

Bachelors in Arts with With Community Science
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE DSE-RMDA 4-HSC
ERGONOMIC DESIGN

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		
Ergonomic Design	4	3	0	1	XII Pass	Appeared in Introduction to Resource Management

Learning Objectives

- To sensitize the students towards the importance of ergonomics and its application in daily life
- To understand components of worker inputs
- To develop understanding of functional design and arrangement of workplaces and equipment
- To identify human and workplace factors which contribute to ergonomic hazards
- To develop aptitude in identifying the product / space design problems at place of work

Learning Outcomes

The students would be able to:

- Understand the concept, history and importance of ergonomics in designing.
- Recognize and appreciate the scope of ergonomics in the professional arena
- Develop skills in taking anthropometric measurements as applied to different workstations.
- Apprehend the techniques of conducting time & motion and energy studies.
- Critically evaluate and design different workstations & equipment with respect to their functional effectiveness.

THEORY
(Credits 3; Hours 45)

UNIT I: Introduction to Human Factors and Ergonomics

10 Hours

This unit introduces the students to the concept of ergonomics and anthropometry and their importance in daily life.

- Ergonomics- concept, significance, history, application of Ergonomics in daily life
- Anthropometry – History and its application in interior designing for different work areas and workers
- Human-Centred Design- Design Thinking concept and methodology

UNIT II: The User Component

10 Hours

This unit highlights the importance of various components of worker inputs.

- Physical: Biomechanics of human movement and musculo-skeletal system, Anatomical position, reference planes and movements
- Temporal
- Cognitive
- Affective

UNIT III - Workplace Design

17 Hours

This unit focuses on the functional design of workplaces, work study techniques, indices of indoor comfort, man- machine interface, as well as the occupational safety and health at the workplace.

- Functional design and arrangement of workplaces
- Work study- Time and motion study, energy study
- Indices of indoor comfort: ventilation, lighting, temperature, noise
- Human Machine Interface- Controls and Displays

UNIT IV: Sustainable built environment

8 Hours

This unit provides insight into the occupational safety and health at workplace.

- Types of ergonomic risk factors
- Effects of ergonomic hazards
- Occupational safety and health at workplace - Applications of ergonomics in different work environments

PRACTICAL (Credits 1; Hours 30)

1. Basic Anthropometry of a selected demography
2. Time and motion study
3. Energy study - Physiological cost of workload
4. Prepare floor and elevation plans for different types of kitchen
5. Testing suitability of selected environmental factors at a workplace
6. Case study of a selected workplace - Identifying and assessing workplace for a selected occupation, analysis of posture and equipment used, suggestions for improvement in process of the activity
7. Designing workstation/equipment suitable to the selected occupation

Essential Readings

UNIT I

This unit introduces the students to the concept of ergonomics and anthropometry and their importance in daily life.

- **Bridger, R.** (2017). *Introduction to Human Factors and Ergonomics*. CRC Press.
- **Salvendy, G.** (2012). *Handbook of Human Factors and Ergonomics*. John Wiley & Sons.
- **Steidl, R.E. & Bratton, E.C.** (1968). *Work in the Home*. John Wiley & Sons Inc.

UNIT II

This unit highlights the importance of various components of worker inputs

- **Tosi, F.** (2019). *Design for Ergonomics*. Springer Nature.
- **Steidl, R.E. & Bratton, E.C.** (1968). *Work in the Home*. John Wiley & Sons Inc.
- **Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W.** (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press

UNIT III

This unit focuses on the functional design of workplaces, work study techniques, indices of indoor comfort, man- machine interface, as well as the occupational safety and health at the workplace.

- **Chakrabarti, D.** (1997). *Indian Anthropometric Dimensions for Ergonomic Design Practice*. National Institute of Design
- **Hedge, A.** (2016). *Ergonomic Workplace Design for Health, Wellness, and Productivity*. CRC Press.
- **Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W.** (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press

UNIT IV

This unit provides insight into the occupational safety and health at workplace.

- **Helander, M.** (2005). *A Guide to Human Factors and Ergonomics* (2nd ed.). CRC Press.
- **Shorrock, S., & Williams, C.** (2016). *Human Factors and Ergonomics in Practice: Improving System Performance and Human Well-Being in the Real World*. CRC Press
- **Stanton, N. A., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. W.** (2004). *Handbook of Human Factors and Ergonomics Methods*. CRC Press

Suggested Readings

- **DeChiara, J., Panero, J., & Zelnik, M.** (2017). *Time-saver standards for interior design and space planning* (2nd ed.). McGraw-Hill Education.
- **Neufert, E., & Neufert, P.** (2019). *Architects' data* (5th ed.). John Wiley & Sons.

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 6-HSC: ADVANCED INTERIOR DESIGN

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		
Advanced Interior Design	4	2	0	2	Class XII	Appeared in Introduction to Resource Management