INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-501 **Course Title**: Introduction to Design and Prototyping
2. **Contact Hours:** **L:** 15 **T:** 5 **P:** 10
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 35 **PRS:** 35 **MTE:** 0 **ETE:** 30 **PRE:** 0
5. **Credits:** 0 **6. Semester:** Foundation Week **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** The course is intended to create an overall awareness of the design discipline, designing processes and methods dealing with creation of systems, products, visuals, environments and prototyping methods.

10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Design definitions; Industrial Design chronology; Interrelationship of Design to Engineering, Architecture, Arts and Social Sciences. Design as a creative professional career. Choices, Routes, Courses and Specializations in the field of Design. Brief history of developments in Design and Technology. Scientific and Engineering considerations in Design, Impact of design on society.	3
2.	Aesthetics: Study and exploration of visual elements, Introduction to visual communication.	2
3.	Role of Creativity and Innovation in Design. Case studies of creativity related to design.	1
4.	Interaction Design: Introduction to Human Computer Interaction. Case studies related to introduction design and human computer interaction.	1
5.	Ergonomics: Definition of Ergonomics / Human Factors. Human capabilities and limitations in terms of engineering.	2
6.	Rapid Prototyping: Working Principles and types of Rapid Prototyping machines. Input devices, Contact and non-contact type digitizers such as Co-ordinate measuring machines, Laser and White light scanners.	3
7.	Introduction to Automation: Principles of Computer Numerically Controlled (CNC) machines and programming; Computer Aided Design (CAD); Computer Aided Manufacturing (CAM). Introduction to modelling tools; Product Modeling using CAD software and Rapid Prototyping machine.	3
Total		**15**

Studio Sessions/ Practicals:

1. Identification and analysis of samples of good and bad design for sensitization to Design quality/processes.

2. Chronological studies for analysis of designed objects/systems/environments and their eclectic evolution through technology change.
3. Simple exercises in design creation/recreation through mock ups/montages/paste boards using primary materials such as paper, board, wood etc.
4. Analysis and redesign of a simple utility artifact/ product/ visual communication/ interface or environment.

11. Suggested Books:

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	M. Droste, Bauhaus, Taschen.	2019
2.	P. Sparke, Introduction to Design and Culture in the 20th Century, Routledge.	1986
3.	Norman, Design of Everyday Things, Currency Books, New York.	2013
4.	A. Forty, Objects of Desire, Thames & Hudson.	1998
5.	Taura, Toshiharu, Nagai, Yukari, Concept Generation for Design Creativity - A Systematized Theory and Methodology. Springer, London, pp. 9–20.	2013
6.	Jones, J.C., Design Methods, John Wiley.	1992
7.	Cross, N., Engineering Design Methods, John Wiley.	2021
8.	Pahl, G., and Beitz, W., Engineering Design, Design Council.	2007

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-503 **Course Title**: Design Thinking
2. **Contact Hours:** **L:** 1 **T:** 0 **P:** 4
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 20-30 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Autumn **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To develop courage amongst young designers to think and design creatively in order to develop innovative products based on user's need.

10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Design Thinking: Introduction, key concepts, terminologies.	2
2.	Process of Design Thinking: Steps involved and applications.	2
3.	Empathy: Role of empathy, process of empathizing people, user interviews.	2
4.	Define: Methods for identifying challenges and designer's point of view.	2
5.	Ideate: Elements and thinking modes, ideation techniques.	2
6.	Prototype: Types of prototypes, methods and techniques for prototyping.	2
7.	Testing: Feedback from users, getting honest feedback, improving design.	2
Total		**14**

Studio/Project Work:

The practical work will include design studio workshops leading to ideation and brainstorming. The innovative design thinking strategies will be employed to create a habit of inquisitiveness among the students. The process of conducting user interviews leading to identification of needs and recording of the information in standard templates will be undertaken. The user defined needs will be analyzed and product concepts leading to the first form of prototypes will be the major deliverable of the course.

