

**MALNAD COLLEGE OF ENGINEERING, HASSAN**

**DEPARTEMENT OF MECHANICAL ENGINEERING**

<b>Course Title</b>		<b>INNOVATION &amp; DESIGN THINKING</b>	
<b>Course Code</b>		<b>(L-T-P) C</b>	(1-0-0)1
<b>SEE duration</b>	2 hours	<b>Hours / Week</b>	01
<b>CIE marks</b>	50	<b>Total Marks</b>	100
<b>SEE marks</b>	50	<b>Total contact hours</b>	15
<b>CourseObjective:</b> The objective of this course is to make students choose real life problems andgenerate innovative ideas to solve them through a design thinking approach.			
<b>Course Outcomes (COs) {with mapping shown against the Program Outcomes (POs)} Uponcompletion of the course,studentsshallbeable to:</b>			
<b>Sl. No.</b>	<b>Course outcomes</b>	<b>Mapping to POs</b>	
1.	explain the different stages in design thinking	1, 6, 7	
2.	generate solutions to real life problems by applying the design thinking approach	1, 2, 10, 12	
<b>Course Contents:</b>			
<b>MODULE –1</b>			<b>5 Hrs.</b>
<b>Introduction:</b> Innovation, Design, Early man as a designer, Design thinking levels: Component or product level, System or community level. <b>Morphology of Design:</b> Divergence or Explorative phase, Transformation or Creative phase, Convergence phase. Sustainable Development Goals.			
<b>MODULE –2</b>			<b>5 Hrs.</b>
<b>Fundamentals of Design Thinking:</b> Design Thinking Process: DifferentPhases. Empathize: Observation, Interview, Literature Survey. Define/Analyse:5 Why's technique, Conflict Analysis.			
<b>MODULE –3</b>			<b>5 Hrs.</b>
<b>Ideate:</b> Eskimo nine dot problem, Theory of Inventive Problem Solving (TRIZ method), Brainstorming. <b>Prototype:</b> Methods of Prototyping. <b>Testing:</b> Self-reflection, Interviewing real customer.			

**Activities:**

1. Identifying real life problems through observation & interaction with real world
2. Literature Review
3. Brainstorming Session to generate ideas for the chosen problem
4. Skill building to prepare a prototype

**TEXTBOOK:**

5. Dr.BalaRamadurai, "*KarminDesignThinking*", MudranikTechnologyPrivateLtd.ISBN978-93-5419-010-0.
6. V. Gupta and P. Murthy, An Introduction to engineering design method, Tata McGraw Hill, 2000. ISBN-0070964416.

**REFERENCES:**

1. John.R.Karsnitz,StephenO'BrienandJohnP.Hutchinson, "*EngineeringDesign*", Cengagel earning(Internationaledition)SecondEdition,2013.
2. RogerMartin, "*TheDesignofBusiness:WhyDesignThinkingistheNextCompetitiveAdvantage*", HarvardBusinessPress ,2009.
3. HassoPlattner,ChristophMeinelandLarryLeifer(eds), "*DesignThinking:Understand–Improve–Apply*", Springer,2011
4. IdrisMootee, "*DesignThinkingforStrategicInnovation:WhatTheyCan'tTeachYouatBusinessorDesignSchool*", JohnWiley & Sons2013.

**Scheme of Evaluation (Laboratory Courses)**

Level	Evaluation Type	Evaluation modules	Marks
1	Continuous internal Evaluation	Work diary	10
		Record	20
		Presentation based on chosen project	20
2	Semester End Examination	Design thinking project report	20
		Presentation based on chosen project	20
		Viva voce	10
Total			100

**Note:** The marks distribution to be made based on the rubrics.

Examination	Maximum marks	Minimum marks to qualify
<b>CIE</b>	<b>50</b>	<b>20</b>
<b>SEE</b>	<b>50</b>	<b>20</b>

**COURSE ATRICULATION MATRIX**

Course Out comes	Program Outcomes [POs]													
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3					2	2							
CO2	3	2								2		2		