



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma Engineering

Level: Diploma

Branch: Information Technology

Subject Code : DI04016041

Subject Name : UI and UX Design

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

<b>Prerequisite:</b>	<ul style="list-style-type: none"><li>Basic Computer Literacy: Familiarity with using computers, web browsing, and introductory computer applications.</li><li>Logic and Problem Solving: Ability to think analytically and approach problems methodically.</li><li>Fundamental Graphics Knowledge: Awareness of image formats and simple graphics manipulation.</li></ul>
<b>Rationale:</b>	User Interface (UI) and User Experience (UX) Design are critical for the success of any software product—desktop, web, or mobile. This course aims to bridge the gap between technical implementation and user satisfaction, instilling students with the principles, tools, and practical skills to design intuitive, efficient, and attractive digital experiences. Graduates will be equipped for roles in the rapidly growing design domain across IT industries in Gujarat and beyond.

## Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Understand the fundamentals of UI/UX design – Demonstrate knowledge of user interface principles, user experience concepts, and design thinking approaches.	Understand
02	Apply design process and tools – Utilize wire framing, prototyping, and industry-standard tools (e.g., Figma, Adobe XD, Sketch) to create user-centric designs.	Apply
03	Analyze user needs and behaviors – Conduct user research, persona creation, and usability testing to design effective and intuitive interfaces.	Analyze
04	Design responsive and accessible interfaces – Develop interfaces that adapt to various devices, platforms, and follow accessibility standards.	Apply
05	Evaluate and improve design solutions – Apply usability testing, feedback analysis, and iteration methods to refine design outcomes.	Evaluate



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06	Collaborate and present design projects effectively – Work in teams and communicate design ideas through visual presentations, documentation, and storytelling.	Apply
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\*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	2	2	3	00	00	20	30	50

## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Foundations &amp; Design Thinking</b> 1.1 Introduction to UI and UX; roles (UX researcher, UI designer, interaction designer, product manager) 1.2 Design thinking stages: empathize, define, ideate, prototype, test — methods and outputs 1.3 Product thinking vs user-centred thinking; stakeholder mapping; business vs user goals 1.4 Ethics & Inclusive design; Introduction to Accessibility 1.5 Basic UX terminology: Persona, Journey, Flow, Information Architecture (IA)	08	16
2.	<b>User Research &amp; Requirements</b> 2.1 Research methods: interviews, contextual inquiry, surveys, observation 2.2 Research planning: goals, recruitment, consent, scripting, sample basics 2.3 Data synthesis: affinity mapping, insights, problem statements 2.4 Personas, empathy maps, user journeys, scenarios	07	22



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	2.5 Task analysis, User stories		
3.	<b>Information Architecture &amp; Interaction Design</b>  3.1 Information Architecture 3.1.1 content audit, card sorting (open/closed) 3.1.2 sitemaps, mental models  3.2 Wireframing: lo-fi (paper), mid-fi, high-fi; annotation conventions 3.3 Layout: grids, spacing, responsive breakpoints, Interaction patterns: forms, onboarding, search, lists, filters, error states 3.4 Micro-interactions & feedback; affordances 3.5 Usability heuristics and heuristic evaluation (simplified Nielsen)	07	22
4.	<b>Visual Design &amp; Prototyping</b>  4.1 Visual fundamentals: typography (hierarchy, pairing), color theory, contrast, imagery, iconography  4.2 Accessibility in visuals: contrast checks, legible typography, touch target sizes  4.3 Prototyping fidelity: lo-fi → mid-fi → hi-fi; transitions & basic motion 4.4 Tools workflow: Figma / Penpot basics, components, prototyping links	04	18
5.	<b>Testing, Handoff &amp; Front-end Basics</b>  5.1 Usability testing: plan, tasks, moderated vs unmoderated, recruiting participants  5.2 Simple metrics: success rate, time-on-task; reporting results  5.3 Iteration & version control: creating a fix backlog, presenting design iterations  5.4 Basic front-end essentials: semantic HTML, CSS box model, Flexbox basics, responsive breakpoints; build a simple static login or landing page	04	22
	<b>Total</b>	<b>30</b>	<b>100</b>



