

Annexure 76-84

College of Vocational Studies

Material ManagementSemester VII

DSC-1	Sustainable Material Management
DSE-1	Business Research Methodology in Material Management
DSE-1	Strategic Procurement and Supplier Relationship Management
DSE-2	Hands-on Python
DSE-2	Linear Programming
GE Common Pool for BA (VS) Material Management	
1	Offered by History Department
2	Offered by Political Science Department
3	Offered by Mathematics Department
4	Offered by Economics Department
5	Service marketing for Tourism and Hospitality (Offered by Department of Tourism, CVS)

Semester-VII

Sustainable Material Management

DISCIPLINE SPECIFIC CORE (DSC-7.1)

Credit Distribution, Eligibility and Pre-requisites the Course

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility	Prerequisite of the course
Sustainable Material Management	4	3	1	-		

Learning Objectives:

- Introduce the principles and practices of Sustainable Materials Management (SMM) and its significance in modern industries.
- Develop critical understanding of green procurement, eco-certifications, and sustainable sourcing.
- Examine waste minimization practices and current global regulations for hazardous and e-waste management.
- Explore sustainable approaches to warehousing, packaging, transportation, and distribution systems.

Learning Outcomes :

- Define and explain Sustainable Materials Management (SMM) and differentiate it from conventional practices.
- Apply green procurement techniques and assess suppliers based on environmental and ethical criteria.
- Implement circular economy principles to optimize resource usage and extend product lifecycles.
- Devise strategies for minimizing, recycling, recovering, and responsibly disposing of industrial waste.
- Design energy-efficient warehousing systems and sustainable logistics solutions.
- Critically evaluate eco-labels, certifications, and sustainability metrics (KPIs) for materials flow.
- Enhance employability by gaining sustainability, environmental compliance, and green supply chain management skills.

Learning Outcomes After completing this course, students will be able to:

- Define and explain Sustainable Materials Management (SMM) and differentiate it from conventional practices.

- Apply green procurement techniques and assess suppliers based on environmental and ethical criteria.
- Implement circular economy principles to optimize resource usage and extend product lifecycles.
- Devise strategies for minimizing, recycling, recovering, and responsibly disposing of industrial waste.
- Design energy-efficient warehousing systems and sustainable logistics solutions.
- Critically evaluate eco-labels, certifications, and sustainability metrics (KPIs) for materials flow.
- Enhance employability by gaining sustainability, environmental compliance, and green supply chain management skills.

Unit-I	Introduction to Sustainable Materials Management Definition, key principles, and primary objectives. Distinction between conventional materials management and sustainable approaches. Importance and emerging role of SMM in contemporary industries.	(10 Hours)
Unit II	Green Procurement and Sustainable Sourcing: Concept and significance of green procurement. Criteria for supplier evaluation based on environmental and ethical performance. Overview of major eco-labels and sustainability certifications (e.g., ISO 14001, FSC, EPEAT, Energy Star).	(11 Hours)
Unit III	Circular Economy and Resource Optimization: Introduction to Cradle-to-Cradle design philosophy. Strategies for extending product lifecycles. Approaches for material recovery, reuse, and redesign. Role and management of reverse logistics.	(12 Hours)
Unit IV:	Waste Minimization and Sustainable Disposal Techniques: (12 Understanding the waste hierarchy (Reduce, Reuse, Recycle, Recover). Hours) Safe handling and disposal of hazardous materials. Current e-waste management regulations and global best practices.	(12 Hours)

Suggestive Readings:

- Sustainable Materials Management: Making Better Use of Resources
William McDonough & Michael Braungart (2002) – Cradle to Cradle: Remaking the Way We Make Things
- Joseph Sarkis (2006) – Greening the Supply Chain
- Trevor M. Letcher (2011) – Waste: A Handbook for Management
- Ken Peattie (2001) – Towards Sustainability: The Third Age of Green Marketing
- Walter R. Stahel (2019) – The Circular Economy: A User's Guide
- Chartered Institute of Procurement & Supply (CIPS, latest) – Guide to Sustainable Procurement
- European Environment Agency (EEA Reports) – Circular Economy and Material Resource Efficiency

- Environmental Protection Agency (EPA, USA) – Sustainable Materials Management: The Road Ahead (Report)
- UNEP (United Nations Environment Programme) – Sustainable Resource Management: Global Trends and Practices

Teaching Pedagogy/Methodology:

- Lectures for conceptual foundations and theoretical frameworks.
- \Case Studies of companies practicing sustainable supply chain and materials management.
- Workshops/Practicals on eco-label evaluation and sustainable design strategies.
- Seminars and Group Discussions on emerging trends like Industry 5.0 and circular economy.
- Projects/Assignments involving real-world audits of green procurement and waste management systems.
- Industry Expert Talks/Webinars to give practical exposure.
- **SWAYAM Reference:** SWAYAM references for blended learning (as NEP 2020 recommends integrating online modules. Since SWAYAM directly doesn't have a course titled "Sustainable Materials Management", the closest and most relevant course available is:
- **SWAYAM:** Solid and Hazardous Waste Management - Institution: IIT Kharagpur, **Instructor:** Prof. Brajesh Kr. Dubey, **Course Focus:** Waste management, resource recovery, sustainable practices — all integral to Sustainable Materials Management.
- **Alternate useful SWAYAM course:** Introduction to Circular Economy, Institution: IIT Roorkee, Instructor: Prof. Gaurav Dixit, **Course Focus:** Circular economy frameworks that directly link to Unit III (Circular Economy and Resource Optimization).

Semester-VII

DISCIPLINE SPECIFIC ELECTIVE- DSE I- 7.1

Semester-VII

Business Research Methodology in Material Management

Offered by Commerce Department, College of Vocational Studies

Credit Distribution, Eligibility and Pre-requisites the Course

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility	Prerequisite of the course
Business Research Methodology in Material Management	4	3	1	-		

Learning Objectives: