| Semester: I/II | | | |
|---|---|---|---|
| **Course Title** | Innovation and Design Thinking | **CIE Marks** | 50 |
| **Course Code** | BHSIDT108/208 | **SEE Marks** | 50 |
| **Course Type** | Theory | **Total Marks** | 100 |
| **Course Category** | HSMC | **SEE Duration** | 1.5 hrs |
| **Hours Per Week** | L1 : T0 : P0 | **SEE Type** | MCQ |
| **Total Hours** | 15 hrs | **Credits** | 01 |

| **Course Learning Objectives** |
|---|
| This course will enable the students to |
| • Understand the concept of design thinking for product and service development |
| • Understand the fundamental concept of innovation and design thinking |
| • Understand the methods of implementing design thinking in the real world. |
| **Pre-Requisites** |
| • Techniques of engineering design, analytical thinking and ideas required. |
| • Basics concepts of engineering drawing. |
| • Application of engineering drawing with computer aid. |

| **Module- 1** | **(3 hrs)** |
|---|---|
| **Process of Design Understanding Design thinking**<br>Shared model in team-based design – Theory and practice in Design thinking – Explore presentation signers across globe – MVP or Prototyping | |
| **Module- 2** | **(3 hrs)** |
| **Tools for Design Thinking**<br>Real-Time design interaction capture and analysis – Enabling efficient collaboration in digital space – Empathy for design – Collaboration in distributed Design | |
| **Module- 3** | **(3 hrs)** |
| **Design Thinking in IT**<br>Design Thinking to Business Process modelling – Agile in Virtual collaboration environment – Scenario based Prototyping | |
| **Module- 4** | **(3 hrs)** |
| **DT For strategic innovations**<br>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. | |
| **Module- 5** | **(3 hrs)** |
| **Design thinking workshop**<br>Design Thinking Workshop Empathize, Design, Ideate, Prototype and Test | |

| **Text Books:** | |
|---|---|
| 1. | "Engineering Design" John.R. Karsnitz, Stephen O'Brien and John P. Hutchinson Cengage learning (International edition) second Edition, 2013. |
| 2. | "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Roger Martin, Harvard Business Press, 2009. |

| | |
|---|---|
| 3. | "Design Thinking: Understand –Improve– Apply", Hasso Plattner, Christoph Meinel and Larry Leifer (eds), Springer, 2011 |
| 4. | "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", Idris Mootee, John Wiley & Sons 2013. |
| **Reference Books:** | |
| 1. | "Engineering Design Process", Yousef Haik and Tamer M.Shahin, Cengage Learning, Second Edition, 2011. |
| 2. | "Book - Solving Problems with Design Thinking - Ten Stories of What Works Hardcover", Jeanne Liedtka, Andrew King, Kevin Bennett, Columbia Business School Publishing, 20 Sep 2013. |

| **Course Outcome Statements:** After the successful completion of the course, the student will be able to | |
|---|---|
| **CO1** | Explain the design process procedure |
| **CO2** | Generate and develop design ideas through different technique |
| **CO3** | Identify the significance of reverse Engineering to Understand products |
| **CO4** | Draw technical drawing for design ideas |

**Course Articulation Matrix**

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 1 | 1 |
| **CO2** | 2 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 1 | 1 |
| **CO3** | 2 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 1 | 1 |
| **CO4** | 2 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 1 | 1 |
| **Avg.** | **2** | **1** | **1** | **1** | - | - | - | - | **1** | **1** | **1** | **1** |

**3: High, 2: Medium, 1: Low**

**Suggested Activity Based Assessment (ABA) Methods**

- Content related activities (ABA)
- Organizing Groupwise discussions connecting to placement activities
- Quizzes and Discussions, Seminars and Assignments.
- For active participation of students instruct the students to prepare flowcharts and handouts.