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## Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
---NOT APPLICABLE---					

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

## References/Suggested Learning Resources:

### (a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability	Steve Krug	San Francisco, California; 2014; ISBN-13: 978-0321965516
2	The Design of Everyday Things (Revised & Expanded Edition)	Donald A. Norman	New York; 2013; ISBN-13: 978-0262640374
3	Microinteractions: Designing with Details	Dan Saffer	Sebastopol, California; 2013; ISBN-13: 978-1449342807
4	Universal Principles of Design, Updated and Expanded Third Edition	William Lidwell, Kritina Holden, Jill Butler	United States; 2023; ISBN: 978-0760375167
5	Laws of UX: Using Psychology to Design Better Products & Services	Jon Yablonski	O'Reilly Media; 2020; ISBN-13: 978-1492055280



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## (b) Open source software and website:

1. Penpot – Open-source UI/UX design and prototyping tool.
2. Carbon Design System – Open-source design system with reusable UI components.
3. Silex – Open-source drag-and-drop website builder.
4. Foundation – Responsive front-end framework for UI design.
5. LimeSurvey – Open-source survey tool for UX research and feedback.

## Suggested Course Practical List:

The following practical outcomes (PrOs) are the subcomponents of the COs. These PrOs need to be attained to achieve the COs.

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Conduct an empathy exercise and create an empathy map for a chosen product/service.	1	2
2	Plan and perform short user interviews; synthesize findings into personas and journey maps.	2	4
3	Create user task flows and problem statements for the chosen mini-project.	2	2
4	Perform a card-sorting activity and design a sitemap for the application.	3	2
5	Develop low-fidelity wireframes for 3–4 key screens.	3	2
6	Convert wireframes into mid-fidelity wireframes with interaction annotations.	3	2
7	Design a style tile (typography, colors, buttons, icons) for the project.	4	2
8	Build a component library (buttons, forms, navigation) in Figma.	4	2
9	Develop a high-fidelity prototype (4–6 linked screens) in Figma.	4	4
10	Conduct a usability test (3–4 participants) on the prototype and record findings.	5	2
11	Revise prototype based on usability test results and prepare a final version.	5	2



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12	Prepare a developer handoff package (export assets, create specs) and a simple HTML/CSS mockup.	5	4
<b>Total</b>			<b>30</b>

**Note** -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.

## List of Laboratory/Learning Resources Required:

Sr. No	Laboratory/Learning Resources/Equipment Name with Broad Specifications	PrO. No.
1	Computer system with operating system: Windows 7 or higher version, macOS, and Linux, with 4GB or higher RAM, Python versions: 2.7.X, 3.6.X, or higher version.	All
2	Figma (Free Plan), Cloud-based UI/UX design tool. <a href="https://www.figma.com">https://www.figma.com</a>	3–11
3	Penpot (Open-source alternative), Free & open-source design tool. <a href="https://penpot.app">https://penpot.app</a>	3–11
4	Miro / Jamboard / Pen & Paper, For affinity mapping, card sorting, brainstorming	2–4
5	Code Editor (VS Code / Notepad++), For basic HTML & CSS practicals	12
6	Web Browser, Chrome / Firefox with Developer Tools	12

## Suggested Activities for Students:

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 reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

- a) Redesign Exercise – Take a real government service portal (e.g., IRCTC or DigiLocker) and redesign the interface for better usability.



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- b) User Journey Mapping – Map the step-by-step journey of ordering food from Zomato or Swiggy, identifying pain points.
- c) Usability Testing – Test a popular app (e.g., Paytm or WhatsApp) with peers and record usability issues.
- d) Accessibility Check – Evaluate a university/college website for accessibility issues (contrast, readability, navigation).

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