

COURSE DESCRIPTION			
Program	Diploma in Engineering and Technology		
Course Title	Foundational IT Skills		
Course Code	1008	Semester	I
Type of Course	Lab	Contact Hours	30
Teaching Scheme (L: T:P:R)	0:0:2:0	Credits	1
CIE Marks	60	ESE Marks	40

Introduction

This course bridges the gap between basic computer usage and professional engineering standards, equipping students with essential skills in office automation, cloud collaboration, and data visualization. By integrating modern Generative AI and Data Visualization software tools, it empowers students to solve technical problems efficiently and communicate ideas with professional clarity

Course Objectives

1	Familiarize the students with basic functions and features of Computers, Operating systems and Internet applications.
2	Enable the students to prepare documents, spreadsheets and presentations.
3	Equip students with data visualization and automation skills using Pivot tables, slicers, graphs and charts.
4	Empower students to use generative AI tools for ethical content creation and guided technical learning.

Course Pre-requisite

Topic	Course code	Course Title	Semester
NIL			

Course Outcome

CO	Course Outcome	Blooms Taxonomy Level
CO1	Identify the basic functions and features of Computers, Operating Systems, and Internet applications.	Understand
CO2	Use Stand-alone and Cloud-based office tools to prepare documents, spreadsheets, and presentations.	Apply
CO3	Apply spreadsheet functions and Generative AI tools to construct interactive dashboards, automated reports, and professional visual presentations for interpreting complex datasets.	Apply
CO4	Apply generative AI, digital design platforms for guided learning and visual communication.	Apply

CO-PO mapping

COURSE ARTICULATION MATRIX											
Course Outcomes	PROGRAM OUTCOMES										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	3	3	-	-	-	-
CO3	3	3	-	3	-	-	3	-	-	-	-
CO4	3	3	3	3	-	-	3	-	-	-	-
Total	12	6	3	6	-	3	9	-	-	-	-
Correlation Level	3	3	3	3	-	3	3	-	-	-	-

Legends: 1 - Low; 2 - Medium; 3 - High; No Correlation - "-"

Teaching and Assessment Scheme

Teaching Scheme/Week				Self-learning (SS)/Week	Total Hours/Semester	Credits C	Examination Scheme					
							Theory			Practical		
L	T	P	S				CIE	ESE	Total	CIE	ESE	Total
0	0	2	0	1	30	1				60	40	100

L: Lecture (One unit is of one-hour duration with one credit), T: Tutorial (One unit is of one-hour duration with one credit), P: Practical (One unit is of one-hour duration with 0.5 credit), S: Project (One unit is of one-hour duration with 0.5 credit) SS: Self-Learning, CIE: Continuous Internal Evaluation, ESE: End Semester Examination

Detailed Syllabus

Expt No.	Experiment name	Practical Outcome	Mapped CO	Taxonomy Level	Instructional Hours
Module I					
1	Hardware & Software Exploration	1. Identify the CPU, RAM, HDD/SSD, and peripheral ports. 2. Identify various application softwares and system softwares on a Personal Computer.	CO1	Remember	2
2	File and Folder Management in a Linux GUI	Create folders and files in Linux using Graphical User Interface(GUI).	CO1	Understand	2
3	Web & Connectivity	Practice advanced search operators, email etiquette and Google classroom.	CO1	Understand	2
Module II					
4	Professional Documentation	Create a formal report with table of contents, styles	CO2	Apply	2
5	Spreadsheet Basics	Use formulas (SUM, AVG, COUNT, COUNTIF, IF) and cell referencing.	CO2	Apply	2
6	Presentation Design	Design a 5-slide pitch deck with animations and transitions.	CO2	Apply	2
7	Cloud Collaboration	Use real-time editing in Google Docs/Sheets with version history.	CO2	Apply	2
	Series Test 1		CO2	Apply	2
Module III					
8	Data Analysis	Use pivot tables and slicers to analyze a given dataset in a spreadsheet	CO3	Apply	2
9	Data Visualization	Use different types of charts to analyze a given dataset in a spreadsheet.	CO3	Apply	2
10	AI Slide Generation	Use Generative AI platforms to transform structured text prompts into professional multi-slide presentations	CO3	Apply	2
Module IV					
11	Generative Pre-trained Transformer (GPT) Guided Learning	Create a "Study Assistant" prompt for technical concepts.	CO4	Apply	2
12	Graphic Design	Design a technical event poster using AI Tools.	CO4	Apply	2
	Series Test 2		CO4	Apply	2
	Open-Ended Experiment		CO1	Apply	2

