S. No.	Course Code	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	Analyse 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	4th (2012)
2.	Product-Service System Design for Sustainability	Carlo Vezzoli, Cindy Kohtala and Amrit Srinivasan	Greenleaf Publishing	1st (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	1st (2012)
2.	Sustainable Development Report 2020: The Sustainable Development Goals and Covid-19-Includes the SDG Index and Dashboards	Jeffrey SachsJeffrey Sachs	Cambridge	1st (2021)