

Polymer Science (Minor)

To see more about what you will learn in this program, visit the Learning Outcomes website (<https://apps.oirp.ncsu.edu/pgas/>)!

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.

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

Russell Gorga

College of Textiles 3267

919-515-6553

regorga@ncsu.edu

SIS Code: 18POLYM

Plan 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.

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Required Prerequisites | | |
| MA 131 & MA 231 or MA 141/241 | Calculus for Life and Management Sciences A and Calculus for Life and Management Sciences B Calculus I | 4-6 |
| PY 211 & PY 212 | College Physics I and College Physics II | 4 |

| | | |
|--------|--|---|
| | or PY 205/208 Physics for Engineers and Scientists I | |
| CH 220 | Introductory Organic Chemistry (or higher) | 3 |

| Code | Title | Hours |
|--------------------------------|--|-------|
| Required Courses | | |
| PCC 106 | Polymer Chemistry and Environmental Sustainability | 3 |
| PCC 461 | Chemistry of Polymeric Materials | 3 |
| PCC 462 | Characterization and Physical Properties of Polymers | 3 |
| Elective Courses | | |
| Advised Electives ¹ | | 6 |
| Total Hours | | 15 |

¹ The advised electives are to be selected in consultation with advisor for the Minor from the following list of approved courses.

Elective Courses

| Code | Title | Hours |
|--|--|-------|
| Polymer and Color Chemistry | | |
| PCC 404 | Introduction to the Theory and Practice of Fiber Formation | 3 |
| PCC 466 | Polymer Chemistry Laboratory | 3 |
| PCC 471 | The Chemistry of Synthetic and Natural Bipolymers | 3 |
| Chemical Engineering | | |
| CHE 461 | Polymer Sciences and Technology | 3 |
| CHE 465 | Colloidal and Nanoscale Engineering | 3 |
| CHE 467 | Polymer Rheology | 3 |
| Textile Engineering | | |
| TE 463 | Polymer Engineering | 3 |
| TE 466 | Polymeric Biomaterials Engineering | 3 |
| Materials Science and Engineering | | |
| MSE 380 | Microstructure of Organic Materials | 3 |
| MSE 455 | Polymer Technology and Engineering | 3 |

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.