Open-ended experiment

Objective:

To encourage creativity, innovation, and application of knowledge by allowing students to design and perform an experiment beyond the prescribed list, using the concepts learned during the course.

Description:

At the end of the laboratory course, each student (or group of students) shall undertake one open-ended experiment. In this activity, students are expected to conceive, design, and implement an experiment of their own choice related to the course outcomes. The aim is to apply theoretical knowledge and laboratory skills to a new or practical problem not explicitly covered in the regular experiments.

Students may choose to:

Modify or extend an existing experiment to explore additional parameters or behaviors. Integrate multiple concepts from the syllabus into a combined application. Design a mini-setup or prototype to demonstrate a principle or solve a simple engineering problem. Perform a comparative study or performance analysis of a circuit/system/component.

Student Activities for Self-Learning

Week	Self-Learning description	Hours
Module I		

1	1. Draw or Take a picture of the ports of your Lab PC and label the ports of your PC. 2. Compare the RAM, Processor, and Storage type (SSD vs. HDD) of your Tablet PC or any other smart devices versus your lab PC. Prepare a comparison chart of the configurations. 3. List any 5 system software and application software in your lab PC.	1
2	1. Use the GUI to create a directory tree for your semester subjects, using subject codes as folder names and creating separate sub-folders to organize notes for each module. 2. Create folders and files for the given scenario You are preparing for a weekend trip. Your "home base" is your main user folder. Create a new folder called Backpack. Go inside your Backpack folder and create two folders: Food and Tools. Inside the Tools folder, create a file called flashlight.txt and a file called map.txt. You realize the map.txt shouldn't be in Tools. Move it into the Food folder instead. You want a second flashlight just in case. Copy the flashlight.txt file and name the copy spare_light.txt. You decide you don't need the Food folder at all. Delete the entire Food folder and everything inside it. List everything left in your Backpack to see what you have.	1
3	1. Use filetype:pdf "Computer Engineering" site:edu on Google. Record the URL and File Size (KB) of the first PDF result found. 2. Enroll to google classroom or any other LMS of Foundational IT Skills and customize profile. 3. Create an email id, draft a formal mail and send mail to your friends with netiquette. (scenario- You are the Event Coordinator for your college. You need to send a formal announcement to the Staff coordinator, 10 student participants regarding a change in the workshop schedule. You must also keep the HoD informed of this update, but you must ensure the students' private email addresses are not visible to one another.)	1
Module II		
4	1. Create a standard 1-page "Assignment Cover Sheet" using Word Styles (Heading 1, Heading 2). 2. Create a professional Biodata for an internship application and export it into pdf (The Specification: Page Layout: Margins: Set to "Normal" (1 inch or 2.54 cm on all sides). Font: Use a professional sans-serif font (e.g., Arial or Calibri) for the body. Use of Styles: Apply Heading 1 to main sections (Personal Details, Education, Skills). Modify the Heading 1 style to be Bold and Underlined. Data Organization (The Table): Use a 2-column Table to align your personal information (e.g., Date of Birth, Nationality, Languages) so the colons (:) line up perfectly. Border: Remove the table borders so the text looks floating but perfectly aligned. Visual Element: Insert a placeholder for a professional photo.	1
