

B.Tech Programme Template

1. Name of the Programme and Code	B. Tech (Textile and Fibre Engineering)
2. Degree (UG/PG)	UG
3. Minimum Duration of the Programme (Specify for FT and PT, if applicable)	4 Years
4. Maximum Duration of the Programme (Specify for FT and PT, if applicable)	FT
5. Capacity (Max. Student Strength) of the Programme	95
6. Number of Regular Faculty Members Involved as Teaching Faculty in the Programme	21
7. Minimum Credit Requirements for the Degree	143
8. Articulate the Program Learning Outcomes (PLO) <i>[For example see: Objectives vs. Outcomes and Student Outcomes]</i> PLO1. Ability to analyze, synthesize, and clearly communicate fundamentals and advanced concepts of textile and fibre engineering, integrating theory with practical applications across interdisciplinary contexts. PLO2. To demonstrate scientific temperament, uphold high standards of academic and professional integrity, and act with academic personal responsibility through ethical decision-making. PLO3. To identify and solve challenging, real-world problems in the field of textile and fibre engineering and allied disciplines by applying robust analytical skills and designing sustainable solutions that address societal and environmental issues	

9. Map PLOs with Institute Learning Outcomes (ILOs) of the Degree

[Indicate '1' for weak, '2' for good, and '3' for excellent relation. Leave the cell blank to indicate no relation]

	PLO1	PLO2	PLO3	...
ILO1	3	2	3	
ILO2	2	3	2	
ILO3	3	2	3	
ILO4	2	3	2	
...	...	...	...	...

10. Number of Programme Core Credits

47

11. Number of Programme Elective Credits

24

12. Number of Open Credits

9

13. Number of Project Core Credits

3

14. Details of Creative Expression and Ethical Reasoning (CEER) Component in the Programme [Only for UG]

Number of Credits Assigned	5
Courses Involved and Credits Accounted	1. Mechanics and Generative Design of Fabrics – (1) 2. Major Project I- (1) 3. Manufacturing for Product Innovation (1) 4. Textile Preparation and Dyeing lab (0.5) 5. Textile Finishing and Printing lab (0.5) 6. Engineering Visualization (1)

15. Details of Emerging Trends (ETT) Component in the Programme [Only for UG]

Number of Credits Assigned	5
Courses Involved and Credits Accounted	1. Mechanics and Generative Design of Fabrics (1) 2. Polymer to Fibre Engineering (1) 3. Fabric Manufacture II (1) 4. Yarn Manufacture II (1) 5. Technology of Textile Finishing (1)

16. Details of Environment and Sustainability (E&S) Component in the Programme [Only for UG]

Number of Credits Assigned	3.5
Courses Involved and Credits Accounted	1. Preparation and Coloration of Textiles -I (0.5) 2. Preparation and coloration of Textiles-II (1) 3. Technology of Textile Finishing (1) 4. Polymer to Fibre Engineering (0.5) 5. Yarn Manufacture II (0.5)