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Tim Brown, 'Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation' Harper Business	2009
2.	Roger L. Martin, 'The Design of Business: Why Design Thinking is the Next Competitive Advantage' Harvard Business Review Press	2009
3.	Tom Kelley, Jonathan Littman, Tom Peters 'The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm' Broadway Business	2001

4.	John Christopher Jones, “Design Methods-Seeds of Human Future” John Wiley and Sons.	2008
5.	Thomas T. Woodson, “Introduction to Engineering Design” McGraw-Hill.	2001

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-505 **Course Title**: Elements and Principles of Visual Design
2. **Contact Hours:** **L:** 2 **T:** 1 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 0 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Autumn **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To get exposure about basic Design methods and Creativity.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Study and exploration of visual elements - point, line, form, shape, texture, colour.	3
2.	Study of visual principles - balance, proportion, mass, unity, harmony, rhythm and variety.	4
3.	Spatial and visual relationship in compositions; Gestalts laws of visual perception; Colour classification - Additive and Subtractive colour theories; Dimensions of colour Hue, Value, Saturation and Chroma and their relationships; Colour dynamics and interaction of colour; Colour and Form relationships; Aesthetic application of colour. Hands-on projects.	7
4.	Studies in form, graphic compositions, grid structure, spatial analysis and organization; Visual expressions in nature. Hands-on projects.	6
5.	Introduction to free hand perspective drawing: Vanishing points, Station Point; One- point perspective drawing and two-point perspective drawing; Worms eye view and Ariel view; Rendering techniques with different media: pen and ink, markers, pastels,thinners and paint on different types of paper including white paper and toned paper. Exercises in free hand object drawing. Gradation exercises using textures, scribbling, stippling and shading techniques. Digital rendering: exposure to image editing software. Hands-on projects.	8
Total		**28**

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	R.W. Gill, Manual of Rendering with Pen and Ink, Thames and Hudson.	1997
2.	J. Bairstow, R. Barber, M. Kenny, Design Modelling - Visualizing Ideas in 2 Dimension and 3 Dimension, Hodder and Stoughton,	2005
3.	W. Wong, Principles of Two-Dimensional Design, John Wiley and Sons,.	1972

4.	J. Itten, The Art of Colour, New York, VNR,.	1973
5.	D.K Francis, Design Drawing, John Wiley and Sons.	2019
6.	J. Bowers, Introduction to Two- Dimensional Design: Understanding Form and Function, John Wiley and Sons.	2008
7.	L. Holtzschue, Understanding Colour: An Introduction for Designer, 2nd Edition, John Wiley and Sons.	2002
8.	H.G Greet and R. Kostellow, Elements of Design and the Structure of Visual Relationships, Architectural Press, New York.	2002

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-507 **Course Title**: Human Factor Design
2. **Contact Hours:** **L:** 1 **T:** 2 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 0 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Autumn **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To apply physical and physiological considerations in design. To understandand and use of anthropometric data in design of workspaces.

10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Definition and origin of Ergonomics- Examples of its applications in Design.	2
2.	Data collection techniques in Anthropometry. Types of data from humans at physical, physiological, cognitive and effective levels. Usage of percentile data in design of workspaces. Application of mean, median, mode and percentile in anthropometry.	4
3.	Force, repetitive injury, stress- human physiological potential and limitations.	2
4.	Cognitive load in complex tasks; Applications of cognitive load in design.	4
5.	Control panel design principles. Cognitive perspective in control panel design and graphical user interface design.	2
Total		**14**

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	J Don Norman, “Living with Complexity”, MIT Press.	2010
2.	Wesley Woodson, Peggy Tillman and Barry Tillman, “Human Factors Design Handbook”, McGraw-Hill Professional, 2 Edition.	2016
3.	McCormick, ‘Human Factors in Engineering & Design’, Tata McGraw Hill.	1993
4.	Benjamin Niebel and Andris Freivalds, ‘Methods, Standards & Work design, McGraw-Hill Intl Ed.	2008

