

DISCIPLINE SPECIFIC ELECTIVE COURSE**DSE HH 7E3: RESOURCES AND SUSTAINABLE DEVELOPMENT****CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE**

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical		
Resources and Sustainable Development DSE HH 7E3	4	2	0	2	Studied Semester 6	NIL

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.
- To develop skills and competencies amongst students with regard to energy, water and waste management.

Learning outcomes

- Build an understanding of environmental concerns, sustainable development and its challenges.
- Understand the concept of resources and developmental issues with respect to sustainable development.
- Develop skills in sustainable resource management.

SYLLABUS OF DSE HH 7E3

THEORY
(Credit 2; Hours 30)

UNIT I: Introduction to Sustainable Development**9 Hours**

This unit introduces the concept, need, principles, and goals of sustainable development, along with key global milestones and initiatives.

- Concept of sustainable development
- Need, objectives and principles of sustainable development
- National and international milestones, initiatives, summits and protocols

- Sustainable Development Goals (SDGs)

UNIT II: Resources and Developmental Issues

9 Hours

This unit explores environmental challenges, resource consumption, sustainable resource management, green practices, and green building rating systems.

- Environmental concerns, population explosion, urbanization, globalization, economic development, ecological footprint, carbon footprint
- Perspectives in resource consumption
- Sustainable management of key resources: Land, green cover, water, air, waste
- Sustainable practices by industry, CSR initiatives
- Green buildings and green building rating systems

UNIT III: Sustainable Resource Management

12 Hours

This unit covers sustainable management of energy, water, waste, and air through strategies like energy auditing, rainwater harvesting, and air quality monitoring.

- Energy management – star labelling, energy auditing, renewable energy
- Water management – Rain water harvesting- Calculation of rainwater harvesting potential, water auditing, waste water recycling, water testing
- Waste management – Waste to energy plants, waste to wealth
- Air management – Air quality, AQI

PRACTICAL (Credit 2; Hours: 60)

UNIT I: SUSTAINABLE DEVELOPMENT INITIATIVES

- Case studies on sustainable initiatives/CSR initiatives by industry
- Creation of awareness generation material for issues related to sustainable development
- Organizing events/competitions to commemorate important environment related days/
Current issues related to environment and sustainable development
- Calculation of ecological and carbon footprint using various applications and websites
- Case studies on green buildings

UNIT II: ENERGY MANAGEMENT

- Understanding electricity bills: components and calculations
- Understanding BEE star labels as an initiative towards sustainable energy consumption
- Energy auditing for sustainable energy management
- Portfolio/Survey on renewable energy products available in the market

UNIT III: AIR, WATER AND WASTE MANAGEMENT

- Air/noise/water testing, AQI applications and websites

- Green modes of transportation, E-vehicles: components and calculations
- Composting for sustainable waste management
- Case studies on waste management

Essential Readings

- Thakur, B., Thakur, R. R., Chattopadhyay, S., & Abhay, R. K. (Eds.). (2023). *Resource management, sustainable development and governance: India and international perspectives*. Springer.
- Prasad, R., Jhariya, M. K., & Banerjee, A. (2021). *Advances in sustainable development and management of environmental and natural resources: Economic outlook and opinions*. CRC Press, Taylor & Francis Group.
- Goel, S. (Ed.). (2016). *Management of resources for sustainable development*. Blackswan Publications.
- Somayaji, G., & Somayaji, S. (2009). *Environmental concerns and sustainable development: Some perspectives from India*. TERI Publication.
- Sundar, I. (2006). *Environment and sustainable development*. APH Publishing Corporation.

Suggested Readings

- Patel, B. N., & Nagar, R. (2018). *Sustainable development and India*. Oxford University Press India.
- Filho, W. L., Rogers, J., & Raniga, U. I. (Eds.). (2018). *Sustainable development research in the Asia-Pacific region: Education, cities, infrastructure and buildings* (World Sustainability Series). Springer.
- UN Millennium Project. (2005). *Innovation: Applying knowledge in development*. Science, Technology and Innovation Task Force Report.
- World Bank. (2006). *Enhancing agricultural innovation: How to go beyond the strengthening of research systems*. World Bank: Agriculture and Rural Development.

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