5	1. Find and apply the COUNTIF formula in a spreadsheet to count how many students passed a test 2. In a cricket database, use the SUM and AVERAGE functions to calculate the total and mean values for the "Runs Scored" field in the range B2:B21. Next, apply the COUNTIF formula to the "Player Category" field in range C2:C21 to find the total number of players listed as "Batsman." In the "Selection Status" column, use an IF formula to check the "Runs Scored" in cell B2 and display "Selected" if the value is 50 or higher, otherwise display "Waitlist." Finally, use the COUNT function on the "Player Name" field in range A2:A21 to verify the total number of participants in the academy.	1
6	Edit a "Slide Master" to ensure your name and roll number appear automatically on header or footer of every slide of a deck	1
7	1. Imagine a team of four students is editing a single Google Sheet for a lab report. One student accidentally deletes a large data table and then closes the browser. Explain how the team can use the 'Version History' tool to see the names of people who edited the file and describe the steps to restore the table back to its original state. 2. In Google Sheets, if three people are working on a project, how can you tell which specific person deleted a value in Cell B5? Name the menu path you would use to find this information and explain how the 'color-coded' system helps identify the person. 3. Create a 1-page overleaf document that includes a title, a mathematical formula, and a list. (Optional Assignment)	2
Module III		
8	1. Create a Pivot Table from a 50-row sales dataset. Drag "Category" to Rows and "Sales" to Values. Record the Grand Total value displayed. 2. You have a list of sales for 'Laptop', 'Mouse', and 'Keyboard'. Create a Pivot Table to show the total sales for each. Insert a Slicer for 'Region'. If you click 'South' on the Slicer, what happens to the 'Grand Total'? If you add a new row of data to your original list, name the button you must click to update the Pivot Table.	2
9	1. Create a small summary table showing the count of students who 'Passed' (Score ≥ 40) versus 'Failed' (Score < 40) in the Series Test of Foundational IT Skills. Insert a 3D Pie Chart to represent these two groups as percentages of the whole class. 2. Create a Clustered Bar Chart (Horizontal) that displays the students' names on the Y-axis and their marks on the X-axis. After creating the chart, apply a Chart Style from the Design tab to change the background to a dark theme.	2
10	1. Use Gamma.app to generate an 8-slide deck. Record the time taken (in seconds) for the AI to generate the full presentation. 2. Use Manus AI to research the current market price of three different laptop brands (Dell, HP, and Lenovo) with 16GB RAM. Ask the agent to summarize these prices into a formatted table and then create a 5-sentence summary recommending the best value for a student budget and make a presentation.	1
Module IV		
11	1. Give ChatGPT this prompt: "Act as a technical interviewer for a Junior Engineer role. Ask me 5 questions one by one about computers." 2. What you mean by C-R-T-O framework in prompt engineering. Generate a proper prompt in the C-R-T-O framework for use cases of your choice.	1
12	1. Use canva or any web based graphic design platform to design logo for your college art festival 2. Use Canva's Magic Studio or any web based graphic design platform to place a photo of yourself in front of a "High-Tech Server Room" background for a professional poster.	1
Total Self-Learning hours		15

Learning Resources

TEXT BOOK			
Sl. No.	Title	Author	Publication
1	Computer Fundamentals	P.K. Sinha	BPB Publications

REFERENCE			
Sl. No.	Title	Author	Publication
1	IT Essentials: PC Hardware and Software	Cisco Networking Academy	Cisco Press

WEB RESOURCES		
Sl. No.	URL	Modules Covered
1	https://www.overleaf.com/learn	Module II
2	https://www.gamma.app	Module III
3	https://manus.ai/	Module III
4	https://www.canva.in/	Module IV

