Polymer Science (18POLYM)

Description

The minor in Polymer Science is intended to allow students to develop a fundamental understanding of polymers and macromolecules, which dominate both our natural and synthetic worlds. The chemical, physical and structural aspects of polymers and their application in a wide range of materials are examined in a series of courses designed to introduce the basic concept of macromolecules to students.

The Textile Engineering, Chemistry, and Science Department (TECS) offers a minor in Polymer Science to majors in all fields (provided the prerequisites are met). The program is designed to expose students to the technical and scholarly disciplines of polymer science, including their syntheses, structures, characterization, and properties. Students are given the opportunity to learn how polymers are applied in industrial settings and how they function in nature.

Requirements

- Students take a minimum of 15 hours from a select group of courses focusing on Polymer Science consisting of 3 required courses (9 hours) as well as 2 advised elective courses (6 hours).
- Students must achieve a grade of ‘C’ or better in all courses to be used toward the Minor
- Students need to pay special attention to course prerequisites.

Comments and Restrictions

1. Required prerequisites courses in mathematics consist of MA 131 and 231, or MA 141 and 241.
2. Required prerequisites courses in physics consist of PY 211 and PY 212 or PY 205 and PY 208.
3. Required prerequisites courses in chemistry of CH 220 or higher.

Required Courses (9 credit hours)

- PCC 106 Polymer Chemistry and Environmental Sustainability (3 cr); Prerequisite: CH 101; Corequisite: CH 221 OR TE 200 Introduction to Polymer Science and Engineering (3 cr); Prerequisite: CH 101

PLUS

- PCC 461 Chemistry of Polymeric Materials (3 cr); Prerequisite: CH 220 and TE 200 or CH 223
- PCC 462 Characterization and Physical Properties of Polymers (3 cr); Prerequisite: PCC 461

Elective Courses (6 credit hours)

The advised electives are to be selected in consultation with advisor for the Minor from the following list of approved courses.

Polymer and Color Chemistry

- PCC 402 Introduction to the Theory and Practice of Fiber Formation
- PCC 466 Polymer Chemistry Laboratory
- PCC 471 The Chemistry of Synthetic and Natural Bipolymers

Chemical Engineering

- CHE 455 Polymer Technology and Engineering
- CHE 461 Polymer Sciences and Technology
- CHE 465 Diffusion in Polymers
- CHE 467 Polymer Rheology
- CHE 469 Polymers, Surfactants, and Colloidal Materials

**Textile Engineering**

- TE 463 Polymer Engineering
- TE 466 Polymeric Biomaterials Engineering

**Materials Science and Engineering**

- MSE 380 Microstructure of Organic Materials
- MSE 455 Polymer Technology and Engineering

Courses from outside of this list need to be approved in advance with the advisor for the Minor. Prerequisites for the elective courses **must** be met.

**Admissions and Certification of Minor**

- **Admissions**
  Request for information and additional details about the minor and its prerequisites should be directed to the address listed below.

- **Certification**
  Once pursuing the minor, students should contact the director for advice about course selection and certification. The minor must be completed no later than the semester in which the student expects to graduate from his or her degree program. Paperwork for certification can be found with 3307 College of Textiles and should be completed no later than during the registration period for the student’s final semester at NC State.

**Contact Person**

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*SIS Code: 18POLYM*