20ME2501A - DESIGN THINKING

Offering Branch	ME		
Course Category:	Open Elective -I	Credits:	3
Course Type:	Theory	Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	NIL	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Understand** the principles of design thinking and its approaches	K2
CO2	**Apply** the empathy, the Define phase and develop an idea through ideation Techniques in human-centered design problems.	K3
CO3	**Apply** the design thinking techniques for innovation processes	K3
CO4	**Analyze** the prototype and test in a design thinking context.	K4

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			3			2	2		3	3	2	2	2	3
CO2			3			2	2		3	3	2	2	1	3
CO3			3			2	2		3	3	3	2	1	3
CO4			3			2	2		3	3	2	2	1	3
Avg.			**3**			**2**	**2**		**3**	**3**	**2**	**2**	**1**	**3**

1- Low **2-Medium** **3-High**

Course Content

UNIT-1	**Introduction to Design Thinking** An insight into Design, Design Methodology, the origin of Design thinking, Design thinking Vs Engineering thinking, the importance of Design Thinking, Design Vs Design thinking, understanding Design thinking and its various process models or frameworks, Stanford process models and its five stages, features of design thinking, application of Design thinking	**CO1**
UNIT-2	**Empathize in Design Thinking:** Human-Centered Design (HCD) process, explanation of HCD design thinking with examples, Role of Empathy in design thinking, persona creation and its importance, tools of empathy: Empathy maps, advantages and disadvantages of empathy maps, Customer journey map and its advantages & disadvantages, Mind Maps, and its uses, understanding empathy tools.	**CO1 CO2**
UNIT-3	**Define Phase and Ideation:** Explore define phase in Design Thinking, Methods of Define phase. Introduction to ideation Methods, convention methods for ideation, intuitive methods: Brainstorming, storyboard telling, select ideas from ideation Methods: Bingo Selection, Six Thinking Hats.	**CO1 CO2**
UNIT-4	**Prototyping and Testing**: Prototyping and methods of prototyping, Difference between low fidelity and high-fidelity prototypes, paper prototyping, techniques for implementing paper prototyping, Digital prototyping, user testing methods, Advantages, and disadvantages of user Testing/ Validation	**CO1 CO3**
UNIT-5	**Design Thinking for Innovation**: Innovation in Design Thinking, Definition of innovation, the art of innovation, types of innovations, product innovation, process innovation, and organizational	**CO1 CO3**

	innovation, characteristics of innovation, levels of innovation, Innovation towards design, Case studies	

Learning Resources

Text books:	1. Changebydesign,Tim Brown,2009,HarperCollins 2. Engineering design, George E Dieter,4th Revisededition,2009 McGraw Hill.
Reference books	1. Design Thinking for Strategic Innovation, Idris Mootee,2013, JohnWiley&Sons 2. DesignThinking-TheGuidebook–FacilitatedbytheRoyalCivil serviceCommission, Bhutan 3. Design Methods: A Structured Approach for DrivingInnovation in Your Organization, Vijay Kumar, FirstEdition, 2012, Wiley 4. Human-Centered Design Toolkit: An Open-SourceToolkittoInspireNewSolutionsintheDeveloping 4. World,IDEO,SecondEdition,2011, IDEO
e- Resources & other digital material	1. https://www.interaction-design.ora/literature/topics/design-thinking 2. https://www.interaction-design.prq/literature/article/how-tq-<eve'op-an empath\capproach-in-design-thinking