

Branch Name:	Mechanical Engineering
Program Code:	ET101
Course Name:	Design Thinking
Course Code:	2ET1000302P
Pre-requisite Course:	Zeal to learn the subject

Course Objectives:

1. To provide the new ways of creative thinking
2. To Learn the innovation cycle of design thinking process for developing innovative products

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
01	-	-	02	02	-	-	-	-	10	25	10	25	50

Course Contents:

Sr. No	Topic	Total Hours
1	An Insight to Learning: Understanding the Learning Process, Kolb's Learning Styles, Assessing and Interpreting	02
2	Remembering Memory: Understanding the Memory process, Problems in retention, Memory enhancement techniques	02
3	Emotions: Experience & Expression: Understanding Emotions: Experience & Expression, Assessing Empathy, Application with Peers	02
4	Basics of Design Thinking: Definition of Design Thinking, Need for Design Thinking, Objective of Design Thinking, Concepts & Brainstorming, Stages of Design Thinking Process (explain with examples) – Empathize, Define, Ideate, Prototype, Test	02
5	Being Ingenious & Fixing Problem: Understanding Creative thinking process, Understanding Problem Solving, Testing Creative Problem Solving	02
6	Process of Product Design: Process of Engineering Product Design, Design Thinking Approach, Stages of Product Design, Examples of best product designs and functions, Assignment – Engineering Product Design	02
7	Prototyping & Testing: What is Prototype? Why Prototype? Rapid Prototype Development process, Testing, Sample Example, Test Group Marketing	02
8	Celebrating the Difference: Understanding Individual differences & Uniqueness, Group Discussion and Activities to encourage the understanding, acceptance and appreciation of Individual differences	02

9	Design Thinking & Customer Centricity: Practical Examples of Customer Challenges, Use of Design Thinking to Enhance Customer Experience, Parameters of Product experience, Alignment of Customer Expectations with Product Design	02
10	Feedback, Re-Design & Re-Create: Feedback loop, Focus on User Experience, Address “ergonomic challenges, User focused design, rapid prototyping & testing, final product, Final Presentation – “Solving Practical Engineering Problem through Innovative Product Design & Creative Solution”.	02

Text/ Reference Books:

1. E Balaguruswamy (2022), “Developing Thinking Skills (The way to Success)”, Khanna Book Publishing Company.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Compare and classify the various learning styles and memory techniques and apply them in their engineering education	2 Understanding
CLO2	Analyze emotional experience and Inspect emotional expressions to better understand users while	1 Remembering 3 Applying 4 Analyze
CLO3	Develop new ways of creative thinking and Learn the innovation cycle of Design Thinking process for developing innovative products	3 Applying 4 Analyze
CLO4	Propose real-time innovative engineering product designs and Choose appropriate frame works, strategies, techniques during prototype development	2 Understanding 6 Creating
CLO5	Perceive individual differences and its impact on every day decisions and further Create a better customer experience	5 Evaluating
CLO6	Reproduce, improve and refine technical aspects for engineering projects	2 Understanding 6 Creating

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	M		L			M	L				L			L
CLO2			M	M	L	L							L	
CLO3		L	M		H			L		M			L	
CLO4	L	L	M		H			L	M	M			M	
CLO5		M		M	L		L							M
CLO6	M							M		M	L	L		L

H: High, M: Medium, L: Low