# Design Thinking Syllabus

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Int. Marks | Ext. Marks | Total Marks |  | L | T | P | C |
| 40 | 60 | 100 |  | 3 | - | - | 3 |

## Introduction

**Pre-Requisites:** No Prerequisites required.

## Course Description

Overview of design thinking process, empathize, human centered design (HCD), defining or analyzing, ideation and prototyping, testing and validation.

## Course Objectives

1. To impart knowledge on design thinking process for understanding complex designs.
2. To provide design skills to analyze design thinking issues and apply the tools and techniques of design.
3. To inculcate attitude to solve societal problems using design thinking tools.

## Course Outcomes

After successful completion of this course, the students will be able to:

1. CO1: Demonstrate knowledge of design thinking process
2. CO2: Apply design thinking techniques to design relevant products/services for a customer base.
3. CO3: Apply human centered design (HCD) methodology for product or service design.
4. CO4: Apply ideation techniques for developing innovative products or services for a specific target market.
5. CO5: Perform the steps to gain practical knowledge of prototyping, testing and validation.

## Detailed Syllabus

### Unit I: Overview of Design Thinking Process (9 Periods)

Design Thinking Process: Business context of innovation for applying design thinking, two models of design thinking, phases of design thinking, correlation with other philosophiesIntroduction to design thinking: Definition, Origin of design thinking, Importance of design thinking, Design vs Design thinking, Problem solving, Understanding design thinking and its process model, Design thinking tools.

Human-Centered Design (HCD) process - Empathize, Define, Ideate, Prototype and Test and Iterate or Empathize, Analyze, Solve and Test.

### Unit II: Empathize (9 Periods)

Design thinking phases, How to emphatize, Role of empathy in design thinking, purpose of empathy maps, Things to be done prior to empathy mapping, creation of user personas, customer journey mapping, How might we questions. (9 Periods)

### Unit III: Analyze Or Define (9 Periods)

Root cause analysis, conflict of interest, perspective analysis, big picture thinking through system operator, big picture thinking through function modeling

### Unit IV: Solve Or Ideate (9 Periods)

Silent brainstorming, metaphors for ideation, CREATE and What-If tool for ideation, introduction to TRIZ, Inventive principles and their applications

### Unit I V: Test (Prototyping and Validation) (9 Periods)

Prototyping, Assumptions during the design thinking process, Validation in the market, best practices of presentation

### UNIT V: Design Innovation

Benefits of iteration in the design thinking process, taking the idea to the market, introduction to innovation management in a company

### Total Periods: 45

## Textbook

1. Dr. Bala Ramadurai, "[Karmic Design Thinking](https://store.pothi.com/book/dr-bala-ramadurai-karmic-design-thinking/)", First Edition, 2020.

### Reference Books

1. [101 Design Methods: A Structured Approach for Driving Innovation in Your Organization](http://www.amazon.com/101-Design-Methods-Structured-Organization/dp/1118083466) by Vijay Kumar
2. [Human-Centered Design Toolkit: An Open-Source Toolkit To Inspire New Solutions in the Developing World](http://www.amazon.com/Human-Centered-Design-Toolkit-Open-Source-Developing/dp/0984645705/ref%3Dsr_1_1?s=books&ie=UTF8&qid=1365783619&sr=1-1&keywords=human+centered+design) by IDEO
3. [This is Service Design Thinking: Basics, Tools, Cases](http://www.amazon.com/This-Service-Design-Thinking-Basics/dp/1118156307) by Marc Stickdorn and Jakob Schneider
4. Ulrich, Karl T. Design: Creation of artifacts in society. Karl T. Ulrich, 2011.

### ADDITIONAL LEARNING RESOURCES

1. <https://www.interaction-design.org/literature/topics/design-thinking>
2. <https://www.interaction-design.org/literature/article/how-to-develop-an-empathic-approach-in-design-thinking>
3. <https://medium.com/dc-design/what-is-human-centered-design-6711c09e2779>
4. <https://think.design/user-design-research/user-testing/>

### Lesson Plan

**Name of the Subject:** Design Thinking

**Class & Semester:**

**Name(s) of the faculty Member(s):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Topic** | **Periods** | **Book(s)** | **self study** |
| **Unit I: Overview of Design Thinking Process** |  |  |  |  |
| 1. | Introduction to Design Thinking | 2 | T1 | Stanford model of design thinking |
| 2. | Business Context of Design Thinking | 1 | T1 |  |
| 3. | Inspiration from Buddhist Philosophy | 1 | T1 |  |
| 4. | Structure and elements of Design Thinking | 1 | T1 |  |
| 5. | Applications of Design Thinking | 1 | T1 |  |
| 6. | Lab work | 3 | T1 |  |
| **Unit II: Empathize** |  |  |  |  |
| 7. | Introduction to Empathize | 1 | T1 | Empathy mapping |
| 8. | Customer Journey Mapping | 2 | T1 |  |
| 9. | Customer Journey Mapping -- Exercise | 1 | T1 |  |
| 10. | Field interviews | 2 | T1 |  |
| 11. | Lab work | 3 | T1 |  |
| **Unit III: Analyze** |  |  |  |  |
| 12. | Introduction to Analyze | 1.5 | T1 | Root cause analyze |
| 13. | Multi-Why Analyze | 1.5 | T1 |  |
| 14. | Conflict of Interest Analysis | 1.5 | T1 |  |
| 15. | Bullet Proofing | 1.5 | T1 |  |
| 16. | Lab work | 3 | T1 |  |
| **Unit IV: Solve** |  |  |  |  |
| 17. | Introduction to systematic problem solving | 2 | T1 | SCAMPER, Six Thinking hats |
| 18. | Free Brainstorming | 2 | T1 |  |
| 19. | Introduction to TRIZ | 2 | T1 |  |
| 20. | Lab work | 3 | T1 |  |
| **Unit V: Prototyping, Testing and Validation** |  |  |  |  |
| 21. | Prototyping -- Products and Services | 2 | T1 | Virtual prototyping |
| 22. | Assumptions and features | 1.5 | T1 |  |
| 23. | Field Work and work on feedback | 1.5 | T1 |  |
| 24. | What next? Importance of iterations | 1 | T1 |  |
| 25. | Lab work | 3 | T1 |  |