

**ANITS (A)**  
**CSE - DEPARTMENT**

**II YEAR – I SEMESTER**

<b>DESIGN THINKING AND PRODUCT INNOVATION</b>											
<b>Code</b>	<b>Category</b>	<b>Periods</b>						<b>Sessional Marks</b>	<b>End Exam Marks</b>	<b>Total Marks</b>	<b>Credits</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>E</b>	<b>O</b>	<b>Total</b>				
<b>CSE 216</b>	<b>ES</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>40</b>	<b>60</b>	<b>100</b>	<b>3</b>

**Prerequisite:** NIL

**Course Objectives:**

The course titled Innovation, Business Models and Entrepreneurship is designed to give an in-depth Understanding on Various aspects of Innovation, Creativity, evolving business models, incubation and entrepreneurship. Come up with exposure to design thinking for designing innovative products. The course is a blend of theory and practice therefore this course does not require any prerequisite and will be useful to understand innovation and its applications in different spheres of development and growth

**Course Outcomes:**

The Student will be able to:

CO-1	plain the fundamentals of Design Thinking and innovation
CO-2	pathize and analyse model action plan.
CO-3	scribe the principles of innovation and idea generation for product design
CO-4	ply design thinking techniques for given tasks.
CO-5	ply the design thinking techniques for solving problems in various sectors.

Mapping of Course Outcomes with Programme Outcomes.

High-3, Medium-2, Low-1

<b>COURSE OUTCOMES</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>
<b>CO1</b>	<b>3</b>	<b>3</b>	<b>2</b>				<b>1</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>CO2</b>	<b>3</b>	<b>3</b>	<b>1</b>				<b>1</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>CO3</b>	<b>3</b>	<b>3</b>	<b>2</b>				<b>1</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>CO4</b>	<b>3</b>	<b>2</b>	<b>1</b>				<b>1</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>CO5</b>	<b>3</b>	<b>3</b>	<b>2</b>				<b>1</b>			<b>1</b>	<b>1</b>	<b>1</b>

<b>Course Outcomes</b>	<b>PSO1</b>	<b>PSO2</b>
<b>CO-1</b>	<b>2</b>	<b>1</b>
<b>CO-2</b>	<b>2</b>	<b>1</b>
<b>CO-3</b>	<b>2</b>	<b>1</b>
<b>CO-4</b>	<b>2</b>	<b>1</b>
<b>CO-5</b>	<b>2</b>	<b>1</b>

## SYLLABUS

### UNIT – I

**6L+4P=10 Periods**

**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

**6L+8P=14Periods**

**Design thinking:** 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.

### UNIT – III

**6L+4P=10Periods**

**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.

**Product Design:** problem formation, introduction to product design, Product strategies, Product value, Product planning, product specifications.

### UNIT –IV

**6L+6P=12Periods**

**Design thinking for strategic Innovation:** An exercise in design thinking – implementing design thinking for better process. Implement design thinking process in various Industries. Design thinking for Startups.

### UNIT-V

**6L+8P=14Periods**

**Design thinking in various sectors:** Case studies in Information Technology, Finance, Education, Management and Retail sector. Analyze and Prototyping, Usability testing, Organizing and interpreting results.

#### **Case study learning outcomes:**

1. Make use of practical design thinking methods in every stage of problem with the help of method templates.
2. Apply design thinking to a problem in order to generate innovative and user-centric solutions.
3. Empathize with end user and initiate a new working culture based on user-centric approach.
4. Prototype and run usability tests for unbiased examination of the product in order to identify problem areas.

#### **Text Books:**

1. Change by design, Tim Brown, Harper Bollins (2009)
2. Design Thinking in the Class Room by David Lee, Ulysses press

#### **Reference Books:**

1. Design the Future , by Shrrutin N Shetty , Norton Press
2. Universal principles of design- William lidwell, kritina holden, Jill butter.
3. The era of open innovation – chesbrough.H
4. Product Design and Manufacturing by A.K. Chitale and R.C. Gupta, Prentice Hall

#### **Web References:**

[https://drive.google.com/file/d/1cplqb1eOWnoNMhFWNP8TyYLF2qHdGY\\_K/view](https://drive.google.com/file/d/1cplqb1eOWnoNMhFWNP8TyYLF2qHdGY_K/view)  
<https://nptel.ac.in/courses/110/106/110106124/#>