17. Details of Research/Technical Communication Component in the Programme [Only for PG]

Number of Credits Assigned	
	NA

18. Details of Professional Ethics Component in the Programme [Only for PG]

Number of Credits Assigned	
	NA

19. Details of External Connect Component in the Programme [Only for PG]			
Number of Credits Assigned		NA	
Courses Involved and Credits Accounted			
20. List of prescribed courses in all baskets (BS, GE, DC/PC, DE/PE, ...)			
Basic Sciences (BS)	General Engineering (GE)	Departmental/Programme Core (DC/PC)	Departmental/Programme Elective (DE/PE)
Biology for Engineers: Microbes in health and disease (2-0-0)	Manufacturing for Product Innovation (1-0-3)	Characterization of Textile Fibres (0-0-2)	High Performance and Specialty Fiber (3-0-0)
The Art and Science of Building Molecules and Materials (2-0-2)	Engineering Visualization (1-0-3)	Chemistry and physics of Polymer (3-0-0)	Functional & Smart Textiles (3-0-0)
Waves and Oscillations(2-1-0)	Introduction to Electrical Engineering (3-1-0)	Structure and Properties of Fibres (3-0-0)	Science & App. of Nanotechnology in Textiles (3-0-0)
Calculus (3-1-0)	Programming with Data Structures (3-0-2)	Polymer to Fibre Engineering (3-0-0)	Medical Textiles (3-0-0)
Linear Algebra and Ordinary Differential Equations (3-1-0)	Introduction to Probability and Statistics (3-1-0)	Polymer to Fibre Engineering Lab (0-0-2)	Advanced Material Characterization (3-0-0)
Chemistry laboratory (0-0-4)	Computer Literacy (0-0-2)	Yarn Manufacture-I (3-0-0)	Technical Textiles (3-0-0)
Physics laboratory (0-0-4)	Introduction to Programming (2-0-2)	Yarn Manufacture Laboratory-I (0-0-2)	Heat and Mass Transport in Fibrous Materials (3-0-0)
Student Choice B.S (3)	Student Choice G.E (4)	Yarn Manufacture-II (3-0-0)	Technology of Textile Coating and Lamination (3-0-0)
Experimental Biology for Engineers (0-0-2)		Yarn Manufacture Laboratory-II (0-0-2)	Special Module in Fibre Science (1-0-0)
		Yarn Structure and	Special Module in Textile

		characterization (3-0-0)	Chemical Processing (1-0-0)
		Fabric Manufacture I (3-0-0)	Design of Functional Clothing (3-0-0)
		Fabric Manufacture II (3-0-0)	Colour Science(3-0-0)
		Fabric Manufacture I Lab (0-0-2)	Nonwoven Processes and Products (3-0-0)
		Fabric Manufacture II lab (0-0-2)	Science of Clothing Comfort (3-0-0)
		Mechanics and Generative Design of Fabrics (3-0-0)	Textile auxiliaries (3-0-0)
		Preparation and Coloration of Textiles -I (3-0-0)	Wearable e-textiles (3-0-0)
		Preparation and coloration of Textiles-II (3-0-0)	Quality and Process Control in Textiles (3-0-0)
		Technology of Textile Finishing (3-0-0)	Production and Operations Management in Textile Industry (3-0-0)
		Textile Preparation and Dyeing lab (0-0-2)	Supply Chain Design Analytics and Management (3-0-0)
		Textile Finishing and Printing lab (0-0-2)	AI and ML for Textile industry (3-0-0)
		Major Project I (0-0-8)	Modelling and Simulation in Fibrous Assemblies (3-0-0)
		Fundamentals of Textile and Fibre Engineering (4-0-0)	Principles of Characterization of Functional and Technical Textiles (3-0-0)
			Design Thinking and Product Development (3-0-0)
			Entrepreneurship and financial management (3-0-0)
			Life Cycle Assessment of Textiles (3-0-0)
			Advanced Knitting Technology (3-0-0)
			Special Module in Textile Engineering (1-0-0)
			Special Module in Yarn Manufacture (1-0-0)
			Special Module in Fabric Manufacture (1-0-0)
			Special Module in Textile Business Management (1-0-0)
			Special Module in Sustainability (1-0-0)

