# DESIGN THINKING

| Course code | 19ES1302 | Year | II | Semester | I |
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| Course category | Engineering Science | Branch | EEE | Course Type | Theory |
| Credits | 2 | L-T-P | 2-0-0 | Prerequisites | Nil |
| Continuous Internal Evaluation | 30 | Semester End Evaluation | 70 | Total marks | 100 |

| Course outcomes | |
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| Upon successful completion of the course the student will able to | |
| CO1 | Explain the principles of design thinking and its approaches |
| CO2 | Identify the empathy, define phases in human centred design problems |
| CO3 | Understand the idea generation, prototype and testing in design thinking context |
| CO4 | Apply design thinking techniques for product innovation |
| CO5 | Use design thinking in business process models |

Contribution of course outcomes towards achievement of program outcomes & strength of correlation
1:Slight (low), 2: Moderate (medium) 3: Substantial (High)

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | 3 | | | 1 | | | | | | 1 | | 2 |
| CO2 | | | 3 | 2 | | 1 | | | 2 | 2 | | 1 | | 2 |
| CO3 | | | 3 | 2 | | 1 | | | 3 | 2 | | 1 | | 2 |
| CO4 | | | 3 | 2 | | 1 | | | 2 | 2 | | 1 | | 2 |
| CO5 | | | 3 | 2 | | 1 | | | 2 | 2 | 1 | 1 | | 2 |

| Syllabus | | |
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| Unit no | Contents | Mapped CO |
| I | **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 |
| II | **Empathize In Design Thinking:** Human-Centred 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 |
| III | **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 |
| IV | **Product Innovation:** | |

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| | 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 |
| V | **Design Thinking In Business Processes:**<br>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** |
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| **Text Books:** |
| 1. Idris Mootee, "Design Thinking for Strategic Innovation", John Wiley & Sons (2013). |
| 2. "Change by design", Tim Brown, Harper Collins, 2009 |
| 3. "Design Thinking- The Guide Book" – Facilitated by the Royal Civil service Commission, Bhutan |
| 4. Engineering design by George E Dieter |
| **Reference Books** |
| 1. 101 Design Methods: A Structured Approach for Driving Innovation in Your Organization by Vijay Kumar |
| 2. Human-Centred Design Toolkit: An Open-Source Toolkit To Inspire New Solutions in the Developing World by IDEO |
| **Additional Learning Resources** |
| https://www.interaction-desiqn.ora/literature/topics/desiqn-th/nkinq |
| https://www.interaction-desiqn.prq/literature/article/how-tq-<eve'op-an-empath\capproach-in-design-thinking |
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