Course Code UOE023	Open Elective I Design Management & Innovations (School of Design & Architecture)

L	T	P	Credits	Evaluation Scheme				
				Component	Exam	Maximum Marks	WT (%)	Mini. Passing %
-	02		2	Theory	FA	100	100	40%

Course Description:
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.

Course Learning Outcome(s)	
At the end of this course students will able to:	
CLO1	List the challenges/problems faced by customer and Specify customer needs
CLO2	Sketch the product by innovative techniques for satisfying the specific needs as identified.
CLO3	Select a product architecture by comparing alternatives using different tools and techniques
CLO4	Design a product/prototype for satisfying specific need

UNIT	DESCRIPTION	HOURS
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	06
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, brain storming, product development	06
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.	06
IV	**Product Design** Problem formation, introduction to product design, Product strategies, Product value, Product planning, product specifications. Innovation towards product design Case studies. Prototype basics, principles of prototyping, planning for prototypes, Economic Analysis, Baseline project planning, Project execution.	06

Practical

Activity No.	Description
1	**Activity1:** Student presentation on idea, design process in the form of flow diagram or flow chart and product development.
2	**Activity2:** Debate on innovation and creativity, and value-based innovation. Presentation on Flow and planning from idea to innovation, Preparing the sketch
3	**Activity3:** Setting specifications, Deciding Product Architecture Preparing poster
4	**Activity4:** Developing prototype, Marketing of own product, Details about maintenance, Reliability and plan for startup.

Important Note: Project-Team of Maximum 4 students would undertake the project work.

Textbooks:

1. Product Design and Development, Ulrich, Eppnger, Anita Goel, McGraw Hill Publication
2. Product Design, Otto & Wood, Pearson Education
3. Benjamin Legum, Amber Stiles, Jennifer L. Vondran, Engineering Innovation: From Idea to Market Through Concepts and Case Studies, de Gruyter; 1st st edition, 2019.
4. Paul Trott, Innovation Management and New Product Development, Pearson, 7th edition, 2021
5. Matt Ridley, How Innovation Works: And Why It Flourishes in Freedom, Harper Perennial, 2021
6. Warren D. Seider, J. D. Seader, Daniel R. Lewin, Soemantri Widagdo, Product and Process Design Principles: Synthesis, Analysis and Design, John Wiley & Sons, 3rd edition, 2008

Reference Books:

1. Change by design, Tim Brown, Harper Bollins (2009)
2. Design Thinking in the Classroom by David Lee, Ulysses press
3. Design Thinking for Strategic Innovation, Idris Mootee, 2013, John Wiley & Sons
4. Design the Future, by Shrruti N Shetty, Norton Press
5. Universal principles of design- William lidwell, Kritinaholden, Jill butter.
6. Product and Process Design Principles: Synthesis, Analysis and Evaluation, Seider ,Seader, Lewin,Widagdo Wiley Publication
7. The era of open innovation – Chesbrough H