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-509 **Course Title**: Materials and Manufacturing
2. **Contact Hours:** **L:** 1 **T:** 1 **P:** 2
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 20-30 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Autumn **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To introduce the students to different materials and manufacturing processes used for developing a product.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Engineering Materials: Classification, Properties, Selection and Applications.	3
2.	Introduction to Manufacturing: Need, Classifications; Selection of processes, Advantages and Limitations, Applications, Capabilities of Manufacturing Process.	3
3.	Manufacturing Processes: Shaping, deformative, joining, material removal, powder processing, additive processes.	6
4.	Design for Environment: Selection of Eco-friendly materials; Design for environment-friendly manufacturing process.	2
Total		**14**

Practicals:

S.No.	Practicals	Hours
1.	To perform mechanical characterization of metallic/non-metallic materials	04
2.	To analyze the surface characteristics of materials using surface analyzer	02
3.	Study and demonstration of primary forming processes for metallic products (sand/pressure die casting)	04
4.	Study and demonstration of primary forming processes for plastic products (compression/Injection molding)	04
5.	Study and demonstration of deformative processes for metallic products (forging)	02
6.	Study and demonstration of joining processes for metallic products (electric arc welding/gas welding)	04
7.	Study and demonstration of joining processes for plastic products (Ultrasonic / Hot plate welding)	04

11. Suggested Books:

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Product Design for Manufacture and Assembly, G. Boothroyd, P. Dewhurst, W. Knight, Marcel Dekker, University of Rhode Island Kingston, New York,USA.	2010
2.	Serope Kalpakjian and Steven R. Schmid, 'Manufacturing Engineering and Technology' Pearson Education; Seventh edition	2018
3.	Jr. Callister, William D., David G. Rethwisch, Materials Science and Engineering, John Wiley & Sons Inc; 9th edition	2013
4.	Manufacturing Processes: Casting, Forming and Welding: H. S. Shan, Cambridge University Press.	2017

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IMN-503 **Course Title**: Effective Communication
2. **Contact Hours:** **L:** 1 **T:** 1 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 0 **Practical:** 2
4. **Relative Weightage: CWS:** 20-35 **PRS:** 20-30 **MTE:** 0 **ETE:** 0 **PRE:** 40-50
5. **Credits:** 2 **6. Semester:** Autumn **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** The course emphasis on effective use of communication for innovation.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	**Understanding Communication Styles**: Introduction to Communication, Types of communications, Passive Communication, Aggressive Communication, Passive-Aggressive Communication, Assertive Communication	2
2.	**Communicating in Writing**: Using Written Communication, Pros and Cons of Written Communication, Tips for Avoiding Misunderstandings in Written Communication, The Importance of Good Conversational Skills, Active Listening, Be an Engaging Speaker	2
3.	**Communications Technology**: Modern Technologies, Benefits of Communications Technology, Drawbacks of Communications Technology	2
4.	**Cultural Aspects of Communication**: Introduction to culture, Working in a Global Community	2
5.	**Disagreements and Conflicts**: Nature of conflict, Avoiding Conflict, Fostering Healthy Conflict, Conflict Resolution, Negotiation, Compromise, Constructive Criticism: The Critic-Recipient Relationship, Personal Criticism, Offering Criticism, Receiving Criticism	3
6.	**Design related Communication**: Proof of Concept Writing, Drafting Patents and related case studies for best practice	3
Total		**14**

List of suggested Practical:

1. Active listening skill based exercises
2. Exercises on describing design/ innovation
3. Exercises on creating effective atmosphere for conflict resolution
4. Creative Problem solving technique exercises such as Six Thinking hats
5. Brainstorming session based exercises
6. Exercises on negotiation

11. Suggested Books:

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	**Effective Business Communication** by Herta Murphy, Herbert Hildebrandt,Jane Thomas	2017
2.	**Effective Communication** by John Adair	2009
3.	Corporate Communication, **Paul** A. Argenti, Tata Mgraw Hill, 6th Edition	2013
4.	Business Communication: Connecting at Work, Hory Shankar Mukherjee, Oxford University Press,	2013

