

## **POLYMER AND FIBER CHEMISTRY**

The School of Materials Science and Engineering offers undergraduate degrees in Ceramic and Materials Engineering, and Polymer and Fiber Chemistry.

The Bachelor of Science degree in Polymer and Fiber Chemistry is based on a foundation in physical and mathematical sciences. From this base, students are taught, using classroom instruction, laboratory courses, and individual research, to apply their scientific knowledge to the solution of problems in polymeric and fiber-based materials for diverse applications ranging from biomedical and sports to construction and communication. The degree in Polymer and Fiber Chemistry also prepares students for graduate studies in a number of science and engineering disciplines.

Students study the production, structure, and properties of natural and man-made fibers; the processes for converting these fibers into textile structures; the science of coloring agents and finishes to improve the desirability and serviceability of the product; and the methods for evaluating the performance of textile materials. Graduates in Polymer and Fiber Chemistry hold jobs in research, development, technical service, quality control, and sales. They create new products and processes and solve problems. Their jobs utilize computers, automation, and product quality and are concerned with plant design, environmental control, and consumer safety.

## **POLYMER AND FIBER CHEMISTRY**

### **Bachelor of Science**

#### **Freshman Year**

##### **First Semester**

- 4 - CH 101 General Chemistry
  - 3 - ENGL 103 Accelerated Composition
  - 4 - MTHSC 106 Calculus of One Variable I
  - 3 - TEXT 175 Intro. to Textile Manufacturing
  - 3 - History Requirement<sup>1</sup>
- 17

##### **Second Semester**

- 4 - CH 102 General Chemistry
  - 4 - MTHSC 108 Calculus of One Variable II
  - 3 - PHYS 122 Physics with Calculus I
  - 3 - Arts and Humanities (Non-Lit.) Requirement<sup>2</sup>
- 14

#### **Sophomore Year**

##### **First Semester**

- 3 - CH 223 Organic Chemistry
  - 1 - CH 227 Organic Chemistry Lab.
  - 4 - MTHSC 206 Calculus of Several Variables
  - 3 - PHYS 221 Physics with Calculus II
  - 1 - PHYS 223 Physics Lab. II
  - 3 - Arts and Humanities (Literature) Requirement<sup>3</sup>
- 15

**Second Semester**

- 3 - CH 224 Organic Chemistry
  - 1 - CH 228 Organic Chemistry Lab.
  - 3 - ECON 200 Economics Concepts
  - 3 - EN SP 200 Intro. to Env. Science *or*
    - 3 - HIST 122 History, Tech., and Science *or*
    - 3 - HIST 124 Environmental History Survey
  - 1 - MS&E 251 Materials Science Portfolio I
  - 4 - MTHSC 208 Intro. to Ordinary Diff. Equations
- 15

**Junior Year****First Semester**

- 3 - CH 331 Physical Chemistry
  - 3 - ENGL 314 Technical Writing
  - 3 - PFC 415 Intro. to Polymer Science and Engr.
  - 1 - PFC 417 Polymer and Fiber Lab.
  - 4 - TEXT 201 Yarn Structures and Formation
- 14

**Second Semester**

- 3 - CH 332 Physical Chemistry
  - 3 - COMM 250 Public Speaking
  - 3 - PFC 416 Chemical Preparation of Textiles
  - 4 - TEXT 202 Fabric Structure, Design, and Analysis
  - 3 - TEXT 324 Textile Statistics
- 16

**Senior Year****First Semester**

- 3 - PFC 457 Dyeing and Finishing I
  - 1 - PFC 459 Dyeing and Finishing I Lab.
  - 3 - TEXT 421 Fiber Science
  - 5 - Approved Requirement<sup>4</sup>
  - 3 - Departmental Requirement<sup>4</sup>
- 15

**Second Semester**

- 1 - MS&E 451 Materials Science and Engineering Portfolio II
  - 3 - MS&E 491 Undergraduate Research
  - 3 - PFC 458 Dyeing and Finishing II
  - 1 - PFC 460 Dyeing and Finishing II Lab.
  - 3 - TEXT 422 Properties of Textile Structures
  - 3 - Departmental Requirement<sup>4</sup>
- 14

120 Total Semester Hours

<sup>1</sup>HIST 172 or 173

<sup>2</sup> See General Education Requirements. This course must also satisfy the Cross-Cultural Awareness Requirement.

<sup>3</sup> See General Education Requirements. Select any 200-level ENGL course from Arts and Humanities (Literature) Requirement.

<sup>4</sup> See advisor.