Major Equipment/Instruments/Components required for a batch of 30 students

Sl. No.	Particulars	Specifications	Quantity
1	PC	Intel Core i5/AMD Ryzen 5 (12th Gen or higher), 16GB RAM, 512GB SSD, 18.5" LED Monitor.	30
2	Internet	Dedicated Leased Line or Broadband with minimum 100 Mbps speed and Wi-Fi 6 Support.	1
3	Networking Kit	24-Port Managed Switch, CAT6 Patch Cords, and RJ45 Connectors for LAN setup.	2
4	Hardware Demo Kit	Disassembled PC components (Motherboard, RAM sticks, HDD, SSD, SMPS) for identification.	2
5	External Peripherals	Assorted Cables (HDMI, VGA, DisplayPort, USB-C) and External Webcams (1080p).	2

Major Software required for a batch of 30 students

Sl. No.	Particulars	Specifications	Quantity
1	Operating System	Windows 10/11 Professional or Latest Ubuntu LTS.	30
2	Office Productivity	Microsoft Office 365 (Academic) or LibreOffice / OpenOffice.	30
3	Web Browsers	Latest versions of Google Chrome, Mozilla Firefox, and Microsoft Edge.	30 installs
4	Cloud Platforms	Access to Google Workspace, Overleaf (LaTeX),	Cloud Platforms
5	AI & Design Tools	Access to ChatGPT/Gemini and AI-powered Design platforms	

Assessment Methodology - Lab

Mode	Attendance	CE	CA1	CA2	OEE	ESE
		Continuous evaluation	Practical test (first half of experiments)	Practical test (second half of experiments)	Open-ended experiment	Practical
Duration			2 hours	2 hours		3 hours
Exam mark		50	40	40	50	40
Converted to			15	15	10	
Marks	5	30			10	40
Total marks		60				40
Tentative schedule	End of semester	Every lab slot	7th week	14th week	15th week	

Scheme of Evaluation - Practical (Continuous Internal Evaluation)

Sl. No.	Criteria	Description	Marks
1	Preparation & Punctuality	Attendance, timely submission of record, pre-lab preparation, understanding of experiment objectives and theory.	10
2	Experimental Setup & Procedure	Ability to identify components/equipment, correct circuit connections/setup, systematic and safe execution of the procedure.	10

3	Observation & Data Recording	Accuracy and neatness of readings, correct use of units, tabulation, and systematic recording of results.	5
4	Analysis & Result Interpretation	Proper calculations, graphical representation, result verification, discussion, and logical conclusion.	10
5	Viva Voce / Concept Understanding	Clarity of theoretical concepts, explanation of procedure, ability to answer questions related to the experiment.	10
6	Workmanship, Discipline & Teamwork	Laboratory discipline, care of instruments, teamwork, attitude, and safety practices.	5
Total			50

Scheme of Evaluation - Practical Test & End Semester Evaluation

Category	Things to evaluate	Marks
Write-up / Procedure (before experiment)	Aim, circuit diagram/flowchart, stepwise procedure.	10
Experiment Setup & Execution	Correct circuit connections / coding / setup. Handling of instruments/software. Accuracy of execution.	10
Observation & Result / Output	Proper tabulation of readings. Calculations/graphs/program output. Correctness of result / expected outcome.	8
Viva Voce	Conceptual understanding of experiment. Related theoretical knowledge.	8
Record	Completion & neatness of practical record. Proper certification by faculty.	4
Total		40

Scheme of Evaluation - Open-ended experiment

Category	Things to evaluate	Marks
Originality and Relevance of the Idea	Assesses how creative, innovative, and relevant the chosen experiment is to the course objectives.	10
Clarity of Objectives and Experimental Plan	Evaluates how clearly the student defines the aim, scope, and systematic plan of the experiment.	10
Correctness of Execution and Data Recording	Checks the accuracy, safety, and neatness in performing the experiment and recording observations.	10
Analysis, Interpretation, and Presentation of Results	Measures the student's ability to analyze data, interpret outcomes, and present results logically.	10
Teamwork and Innovation Demonstrated	Judges the level of collaboration, initiative, and creativity shown during the experiment.	10
Total		50