23ES22T1 - DESIGN THINKING & INNOVATION

(Common to CSE, CSE-DS, CSE-AI&ML, AI&DS and IT)

Course Category:	Humanities	Credits:	2
Course Type:	Theory	Lecture-Tutorial-Practical:	1-0-2
Prerequisite:	• To survive and remain competitive in a rapidly changing environment	Sessional Evaluation: Univ. Exam Evaluation: Total Marks:	30 70 100
Objectives:	**Students undergoing this course are expected:** • The objective of this course is to familiarize students with design thinking Process as a tool for breakthrough innovation. • It aims to equip students with design thinking skills and ignite the minds to Create innovative ideas, develop solutions for real-time problems.		

	Upon successful completion of the course, the students will be able to:
Course Outcomes	CO1 — Define the concepts related to design thinking. (L1, L2)
	CO2 — Explain the fundamentals of Design Thinking and innovation (L1, L2)
	CO3 — Apply the design thinking techniques for solving problems in various sectors(L3)
	CO4 — Analyse to work in a multidisciplinary environment (L4)
	CO5 — Evaluate the value of creativity (L5)
Course Content	## UNIT-I **Introduction to Design Thinking:** Introduction to elements and principles of Design, basics of design-dot, line, shape, form as fundamental design components. Principles of design. Introduction to design thinking, history of Design Thinking, New materials in Industry. ## UNIT-II **Design Thinking Process:** Design thinking process (empathize, analyze, idea & prototype), implementing the process in driving inventions, design thinking in social innovations. Tools of design thinking - person, costumer, journey map, brainstorming, product development **Activity:** Every student presents their idea in three minutes, Every student can present design process in the form of flow diagram or flow chart etc. Every student should explain about product development. . ## UNIT-III **Innovation:** Art of innovation, Difference between innovation and creativity, role of creativity and innovation in organizations- Creativity to Innovation- Teams for innovation- Measuring the impact and value of creativity.

	Activity: Debate on innovation and creativity, Flow and planning from idea to innovation, Debate on value-based innovation.
	UNIT-IV **Product Design:** Problem formation, introduction to product design, Product strategies, Product value, Product planning, product specifications- Innovation towards product design- Case studies Activity: Importance of modelling, how to set specifications, Explaining their own product design. **UNIT-V** **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- Design thinking for Startups- Defining and testing Business Models and Business Cases- Developing & testing prototypes. **Activity:** How to market our own product, About maintenance, Reliability and plan for startup.
Text Books & References Books	**TEXT BOOKS:** 1. Tim Brown,Change by design, Harper Bollins (2009). 2. Idris Mootee, Design Thinking for Strategic Innovation, 2013, John Wiley & Son **REFERENCE BOOKS:** 1. David Lee, Design Thinking in the Classroom, Ulysses press 2. Shrutin N Shetty, Design the Future, Norton Press 3. William Lidwell,Universal Principles of Design- Kritinaholden, Jill Butter. 4. Chesbrough.H, The Era of Open Innovation – 2013
E-Resources	1. https://nptel.ac.in/courses/110/106/110106124/ 2.https://nptel.ac.in/courses/109/104/109104109/ 3.https://swayam.gov.in/nd1_noc19_mg60/preview