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-502 **Course Title**: Design Methodology
2. **Contact Hours:** **L:** 2 **T:** 0 **P:** 2
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 20-30 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Spring **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To get exposure about basic Design methods and Creativity.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Design: Definitions, history and modern practices; Design and the product life cycle.	4
2.	Design and Society: Societal aspects; Impact of Design on Society and vice-versa.	4
3.	Introduction to creativity, creativity methods.	4
4.	Methodology for problem solving in engineering design; Various models, recognition, concept generation.	6
5.	Methodology of Conceptual Design: Definition, analysis, synthesis, communication and presentation. Hands-on projects.	8
6.	Specializations in the field of Design. Design as a creative professional career.	2
Total		**28**

Practical Work:

The practical component involves a hands-on project that involves application of creative skills to become problem solvers by using different design processes and methods. The emphasis of the project is on individually/groups planned design projects that involves design methodologies for problem-solving in design: recognition, definition, analysis, synthesis, communication, and presentation. With wide ranging discussions including social responsibility of designers, application of local materials, various processes and user needs as important design considerations, students learn to correlate technical and functional aspects of a product with real human needs and creating a product for the masses. At the end of the project a comprehensive presentation supported with technical and representational drawings, a prototype and report are the expected deliverables.

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Norman, Design of Everyday Things, Currency Books, New York	2013
2.	A. Forty, Objects of Desire, Thames & Hudson	1998

3.	Taura, Toshiharu, Nagai, Yukari, Concept Generation for Design Creativity – A Systematized Theory and Methodology. Springer, London, pp. 9–20.	2013
4.	Jones, J.C., Design Methods, John Wiley,	1992
5.	Cross, N., Engineering Design Methods, John Wiley	2008
6.	Pahl, G., and Beitz, W., Engineering Design, Design Council	2007

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-504 **Course Title**: Form Design
2. **Contact Hours:** **L:** 1 **T:** 0 **P:** 4
3. **Examination Duration (Hrs.):** **Theory:** 0 **Practical:** 4
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 20-30 **MTE:** 0 **ETE:** 0 **PRE:** 40-50
5. **Credits:** 3 **6. Semester:** Spring **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** To create sensitivity towards form and aesthetics in products. To develop an understanding of form through knowledge of form based designs.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Form and Aesthetics, the need and a designers approach.	2
2.	Elements of Design; Nature inspired design.	2
3.	Form and Detailing Aesthetics; Varied approaches to form design	3
4.	Color theory and Color trends.	3
5.	Product Styling.	4
Total		**14**

Studio/ Practical Work:

The practical work will include introduction to 2-D and 3-D forms. The students will be exposed to exploration of surface textures that can be achieved with different materials, such as metals/ceramics/plastics. The concept of the family of forms will be discussed during the studio work. The students will be learning exploration of forms/shapes in order to develop imagination and insight and will use metaphors to generate new forms. The students will be creating various 3D Forms; cube, tetrahedron, octahedron etc. with different materials which will lead to imaginative generating complex forms and structures. The overall deliverable will be that the students will be able to perform logically the form, material and process relationship during design of products.

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Gail Greet Hannah- "Elements of Design", Princeton Architectural Press	2002
2.	Peter Fiell, Charlotte- "Design of 20th Century", Taschen America LIc	2012
3.	Allen Hurlburt – "Grid: A Modular System for the Design and Production of Newspapers, Magazines and Books", John Wiley & Sons.	2016

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-506 **Course Title**: Design for Sustainability
2. **Contact Hours:** **L:** 2 **T:** 1 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 0 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Spring **7. Subject Area:** PCC
8. **Pre-requisite:** Nil
9. **Objective:** This course will enable the students to think beyond design by understanding the design approaches, methods and tools along with case examples for sustainable development.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Basics of sustainability, sustainable development, need and evolution of sustainability within Design.	5
2.	Sustainable Product: Definition, types and examples, transition path and challenges.	3
3.	Product life cycle design: Methods, strategies and software tools; Minimizing resource consumption; Selecting low impact resources and processes; Product lifetime optimization.	7
4.	Extending the lifespan of materials; Facilitating disassembly in system design for eco-efficiency; Environmental complexity and designing activity; Environmentally sustainable design orienting tools; Design criteria and guidelines	8
5.	Sustainable product design: Environmentally, socially and economically led strategies; Environmental impact of products: short-use, electronic, furniture and space related, transportation and mobility.	5
Total		**28**

