SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Bachelor of Engineering

B E II Textile Technology: Semester – IV

Subject Name: Sustainable Textile Engineering **Subject Code: BTTT12404**

Type of course: Engineering Science

Prerequisite (if any): Basic knowledge of science and textile processes

List of Courses where this course will be prerequisite:

Rationale: (should also include Description of the relevance of this course in the Program) 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				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	0	3	60	25	15	00	00	100

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests CA2: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Content	Total Hrs

BSC: basic science course /ESC: Engineering Science Course /HSM: Humanities and management /PCC: Professional Core course /PEC: professional Elective course /OEC: Open Elective course/ MD: mandatory non-credit course

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**

Suggested Specification table with Marks (Theory):

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:

Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Handbook of Sustainable Textile Production	Marion I Tobler-Rohr	Woodhead Publishing ISBN 978-0-85709-136-9 (print) ISBN 978-0-85709-286-1 (online)	2011	1
2	Handbook of Sustainable Apparel Production	Edited by Subramanian Senthilkannan Muthu	CRC Press, ISBN 978-1-4822-9939-7 (eBook-PDF)	2015	1

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	20

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	sustainability	
CO-3	Formulate appropriate solutions based on scientific research, applied science, social and economic issues	20
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	10

Mapping with POs:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO-1	**1**	**1**	**2**	**2**	**3**	**2**	**3**	**2**	**1**	**2**	**3**	**2**	**1**	**3**	**2**
CO-2	**1**	**1**	**2**	**2**	**1**	**2**	**3**	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**1**
CO-3	**3**	**2**	**3**	**2**	**2**	**2**	**1**	**2**	**2**	**1**	**3**	**2**	**2**	**2**	**2**
CO-4	**1**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**2**	**1**	**3**	**2**
CO-5	**1**	**3**	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**1**
Rationale*															
	Contents of the course are selected in such a way that course														

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	outcomes are matching with the program outcomes by one or the other ways, with a level from 1 to 3 (1-Poor, 3-Strong)

Rationale*: Explaining why it is matching this particular program outcome

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

List of Open Source Software: Swayam portal etc.

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