19ES1302– DESIGN THINKING

Offering Branches	Civil, CSE, EEE, ECE, IT, MECH		
Course Category	ES	Credits	2
Course Type	Theory	Lecture-Tutorial-Practical	2-0-0
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	Explain the principles of design thinking and its approaches	L2
CO2	Identify the empathy, define phases in human centered design problems.	L2
CO3	Develop an idea, build a prototype and test in design thinking context.	L3
CO4	Implement design thinking techniques for product innovation	L3
CO5	Use design thinking in business process models.	L3

	Course Content	
Unit-1	**INTRODUCTION TO DESIGN THINKING** An insight into Design, origin of Design thinking, Design thinking Vs Engineering thinking, importance of Design thinking, Design Vs Design thinking, understanding Design thinking and its process models, application of Design thinking	CO1
Unit-2	**EMPATHIZE IN DESIGN THINKING:** Human-Centered Design (HCD) process - Empathize, Define, Ideate, Prototype and Test and Iterate. Role of Empathy in design thinking, methods and tools of empathy, understanding empathy tools. Explore define phase state users' needs and problems using empathy methods	CO2
Unit-3	**IDEATION, PROTOTYPING AND TESTING:** Ideation methods, brain storming, advantages of brain storming, methods and tools of ideations, prototyping and methods of prototyping, user testing methods, Advantages and disadvantages of user Testing/ Validation	CO3
Unit-4	**PRODUCT INNOVATION:** Design thinking for strategic innovation, Definition of innovation, art of innovation, teams for innovation, materials and innovation in materials, definition of product and its classification. Innovation towards product design Case studies	CO4
Unit-5	**DESIGN THINKING IN BUSINESS PROCESSES:** Design Thinking applied in Business & Strategic Innovation, Design Thinking principles that redefine business – Business challenges: Growth, Predictability, Change, Maintaining Relevance, Extreme competition, Standardization. Design thinking to meet corporate needs.	CO5

Learning Resources		
Text Books	1. Change by design, Tim Brown, 2009, Harper Collins 2. Engineering design, George E Dieter,4th Revised edition, 2009 McGraw Hill.	
Reference Books	1. Design Thinking for Strategic Innovation, Idris Mootee, 2013, John Wiley & Sons 2. Design Thinking-The Guidebook – Facilitated by the Royal Civil service Commission, Bhutan 3. Design Methods: A Structured Approach for Driving Innovation in Your Organization, Vijay Kumar, First Edition, 2012, Wiley 4. Human-Centered Design Toolkit: An Open-Source Toolkit to Inspire New Solutions in the Developing World, IDEO, Second Edition, 2011, IDEO	
e-Resources & other digital material	1. https://www.interaction-desiqn.ora/literature/topics/desiqn-thinkinq 2. https://www.interaction-desiqn.prq/literature/article/how-tq-<eve'op-an-empath\capproach-in-design-thinking	

Course Coordinator   HOD

Code No:**19ES1302**

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PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY
(Autonomous)
II B.Tech – I Semester Regular Examinations, May-2020
DESIGN THINKING

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Duration: 3 Hours   **Max. Marks: 70**

Note: 1. This question paper contains two Parts A and B.
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 units. Answer any one full question from each unit. Each question carries 12 marks and may have a, b, c as sub questions.
4. All parts of Question paper must be answered in one place

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PART – A

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5 x 2 = 10 marks

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		Blooms Level	CO
1. a)	Define the term Design Thinking?	L1	CO1
1. b)	State any two tools of Empathy?	L1	CO2
1. c)	Differentiate ideation and prototype?	L2	CO3
1. d)	Define a product and classify them?	L2	CO4
1. e)	Name any two business challenges	L1	CO5

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PART –B

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5 x 12 = 60 marks

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			Blooms Level	CO	Max. Marks
UNIT-I					
2	(a)	Differentiate design, Engineering design and Design thinking	2	CO1	4
	(b)	Describe the 5 stage Stanford process model and explain them	2	CO1	8
OR					
3	(a)	Explain the Venn diagram of design thinking	2	CO1	6
	(b)	Name the applications of design thinking and explain any two	2	CO1	6
UNIT-II					
4	(a)	Define Empathy in design thinking and discuss any two tools of empathy	2	CO2	6
	(b)	Discuss the guidelines in framing the problem statement in Define phase of design thinking.	2	CO2	6
OR					
5	(a)	What is meant by human centered design and elaborate with any two examples	2	CO2	6
	(b)	Define Empathy map and its use in design thinking? Discuss the process of empathy map	2	CO2	6
UNIT-III					
6	(a)	Define Brainstorming? what are its principles and rules.	2	CO3	6

	(b)	What is meant by prototype in design thinking? Differentiate low-fidelity and high-fidelity prototypes.	2	CO3	6
OR				
7	(a)	Name any four ideation methods? Explain any two methods	2	CO3	6
	(b)	Explain the testing in design thinking? what is its purpose and importance	2	CO3	6
UNIT-IV				
8	(a)	Define Innovation? What are its types and characteristics	2	CO4	6
	(b)	What is the nature of innovation and what are the levels of innovation	2	CO4	6
OR				
9	(a)	Differentiate product innovation and process innovation	2	CO4	4
	(b)	Illustrate the case study of design intervention for Livelihood and hygiene for street vending of food items (panipuri)	3	CO4	8
UNIT-V				
10	(a)	What are business challenges? Explain any two with design thinking solutions?	2	CO5	6
	(b)	Illustrate how design thinking principles that redefines business Management	3	CO5	6
OR				
11	(a)	Distinguish Business model and Business Strategy	2	CO5	6
	(b)	Explain How design thinking meets corporate strategies	2	CO5	6