

Branch Name:	Computer Engineering / Information Technology/ Information and Communication Technology / Artificial Intelligence and Data Science
Program Code:	ET103/ ET105/ ET107/ ET108
Course Title:	Design Thinking
Course Code:	2ET1000302P
Pre-requisite Course:	--

Course Objectives:

- To present an overview of the design thinking involved at each stage of the design process
- To explain the methods used by designers to generate and refine creative ideas, the key considerations that help shape them and the feedback and review elements that allow design teams to learn from each job and contribute to future commissions.

Teaching and Examination Scheme:

Credit	Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

List of Practical's:

Understanding Design thinking

- Shared model in team-based design – Theory and practice in Design thinking – Explore presentation : Introduction about the design thinking: Chalk and Talk method
- Theory and practice through presentation
- signers across globe – MVP or Prototyping: MVP and Prototyping through live examples and videos

Tools for Design Thinking

- Real-Time design interaction capture and analysis – Enabling efficient collaboration in digital space - Empathy for design – Collaboration in distributed Design: Process Simulation exercises for collaborated enabled design thinking
- Case studies on design thinking for real-time interaction and analysis: Live examples on the success of collaborated design thinking

Design Thinking for strategic innovations

- Growth – Story telling representation – Strategic Foresight - Change – Sense Making - Maintenance
- Relevance – Value redefinition - Extreme Competition – experience design - Standardization –
- Humanization - Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.
- Business model examples of successful designs

Design thinking workshop

- Design Thinking Work shop Empathize, Design, Ideate, Prototype and Test
- Design thinking workshop from the expect and then presentation by the students on the learning from the workshop

Reference Books:

- John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage, learning (International edition) Second Edition, 2013.
- Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press, 2009.
- Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve, Apply", Springer, 2011
- IdrisMootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business, or Design School", John Wiley & Sons 2013.
- Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second, Edition, 2011.

6. Solving Problems with Design Thinking - Ten Stories of What Works (Columbia BusinessSchool Publishing)
Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

Web links and Video Lectures (e-Resources):

1. www.tutor2u.net/business/presentations/. /productlifecycle/default.html
2. https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf
3. www.bizfilings.com › Home › Marketing › Product Development
4. <https://www.mindtools.com/brainstm.html>
5. <https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit>
6. www.vertabelo.com/blog/documentation/reverse-engineering
7. <https://dschool.stanford.edu/.../design resources/.../ModeGuideBOOTCAMP2010L.pdf>
8. <https://dschool.stanford.edu/use-our-methods/>
9. <https://www.interactiondesign.org/literature/article/5-stages-in-the-design-thinking-process>
10. <http://www.creativityatwork.com/design-thinking-strategy-for-innovation/> 49
11. <https://www.nngroup.com/articles/design-thinking/>
12. <https://designthinkingforeducators.com/design-thinking/>
13. www.designthinkingformobility.org/wp-content/.../10/NapkinPitch_Worksheet.pdf
14. <http://dschool.stanford.edu/dgift/>
15. https://onlinecourses.nptel.ac.in/noc19_mg60/preview

Course Learning Outcomes:

1. Understand contemporary work and basic theories
2. Analyse ideas to produce creative solutions
3. Create effective solutions for given problems

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

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand contemporary work and basic theories	Understanding (L2)
CLO2	Analyses ideas to produce creative solutions	Analysis (L4)
CLO3	Create effective solutions for given problems	Create (L6)

L1- Remember, L2- Understand, L3- Apply, L4- Analyze, L5- Evaluate, L6- Create

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	PSO3
CLO1	M	M	M	M								M	M	M	M
CLO2	M	M	M	M								M	M	M	M
CLO3	M	M	M	M								M	M	M	M

H: High, M: Medium, L: Low