

PTFE 3720 Introduction to the Polymer/Fiber Enterprise

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Room 4510 Room 4504

Dr. Realff's Office Hours: Wednesdays 10:30am – 11:30am

TAs: Stephani Gulbrandsen, stephani@gatech.edu, Office Hours: Tuesdays & Thursdays 2-3:30pm

Tim Pruyn, tpruyn3@gatech.edu, Office Hours: Mondays 10am-12noon & Thursdays 11-noon.

CATALOG DESCRIPTION

This course approaches the manufacture of engineered fibrous and polymer structures from a manager's viewpoint. The student will receive a working knowledge and understanding of the various processes in manufacturing polymers, fibers and fibrous structures from yarns to fiber optics for telecommunications.

TOPICS TO BE COVERED

- Overview of the Polymer, Fiber, and Textile Industry
- Overview of the Carpet and Nonwovens Industry
- Polymers and Polymer Processing
- Fiber Classification, Properties, and Structure
- Natural and Manmade Fibers – types, processing, and properties
- Staple Yarn Spinning, Weaving, Knitting, Tufting, and Nonwovens
- Preparation Processes – Scouring, Bleaching & Mercerization
- Coloration Processes – Dyeing and Printing
- Stabilization and Finishing Processes
- High Performance Fibers, Industrial Textiles, and Composites

GRADING OF COURSE

Quiz 1, Quiz 2 and Final Exam	30% each (drop the lowest)
Participation Grade (attendance)	10%
Research Paper 1	15%
Landmark/Research Paper 2	15%

Final is set for Thursday, Dec 16, 8:00 am (if you have a conflict, please let me know as soon as you can)

Day	Date	Topic	Comments
Tuesday	24-Aug	Introduction to Polymers	Realff
Thursday	26-Aug	Polymers	Realff
Tuesday	31-Aug	Natural Fibers	Realff
Thursday	2-Sep	Natural Fibers	Cook (Realff in Nebraska)
Tuesday	7-Sep	Synthetic Fibers	Realff
Thursday	9-Sep	Synthetic Fibers	Realff
Tuesday	14-Sep	Yarn Manufacturing	Realff
Thursday	16-Sep	Yarn Mfg –Paper 1 due	Realff
Tuesday	21-Sep	Yarn Manufacturing	Realff
Thursday	23-Sep	Weaving	Realff
Tuesday	28-Sep	Quiz 1	Realff in Brussels
Thursday	30-Sep	Weaving	Realff in Brussels
Tuesday	5-Oct	Weaving	Realff
Thursday	7-Oct	Weaving	Realff
Tuesday	12-Oct	Carpet Manufacturing	Realff
Thursday	14-Oct	Carpet Manufacturing	Realff

Topical Outline of Course

Overview of the Polymer, Fiber, and Textile Industry Complex

Overview of the Carpet and Nonwovens Industry

Polymers and Polymer Processing

Fiber Classification, Properties, and Structure

Natural and Manmade Fibers – types, processing, and properties

Staple Yarn Spinning, Weaving, Knitting, Tufting, and Nonwovens

Preparation Processes – Scouring, Bleaching & Mercerization

Coloration Processes – Dyeing and Printing

Stabilization and Finishing Processes

High Performance Fibers, Industrial Textiles and Composites