21. Nominal Semester-wise Academic Plan [An example is provided below]																
Sem	Courses (Number, abbreviated title, L-T-P, credits)										Lecture	Contact h/week				Credits
												L	T	P	F	
I	BS-Calculus (3-1-0) (4)	BS-The Art and Science of Building Molecules and Materials (2-1-0) (3)	BS-CMP (0-0-4) (2)	GE Manufacturing for Product Innovation (0.5-0-3)(2)	GE-Computer Literacy (0-0-2) (1)	GE - Introduction to Programming Part I (1-0-1) (1.5)	GE - Engineering Visualization (0.5-0-3) (2)				4	9	3	9	21	15.5
II	BS-Linear Algebra and Ordinary Differential Equations (3-1-0) (4)	BS-PYP (0-0-4) (2)	BS - Waves and Oscillations (2-1-0) (3)	GE - Introduction to Programming Part II (1-0-1) (1.5)	GE - Introduction to Electrical Engineering (3-1-0) (4)	Structure and Properties of Fibres (3-0-2) (4)					4	11	2	6	19	18.5
III	BS Student choice (3)	G.E - Programming with Data Structures (3-0-2) (4)	GE - Introduction to Probability and Statistics GE (3-1-0) (4)	HUL (3-0-0) (3)	Yarn Manufacturing -I (3-0-0) (3)	Yarn Manufacturing Lab-I (0-0-2) (1)	Chemistry and Physics of Polymers (3-0-0) (3)				-	-	-	-	-	21

I	BS - Biology for Engineers: Microbes in health and disease (2-0-0) (2)	BS- Experimental Biology for Engineers (0-0-2)(1)	GE Student Choice (4)	HUL (3-0-0) (3)	Yarn Manufacture -II (3-0-0) (3)	Fabric Manufacture -I (3-0-0) (3)	Yarn Manufacture Lab-II (0-0-2) (1)	Fabric Manufacture Lab-I (0-0-2) (1)	Preparation and Coloration of Textiles -I (3-0-0) (3)	Textile Preparation and Dyeing lab (0-0-2) (1)	-	-	-	-	-	22
V	OC I (3-0-0) (3)	HUL (3-0-0) (3)	Fabric Manufacture -II (3-0-0) (3)	Fabric Manufacture Lab-II (0-0-2) (1)	Preparation and Coloration of Textiles -II (3-0-0) (3)	Technology of Textile Finishing (3-0-0) (3)	Textile Finishing and Printing lab (0-0-2) (1)	Polymer to Fibre Engineering (3-0-0) (3)	Polymer to Fibre Engineering Lab (0-0-2) (1)		6	18	0	8	26	21
VI	Mechanics and Generative Design of Fabrics (3-0-0) (3)	Yarn Structure and characterization (3-0-0) (3)	DE I (3-0-0) (3)	DE II (3-0-0) (3)	DE III (3-0-0) (3)	BTP -I (0-0-6) (3)					6	18	0	8	26	18
VII	DE IV (3-0-0) (3)	DE V (3-0-0) (3)	DE VI (3-0-0) (3)	DE VII (3-0-0) (3)	HUL (3-0-0) (3)						5	15	0	0	15	15
VIII	OC II	OC III (3-0-0)	HUL	DE VIII							4	12	0	0	12	12

I	(3-0-0)	(0)	(3-0-0)	(3-0-0)													
I	(3)	(3)	(3)	(3)													
TOTAL														143			
22. Average Contact Hours per Faculty <i>per Week</i> , for this Programme											3.54						
23. Average Credit Students per Faculty per Semester, for this Programme											171.91						

24. If the program is a revision of an existing program, please list the major changes made.	Contents of Design and Engineering of Textile Materials is enhanced considering current and future requirements of the field. New courses are introduced based on advanced concepts in the field. Courses are prepared giving emphasis to Emerging Technologies, Sustainability, Creative Expression, Entrepreneurship and Professional Ethics. Accordingly, degree name is changed to reflect the improvements made.
25. Please elaborate on,	
a) how flexibility for the students has increased?	1. Total credit requirement reduced to 143 from 148. 2. Core courses reduced from 52 to 47 3. Program elective courses increased from 16 to 24. 4. Expanded knowledge spectrum.
b) how engagement and interaction with the student have increased?	Introduction of new courses considering emerging trends. Apart from BTP part-1, 12 out of 47 core credits are laboratory based practical classes.

c) how hands-on learning is emphasized in the program?	Increased practical contact hours in core courses, compared to lecture hours, with 12 out of 47 credit hours dedicated to hands-on experience.
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