select basics text formatting features 3c. Write steps to apply graphics and pictures in the document. 3d. Explain procedure to Create and manipulate table with styles 3e. Explain the procedure to apply Proofing, sharing and Printing Document 3f. write steps to create Google Document	3.1 Functions and features of Word processor 3.2 Text Basics: Typing the text, Alignment of text, Editing Text: Cut, Copy, Paste, Select All, Clear, Find & Replace 3.3 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 3.4 Working with Objects: Shapes, Clipart and Picture, Word Art, Smart Art, Columns and Orderings - To Add Columns to a Document, Change the Order of Objects, Page Number, Date & Time, Inserting Text boxes, Inserting Word art, inserting symbols, Inserting Chart 3.5 Working with bullets and numbered lists: Multilevel numbering and Bulleting, Creating List, Customizing List style, Page bordering, Page background 3.6 Tables: Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		3.7 Styles and Content: Using Build- in Styles, Modifying Styles, Creating Styles, creating a list style, Table of contents and references, adding internal references, adding a Footnote, Adding Endnote 3.8 Sharing and Maintaining Document: Changing Word Options, Changing the Proofing Tools, Managing Templates, Restricting Document Access, Using Protected View, Working with Templates: Managing Templates, Understanding building blocks 3.9 Testing and Printing the document, Check Spelling as You Type, Mark Grammar Errors as You Type, Setting AutoCorrect Options, Page Setup, setting margins, Print Preview, Print 3.10 Google Docs sheet: creating and sharing
Unit–IV: **MS-Excel**	4a. Describe Features of Spreadsheet 4b. Explain basics formatting features of Excel 4c. Explain procedure to apply Formulas and calculation in Excel Spreadsheet with cross referencing and validation 4d. Explain procedure to create and Manipulate Charts and diagrams 4e. Explain procedure to create and Manipulate Pivot Table and Charts 4f. Write steps to Create Google Spreadsheet	4.1 Introduction to Excel: Introduction to Excel interface, understanding rows and columns, Naming Cells, working with excel workbook and sheets 4.2 Formatting excel work book: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, wrap text, Merge and Centre, Currency, Accounting and other formats, Modifying Columns, Rows & Cells 4.3 Perform Calculations with Functions: Creating Simple Formulas, Setting up your own formula, Date and Time Functions, Financial Functions, Logical Functions, Lookup and Reference, Functions Mathematical Functions, Statistical Functions, Text Functions. 4.4 Sort and Filter Data with Excel: Sort and filtering data, using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		4.5 Create Effective Charts to Present Data Visually: Inserting Column, Pie chart etc., Create an effective chart with Chart Tool, Design, Format, and Layout options, adding chart title, changing layouts, Chart styles, editing chart data range, editing data series, Changing chart Analyze Data Using PivotTables and Pivot Charts: Understand PivotTables, create a PivotTable, Framework Using the PivotTable and PivotChart, Create Pivot Chart from pivot Table, inserting slicer, Creating Calculated fields 4.6 Use Macros to Automate Tasks, Creating and Recording Macros, Assigning Macros to the work sheets, Saving Macro enabled workbook, Cross Referencing and Data Validation: VLOOKUP, Validation 4.7 Google Excel sheet: creating and sharing
Unit–V: **MS-PowerPoint**	5a. Explain procedure to create presentation with basic features of PowerPoint. 5b. Explain procedure to apply themes, animation and hyperlink in presentation 5c. Explain procedure to apply audio and sounds with inserting pictures, chart and Clipboard 5d. Write steps to create Master slides 5e. Explain procedure for printing, sharing, and exporting slides 5f. Explain procedure to create Google PowerPoint Presentation	5.1 Setting Up PowerPoint Environment: New, Open, Close, Save, Save As, Typing the text, Alignment of text, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Cut, Copy, Paste, Select All, Clear text, Find & Replace, Working with Tabs and Indents 5.2 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 5.3 Working with bullets and numbering: Multilevel numbering and Bulleting, Creating List, Page bordering, Page background, Aligning text, Text directions, Column's option 5.4 Working with Objects: Shapes, Clipart and Picture, Word Art,