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	T. Bhamra and V. Lofthouse, “Design for Sustainability: A Practical Approach” Routledge, Taylor and Francis Group, London	2007
2.	J. Penty, “Product Design and Sustainability: Strategies, Tools and Practice, Routledge	2019
3.	C A Vezzoli and E Manzini, “Design for Environmental Sustainability” Springer	2008

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-523 **Course Title**: Rapid Prototyping
2. **Contact Hours:** **L:** 2 **T:** 0 **P:** 2
3. **Examination Duration (Hrs.):** **Theory:** 2 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 20-30 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Both **7. Subject Area:** PEC
8. **Pre-requisite:** Nil
9. **Objective:** To introduce students with concepts of Rapid Prototyping and different techniques for developing prototypes.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	**Introduction:** Rapid Prototyping (RP), Traditional manufacturing vs RP, history, fundamentals of RP, process physics, RP process chain, Applications of RP.	5
2.	**Liquid based RP methods:** process mechanism, product design guide lines, applications, advantages and limitations of the techniques – stereolithography (SLA),solid ground curing (SGC), solid creation system (SCS).	6
3.	**Solid based RP methods:** process mechanism, product design guide lines, applications, advantages and limitations of the techniques – fused deposition modeling (FDM), laminated object manufacturing (LOM), and extrusion based fused.	6
4.	**Powder based RP methods:** process mechanism, product design guide lines, applications, advantages and limitations of the techniques – selective laser sintering (SLS), 3D printing (3DP), ballistic particle manufacturing (BPM), shaping, and electron beam melting.	6
5.	**Application of RP:** Selection of RP technologies using decision methods, Additive manufacturing process plan: strategies and post processing, Monitoring and control of defects	5
Total		**28**

Practicals:

S.No.	Practicals	Hours
1.	To perform reverse engineering of a component using CMM	04
2.	To perform reverse engineering of a component using 3-D scanner	04
3.	To create indirect rapid tooling for casting process	04
4.	To fabricate a ABS part using the Fused Deposition Modeling process	04
5.	To fabricate a component using Stereolithography Apparatus	04
6.	To fabricate a component using powder-based RP process	04
7.	Study and demonstration of post-curing process for RP parts	04

11. Suggested Books:

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	I. Gibson, D. W. Rosen, B. Stucker, 'Additive manufacturing technologies: rapid prototyping to direct digital manufacturing', Springer.	2010
2.	A. Gebhardt, 'Understanding additive manufacturing: rapid prototyping, rapid tooling, rapid manufacturing', Hanser Publishers.	2011
3.	J. D. Majumdar and I. Manna, 'Laser-assisted fabrication of materials', Springer Series in Material Science.	2013
4.	L. Lu, J. Fuh and Y.-S. Wong, Laser-induced materials and processes for rapid prototyping, Kluwer Academic Press.	2001

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE: Department of Design

1. **Subject Code:** IDN-533 **Course Title**: User Experience Design
2. **Contact Hours:** **L:** 3 **T:** 0 **P:** 0
3. **Examination Duration (Hrs.):** **Theory:** 3 **Practical:** 0
4. **Relative Weightage:** **CWS:** 20-35 **PRS:** 0 **MTE:** 20-30 **ETE:** 40-50 **PRE:** 0
5. **Credits:** 3 **6. Semester:** Both **7. Subject Area:** PEC
8. **Pre-requisite:** Nil
9. **Objective:** To impart knowledge on the user experience and cognition, which are the key factor to achieve user-friendly design.
10. **Details of the Course**

S.No.	Contents	Contact hours
1.	Introduction to User Experience; User behavior pattern	5
2.	Design semantics.	8
3.	Tools and techniques of User Research: Mental model, Persona, scenario, Task flow.	10
4.	User Experience Design Methodology	12
5.	Case studies and best practices	7
Total		**42**

11. **Suggested Books:**

S.No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Donald Norman – "Design of Everyday Things", Basic Books	2002
2.	Donald Norman – "Emotional Design", Basic Books	2004
3.	Elen Lupton – "Design is Story Telling", Cooper Hewitt Smithsonian Design Museum	2017