

S. No.	CourseCode	Course Name	CourseType	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
3	UGMDC-303 (B)	Design for Sustainability	MDC	3	3	0	0	40	60	100

Course Outcomes:

At the end of the course the student will be able to :-

CO1	Examine the concept of sustainable development.
CO2	Articulate the emerging global challenges for a sustainable environment.
CO3	Analyze the role of the Product service system for sustainability.
CO4	Evaluate system design for sustainability.
CO5	Apply different approaches to Life Cycle Design in real-world scenarios.

Detailed Syllabus**Section A**

Unit I: Ecosystem and Sustainability: Fundamentals of ecology - types of ecosystems & interrelationships, factors influencing sustainability of ecosystems, ecosystem restoration - developmental needs. Concept and Dimensions of Sustainability and Sustainable Development, Emergence of Sustainability, System Innovations for Sustainability, Challenges to Sustainable Development.

(07 Hrs)

Unit II: Gauging Sustainable Development: Millennial Development Goals and Sustainable Development Goals (SDG), UN SDGs - Pillars and Partnerships. UN Global Compact, ISO 14000, European Sustainability Agenda and Asian Sustainability Agenda.

(08 Hrs)

Unit III: Product Service System and Sustainability: Concept and Types of Product-System System (PSS), Benefits of PSS for producer/provider and Customer, Limitations of PSS, Product-Service Systems for emerging and low-income contexts. PSS design for sustainability, main approaches in PSS for sustainability: Satisfaction System, Stakeholder Configuration, and System Sustainability.

(08 Hrs)**Section B**

Unit IV: Methods and tools for system design for sustainability: Criteria, MSDS: a modular method for system design for sustainability, Design Tools for system Design for Sustainability: Sustainable system design steering tools and Stimulus and support tools for the generation of ideas and strategic to system design.

(07 Hrs)

Unit V: Life Cycle Design: Introduction to Life Cycle Design, Relevance of Life Cycle Design for Sustainability, L Methods and Strategies for Life Cycle Design, Approaches to Life Cycle Design, Life Cycle Assessment, Framework for Life Cycle Assessment.

(06 Hrs)**Textbooks:**

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1.	An Introduction to Sustainable Development	Elliott, Jennifer	Routledge	4 th (2012)
2.	Product-Service System Design for Sustainability	Carlo Vezzoli, Cindy Kohtala and Amrit Srinivasan	Greenleaf Publishing	1 st (2014)

Reference Books:

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1.	Sustainable Engineering: Concepts, Design, and Case Studies	David Allen, David R. Shonnard	Prentice Hall	1 st (2012)
2.	Sustainable Development Report 2020: The Sustainable Development Goals and Covid-19-Includes the SDG Index and Dashboards	Jeffrey Sachs	Cambridge	1 st (2021)