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		Smart Art, Change the Order of Objects, inserting slide header and footer, Inserting Text boxes, inserting shapes, using quick styles, Inserting Word art, inserting symbols, Inserting Chart 5.5 Hyperlinks and Action Buttons: Inserting Hyperlinks and Action Buttons, Edit Hyperlinks and Action Button, Word Art and Shapes 5.6 Working with Movies and Sounds: Inserting Movie from a Computer File, Inserting Audio file, Audio Video playback and format options, Video options, adjust options, Reshaping and bordering Video 5.7 Using SmartArt and Tables: Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option Converting text to smart art 5.8 Animation and Slide Transition: Default Animation, Custom Animation, modify a Default or Custom Animation, Reorder Animation Using Transitions, apply a Slide Transition, modifying a, Transition, Advancing to the Next Slide 5.9 Using slide Master: Using slide master, inserting layout option, creating custom layout, Inserting place holders, Formatting place holders 5.10 Slide show option: Start slide show, Start shows from the current slide, rehearse timing, Creating custom slide show 5.11 Testing and Printing: Check Spelling as You Type, Setting AutoCorrect Options, save as video, Save as JPEG files, Save as PowerPoint Show file, Print Preview, Print

***Note**: The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
I	Basics of Computer	Not Applicable				
II	Basics of Internet and Google Applications					
III	MS-Word					
IV	MS-Excel					
V	MS-PowerPoint					
Total						

Legends: *R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)*

Note*: This specification table provides general guidelines to assist student for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.*

10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and 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 conduct following activities in group and prepare small reports of about 5 pages for each activity. They should also collect/record physical evidences such as photographs/videos of the activities for their (student's) portfolio which will 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) Encourage students to participate in the Microsoft-Office Specialist World Championship.
d) Students are encouraged to register themselves in various MOOCs such as: Swayam, edx, Coursera, Udemy etc to further enhance their learning.
e) Undertake a market survey of different Version like new and improved desktop apps, as well as mobile apps and a web-based alternative for both Windows and Mac users.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Guide student(s) in undertaking micro-projects.
b) Diagnosing Essential Missed Learning concepts that will help for students to improve their performance.
c) Guide Students to do Personalized learning so that students can understand the course material at his or her pace.
d) Encourage students to do Group learning by sharing so that learning can be enhanced.

e) About ***20% of the topics/sub-topics*** which are relatively simpler or descriptive in nature is to be given to the students for ***self-learning***, but to be assessed using different assessment methods.

f) Guide students on addressing the issues on environment and sustainability using the knowledge of this course

12. SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should ***not exceed three.***

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16** ***(fourteen to sixteen) student engagement hours*** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

a. Word documents: Prepare Subject teacher shall assign document/Reports to be prepared by each student covering all the major features of MS word.

b. Slide Presentations: Prepare slides show with all Presentation features such as: classroom presentation, presentation about department, presentation about institute, presentation of report. (Subject teacher shall assign a presentation to be prepared by each student).

c. Spreadsheets: Prepare Pay bills/salary statements, tax statement, student's assessment record, Students fees system, earning and expenditure statement of a company to ascertain profit-loss etc. using spreadsheet. (Teacher shall assign a spreadsheet to be prepared by each student).

d. Microproject problems can be designed by the teachers by combining the features of multiple s/w tools. For e.g. data can be collected through Google form, can be organized and analyzed using excel and finally presented using a presentation/ document.

13. SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1.	Fundamentals of Computers, Sixth Edition	Rajaraman V, Adabala N	Prentice Hall India Learning Private Limited, ISBN: 8120350677
2.	MS-Office for Dummies	Wallace Wang	Wiley India, New Delhi, ISBN: 9788126578559
3.	Sams Teach Yourself Internet and Web Basics All in One	Ned Snell, Bob Temple, Michael Clark	Sams Publishing, Indiana, USA, ISBN:0672-32533-0

14. SUGGESTED LEARNING WEBSITES

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/
f) https://www.udemy.com
g) https://www.coursera.org/

15. PO-COMPETENCY-CO MAPPING

Semester-I	Fundamentals of Computer (Course Code: 4310701)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ develop-ment of solutions	PO 4 Engineering Tools, Experimen-tation &Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Manage-ment	PO 7 Life-long learning
Competency *Use Fundamentals of Computer in various engineering applications*							
Course Outcomes CO a) Manage file and folders in OS.	1	-	-	1	-	-	1
CO b) Create Google Forms and Email account.	2	1	1	1	-	-	1
CO c) Perform word processing and basic DTP operation using MS Word.	2	1	1	1	-	-	1
CO d) Use spreadsheet application for analyzing and representing data graphically.	2	1	1	1	-	-	1
CO e) Prepare electronic slideshow presentation using MS PowerPoint.	2	1	1	1	-	-	1

Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.

16. COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

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