

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

**Bachelors in Arts with With Community Science
Category-V**

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-RMDA 10-HSC:
PRODUCT DESIGN AND APPLICATION**

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Product Design and Application	4	2	0	2	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- Understand the basic concepts, scope and significance of product design.
- Develop creative and innovative thinking skills to design user-friendly, inclusive and interactive products.
- Gain knowledge of the New Product Development (NPD) process
- Build skills for the successful promotion of the product in the market.

Learning Outcomes

The students would be able to:

- Develop an understanding of product design principles and real-world design challenges.
- Apply creativity and innovation to design user-friendly and inclusive products.
- Understand the New Product Development (NPD) process, from idea generation to market launch.
- Select appropriate materials, develop prototypes, and perform cost analysis for efficient product design.

**THEORY
(Credits 2; Hours 30)**

UNIT I: Introduction to Product Design

8 Hours

This unit covers the concept, scope, importance, approaches, and challenges of product design, along with success factors, design philosophies, and the role of product designers.

- Introduction to Product design: Concept, scope, importance and challenges
- Different approaches to Product design
- Factors for the success of products
- Design philosophies of famous designers
- Role of Product Designers

UNIT II: Creativity and Innovative thinking

6 Hours

This unit covers concept of creativity, innovation in product design, and human-centric design approaches like ergonomics, inclusive, and interactive design.

- Theories and models of creativity
- Techniques of developing creativity
- Role of innovation in product design
- Application of human factors and ergonomics (user-centric design, Inclusive design and Interactive design).

UNIT III: Product Development Process

10 Hours

This unit outlines the stages of new product development, including idea generation, material selection, prototyping, cost-value analysis, and legal aspects like intellectual property rights.

- Stages of New Product Development (NPD): Idea generation, concept development, market analysis, Feasibility study
- Detailed study of Materials
- Prototyping
- Cost-value Analysis for effective design
- Intellectual Property (IPR) and other legal considerations.

UNIT IV: Product Launch and Marketing

6 Hours

This unit highlights product launch strategies, including packaging, advertising, branding, post-launch review, and real-life case studies.

- Introducing the product to the market
- Packaging, Advertising and branding.
- Post-Launch Review and feedback for Improvements
- Real-Life Examples and Projects

PRACTICAL (Credits 2; Hours 60)

1. Case study of selected products-success and failure stories
2. Techniques of creativity
3. Study of selected materials: properties and functions
4. Design Tools and Software: CAD, graphic design tools, 3D printing etc.
5. Product-Life cycle mapping of any consumer product
6. Designing and Prototyping of a product (as per the stages of product development)
7. Simulation of Product Launch: Group activity for launching a product (pricing, promotional strategies and distribution channels)
8. Use of Technology in product design and development

Essential Readings

UNIT I

This unit explores the concept of product design. It discusses success factors, design philosophies, and the role of product designers. It also highlights the important approaches.

- **Balaram, S.** (1998). *Product design and development in India*. National Institute of Design.
- **Design India Council.** (2011). *India design report 2011*. Confederation of Indian Industry (CII).
- **IDC School of Design, IIT Bombay.** (2015). *D'Source: Digital learning environment for design in India*. Indian Institute of Technology Bombay.
- **National Institute of Design.** (2019). *Design for India: 50 years of design education and practice*. National Institute of Design Publications.
- **Ulrich, K. T., Eppinger, S. D., & Yang, M. C.** (2020). *Product design and development* (7th ed., Indian ed.). McGraw-Hill Education India.

UNIT II

This unit discusses the important topic of creativity, and explores the relevance of innovation in product design. It explains human-centric design approaches like ergonomics, inclusive, and interactive design.

- **Balaram, S.** (2011). *Thinking design*. SAGE Publications India Pvt Ltd.
- **Biswas, A., & Agarwal, A.** (2019). *Ergonomics for beginners: A quick reference guide* (2nd ed.). CRC Press (Indian Reprint Edition).
- **Centre for Product Design and Manufacturing (CPDM), Indian Institute of Science.** (2014). *Product design and engineering: Concepts and applications*. Indian Institute of Science Press.
- **IDC School of Design, Indian Institute of Technology Bombay.** (2015). *D'Source: Digital learning environment for design*. Indian Institute of Technology Bombay.
- **Norman, D. A.** (2013). *The design of everyday things* (Revised and expanded ed., Indian ed.). Basic Books.
- **Ulrich, K. T., Eppinger, S. D., & Yang, M. C.** (2020). *Product design and development* (7th ed., Indian ed.). McGraw-Hill Education India.

UNIT III

This unit elaborates upon the stages of new product development. It emphasizes upon the importance of understanding properties of materials. It focusses on information related to Intellectual Property (IPR) and other legal considerations.

- **Centre for Product Design and Manufacturing (CPDM), Indian Institute of Science.** (2014). *Product design and engineering: Concepts and applications*. Indian Institute of Science Press.
- **Department for Promotion of Industry and Internal Trade (DPIIT), Government of India.** (2016). *National intellectual property rights (IPR) policy*. Ministry of Commerce and Industry, Government of India.
- **IDC School of Design, Indian Institute of Technology Bombay.** (2015). *D'Source: Digital learning environment for design*. Indian Institute of Technology Bombay.
- **Kalpakjian, S., & Schmid, S. R.** (2020). *Manufacturing engineering and technology* (7th ed., Indian ed.). Pearson India Education Services Pvt. Ltd.

UNIT IV

This unit focusses on all product launch strategies and discusses real-life case studies.

- **Aaker, D. A.** (1996). *Building Strong Brands*. Free Press.
- **Armstrong, G., & Kotler, P.** (2017). *Marketing: An Introduction* (13th ed.). Pearson.
- **Keller, K. L.** (2013). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (4th ed.). Pearson.

- Kotler, P., & Keller, K. L. (2016). *Marketing Management* (15th ed.). Pearson.
- Ries, A., & Trout, J. (2001). *Positioning: The Battle for Your Mind*. McGraw-Hill.

Suggested Readings

- Cross, N. (2011). *Design thinking: Understanding how designers think and work*. Bloomsbury Academic.
- Crawford, C. M., & Di Benedetto, C. A. (2011). *New products management* (11th ed.). McGraw-Hill Education.
- Green, W. S., & Jordan, P. W. (Eds.). (1999). *Human factors in product design: Current practice and future trends*. Taylor & Francis.
- Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education.
- Petrov, V. (2019). *Theory of inventive problem solving: Level 1*. Springer.
- Salvendy, G. (Ed.). (2021). *Handbook of human factors and ergonomics* (5th ed.). John Wiley & Sons, Inc.
- Sawyer, R. K. (2012). *Explaining creativity: The science of human innovation* (2nd ed.). Oxford University Press.
- Sherman, B., & Bently, L. (2019). *The making of modern intellectual property law*. Cambridge University Press.
- Ulrich, K. T., & Eppinger, S. D. (2019). *Product design and development* (7th ed.). McGraw-Hill Education.

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Bachelors in Arts with With Community Science Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-RMDA 12-HSC: RESOURCE MANAGEMENT AND SUSTAINABLE DEVELOPMENT

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Resource Management and Sustainable Development	4	3	1	0	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To build an inter-disciplinary perspective on understanding environmental concerns, sustainable development and its challenges.
- To familiarize students with current debates and perspectives with respect to sustainable development.
- To familiarize students with the concepts of sustainable resource management.