GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3142908
Semester – IV
Subject name: Sustainable Textile Production

Subject Name: Sustainable Textile Production

Type of course: Humanities and Social Science

Prerequisite: Basic knowledge of science and textile processes

Rationale: A quantitative assessment of sustainability in the textile manufacturing chain is a long-term strategy including economic, human (social) and environmental (material) resources in development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	Sustainable development (SD) as a goal in production, marketing and trade: Concept, Theory behind, Sustainability in public sector and in industry, Environmental management systems, Environmental labeling	6
2	The supply chain of textiles: Fibres, Yarn and Fabric production, Garment manufacturing, Chemical treatment, Consumption, use and care, Disposal, reuse and recycling scenarios, Energy	8
3	Life cycle assessment (LCA) and ecological key figures (EKF): Life cycle assessment (LCA) methodology, Eight case studies, Life cycle inventory (LCI), Life cycle assessment (LCA), Costs, Ecological key figures (EKF), Applied ecological key figures (EKF) in spinning and weaving, Discussion on ecological key figures (EKF) of textile products	12
4	Carbon Footprint of Textile and Clothing Products, Environmental Impacts of Apparel Production, Distribution, and Consumption, Eco-Parameters and Testing of Sustainable Textiles and Apparels, Sustainable Measures Taken by Industry Affiliates, Nonprofit Organizations and Governmental and Educational Institutions	6

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3142908
Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	**25**	**30**	**5**	**0**	**0**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Handbook of Sustainable Textile Production by Marion I Tobler-Rohr, Woodhead Publishing
2. Handbook of Sustainable Apparel Production Edited by Subramanian Senthilkannan Muthu, CRC Press

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Learn fundamental concepts related to interaction of industrial and environmental/ecological systems, sustainability challenges facing the current generation, and systems-based approaches required to create sustainable solutions for society	20
CO-2	Understand the concepts and apply to a systems-based, trans-disciplinary approach to sustainability, and identify problems in sustainability	20
CO-3	Formulate appropriate solutions based on scientific research, applied science, social and economic issues	10
CO-4	Understand the basic concepts of life cycle assessment (LCA) along with life cycle inventory (LCI) and Ecological key figures (EKF)	30
CO-5	Understand the concept of sustainability with reference to Apparel manufacturing	20

List of Open Source Software/learning website: https://nptel.ac.in, World Wide Web, Google search engine etc