



**BGMEA UNIVERSITY OF FASHION & TECHNOLOGY
(BUFT)**

(Excellence through Education)

Course Code: TEX2101	Course Title: Textile Raw materials-II
Credit Hours: 3	202 Batch- TRM-II-Session:2021, Fall - 212

Faculty: Prof. Dr. Engr. Abu Bakr Siddique

Dean, Faculty of Textile Engineering, BUFT
BGMEA University of Fashion & Technology
Nishatnagar, Turag, Dhaka-1230 & Bangladesh.
+88- 09606950986-87, +88- 09606808080
www.buft.edu.bd
E-mail: abubakr@buft.edu.bd
Cell: +8801840193583

Course Description:

Textile Raw Materials-II contains Manmade Fibers and some polymeric Materials which are widely used in textile process industries. Textile fibers have been developed over many hundred years and the demand of manmade fibers is constantly increasing due to economical, safety and technical reason. The course conducted with manmade fibers manufacturing, Structure of Manmade Fibers, Principles of different spinning systems, Mechanism of different spinning Processes, Finishing stages of Manmade fiber manufacturing, Structural changes during fiber forming, Physical/Thermal/Chemical properties of manmade fibers, Technologies of formation of regenerated fibers, Technologies of formation of high functional fibers, Latest development in manmade fiber production and their economic and social aspects, Global trends and consumption of manmade fibers.

Course objectives:

Man-made fibers are filament, spun and manufactured into a huge number of consumer and industrial products, including garments such as shirts, scarves, and hosiery; home furnishings such as upholstery, carpets, and drapes; and industrial parts such as tire cord, flame-proof linings, fiber composite, filter materials, building materials, automobiles, air buses and drive belts.

Reference Books:

- 1) **Handbook of Textile Fibers, by J. Gordon Cook**
- 2) **Apparel Fibers by Dr. Nazirul Islam**
- 3) **Introduction to Textile Engineering, by Dr. Eng. Abu Bakr Siddique & Dr. Engr. Hosne Ara Begum**
- 4) **Man-Made Fibre, by R.W. Moncrieff**

Marks Distribution

a. Class Test/Assignment	10 marks
b. Presentation	10 marks
c. Mid-Term	30 marks
d. Final Exam	40 marks
e. Attendance	10 marks

Classes	Topic	Details
Lecture-1	Introduction to manmade fibers	Definition, Classification and uses of manmade fibers Manmade fiber formation techniques from natural, Synthetic polymers or other fiber forming materials.
Lecture-2	Structure of Manmade Fibers	Physical and chemical structure of Textile Fibers, Flow chart of MMF fiber production.
Lecture-3	Principles of different spinning systems	Wet -, Dry – and Melt Spinning. Some others spinning.
Lecture-4	Mechanism of different spinning Processes.	Construction & mechanism of spinning Machinery. Types and functions of spinneret.
Lecture-5	Finishing stages of Manmade fiber manufacturing	Drawing, Stretching and Orientation. Texturing, Staple fiber manufacturing. Mono-filament, Multi—filament.
Lecture-6	Structural changes during fiber forming	Morphology: Profile of fibers, Amorphous- and crystalline/semi-crystalline, lamellar crystals in a fibrous polymer. Physical changes: Elasticity, Plasticity, Solubility, Swelling, Hydration, Capillarity
Lecture-7	Thermal properties of manmade fibers	Thermal transition in synthetic fibers, glass transition temperature (T _g) and crystalline (T _c) melting point (T _m) and degradation temperature (T _d). Importance of T _g , T _c , T _m , &T _d .
Lecture-8	Chemical properties of manmade fibers	Polarity, Dipole, Induction, Dispersion (van dar waals

		forces). Reactions of textile polymers: (Covalent bond, Ionic bond, Hydrogen bond, salt bonding, Coordinate bond).
Lecture-9	Technologies of formation of regenerated fibers and different types of cellulose derivatives	Composition, Structure, Classification, manufacturing process, properties and end users of : Viscose (rayons), Lyocell, Cupro, Acetates.
Lecture-10	Different types of regenerated protein and Synthesis of natural plants	Casein Protein, Rubber, alginate.
Lecture-11	Technologies of formation of synthetic fibers	Polymer Synthesis and fiber formation
Lecture-12	Polyolifins	Composition, Polymerization, manufacturing, structure, classification, process, properties, test and end uses
Lecture-13		Review Class & Class Test-1
Lecture-14	Polyesters	Composition, Polymerization, manufacturing, structure, classification, process, properties, test and end uses
Lecture-15	Polyamides	Composition, Polymerization, manufacturing, structure, classification, process, properties, test and end uses
Lecture-16	Polyacrylics, PVA, PVC	Composition, Polymerization, manufacturing, structure, classification, process, properties, test and end uses
Lecture-17	Elastomeric fibers	Composition, Polymerization, manufacturing, structure, classification, process, properties, test and end uses
Lecture-18	Technologies of formation of high functional fibers	Technological Background, History, General properties and usefulness of high performance fibers (HPF)
Lecture-19	Comparative statements of HPF	Properties, uses, advantages
Lecture-20	Carbon	Composition, structure, classification, manufacturing process, properties, test and end uses
Lecture-21	Metallic, Ceramic & Glass Fibers	Composition, Structure, Classification, manufacturing process, properties, test and end uses
Lecture-22		Review Class & Class Test-2

Lecture-23	Aramide	Composition, Structure, Classification, manufacturing process, properties, test and end uses
Lecture-24	Polyethylene Derivates (HDPE/LDPE)	Composition, Structure, Classification, manufacturing process, properties, test and end uses
Lecture-25	Polypropylene Derivates (HDPP/LDPP)	Composition, Structure, Classification, manufacturing process, properties, test and end uses
Lecture-26	Special fibers	Bi/Multicomponent fibers, Anti-microbial/Anti-fungal/Anti-bacterial Fibres Renewable manmade fibers for different uses.
Lecture-27	Production & consumption trends of manmade fibers	Historical growth of manmade fibers up to now Demand-Supply of manmade Fibers
Lecture-28	Latest development of manmade fibers	Innovative, intelligence, nano-tubes and smart fibers
Lecture-29	Global economic Impact of Manmade Fiber	Socio-economic aspects of Manmade Fiber in Bangladesh and Global. Scope of manmade fiber manufacturing in Bangladesh.
Lecture-30		Review Class & Class Test-3

Teaching Method

- ✓ Lecture on the contents
- ✓ Multimedia visualization presentation
- ✓ Group based projects
- ✓ Class presentation
- ✓ Report submission

Ethics and plagiarism

For violating the academic rules and regulations there is a provision of serious punishment. There is also a provision of punishment for the “Plagiarism”. If "plagiarism" is detected during the presentation/assignment submission or project of someone, she/he will be suspended for that presentation/assignment or project.

Class attendance & Academic sincerity

Attendance and general participation in class discussions are necessary for having deep knowledge about the subject. If any students miss the class without any legal reason, there will be no make ups for the topics. Students should be aware that frequent absences will affect their grades. Students must attend more than 75% of the classes to be eligible to sit for the final exam. Students having attendance less than 65% are not eligible to sit for the final exam by any means. In some circumstances, the student may not be allowed to proceed to the next level. All assignments must be submitted on due date. No late assignment will be accepted, consideration may be allowed on the case of circumstances.

Exam policy

The format of the quiz and surprise test will be based on multiple choice and short questions. Students are thus will be provided during reviews. Questions will be mostly conceptual with some memorization of advised to prepare for any type of questions. Exams will be short, essay and MCQ type questions. Please be informed that usually, there is no scope of make-up midterm examination. But if any student can not appear in the midterm exam due to unavoidable circumstances, she/he should submit a written application to the proper authority through her/his guardian along with relevant documents. If the case is accepted and the application is approved by the proper authority, only then special midterm exam can be arranged. Keeping of cellular phone during midterm and final exam is strictly prohibited. If any of the class tests or midterm exams cannot be held on the due date, the exam will be rescheduled for the next available class.

Exam notice

Exams/Quiz test except the surprise tests will be announced a week earlier. Reminders/Changes will be announced in class or via email. If a student missed the class, it is her/his responsibility to consult with the Faculty. Please be informed that no excuse will be granted simply because someone was absent at previous class and did not know the exam notice.

Student Grading System

Numerical Grade	Letter Grade	Grade Point
80% and above	A+ (A Plus)	4.0

75% to less than 80%	A (A Regular)	3.75
70% to less than 75%	A – (A Minus)	3.5
65% to less than 70%	B+ (B Plus)	3.25
60% to less than 65%	B (B Regular)	3.00
55% to less than 60%	B – (B Minus)	2.75
50% to less than 55%	C+ (C Plus)	2.5
45% to less than 50%	C (C Regular)	2.25
40% to less than 45%	D	2.0
Less than 40%	F	0.0

Note to the Students

- ✓ Course teacher reserves the right to make necessary changes on the course content depending on the progress of the class.
- ✓ Students are highly appreciated to raise any question regarding any topics related to the course content.
- ✓ Student must be well dressed and highly disciplined in the class.
- ✓ Assignments must be submitted on the submission date.
- ✓ There is no alternative for absent in the examinations. Existing rules in the University must be followed.