

# POLYMER SCIENCE (PLYS)

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## **PLYS 203 Introduction to Plastics (3 Units)**

Prerequisites: CHEM 101 and PSPE 100. This associates-level course introduces students to plastic technologies, processing, and practical components of plastics. Students will be able to understand what the different plastics are, how they are used, how they are recycled, what physical properties they exhibit, and how they are processed into goods and products.

## **PLYS 204 Introduction to Elastomers (3 Units)**

Prerequisites: CHEM 101 and PSPE 100. The course introduces students to what elastomers are, several common classes of elastomers, key concepts for describing elastomers and their behavior, compounding, and curing. Students are instructed in performance of several common workshop operations with elastomers and testing of elastomer properties.

## **PLYS 265 Organic Polymer Chemistry Laboratory (2 Units)**

Prerequisites: CHEM 153 and CHEM 152. Pre/Corequisite: CHEM 263. This undergraduate course provides an introduction to the lab techniques essential to organic chemistry through the context of polymer science. Techniques including extraction, chromatography, crystallization, and structure analysis are covered. (Formerly 9871:265)

## **PLYS 313 Physics of Living Systems (3 Units)**

Introduction to the interdisciplinary study of biological systems through the lens of the physical sciences. Learn how discovery-driven research between biology and physics leads to biomimetic advances and applications. (Formerly 9871:313)

## **PLYS 340 Polymer Characterization Fundamentals (3 Units)**

Prerequisites: PSPE 201 and PLYE 330. Pre/Corequisite: PLYS 404. This undergraduate course provides an understanding of the most common methods of characterization of polymer molecular structure, solid morphology, and physical properties. (Formerly 9871:340)

## **PLYS 350 Sustainable Polymers (3 Units)**

Pre/Corequisite: CHEM 263. This undergraduate course introduces students to sustainable plastic technologies, challenges, and the principals of the circular economy. Students will be able to understand the how different kinds of plastics are recovered, sorted, and recycled (or not). Topics covered include polymer recycling, composting, bio-based plastics, and life cycle analysis. (Formerly 9871:350)

**Gen Ed:** Complex Issues Facing Society

## **PLYS 401 Introduction to Elastomers (3 Units)**

Prerequisites: CHEM 314 (or equivalent) or permission. An introduction to the science and technology of elastomeric materials and gels, including hydrogels. Lecture and laboratory. (Formerly 9871:401)

## **PLYS 402 Introduction to Plastics (3 Units)**

Prerequisite: CHEM 314 (or equivalent) or permission. An introduction to the science and technology of plastic materials. Lecture and laboratory. (Formerly 9871:402)

## **PLYS 403 Polymer Chemistry (3 Units)**

Prerequisite: CHEM 263 or permission. This undergraduate course provides the fundamental bases for understanding and comprehending the basic principles associated with the synthesis of polymers using a number of traditional and contemporary polymerization techniques with an emphasis on the mechanisms, kinetics, stereochemistry and resulting properties of the polymers. Students are expected to have a strong foundation in mathematics, physics and chemistry. (Formerly 9871:403)

## **PLYS 404 Polymer Physics (3 Units)**

Prerequisites: MATH 222 and PHYS 291. Advanced overview of polymer physics including scaling theories, chain dynamics, rubber elasticity, glassy polymers and crystallization. (Formerly 9871:404)

## **PLYS 405 Polymer Science Laboratory (3 Units)**

Prerequisites: CHEE 408 or PSPE 301 or PLYS 403 or permission. Laboratory course with experiments on the synthesis and characterization of polymers. (Formerly 9871:405)

## **PLYS 460 Polymeric Biomaterials (3 Units)**

Prerequisites: PLYS 403 and junior or greater standing. Pre/Corequisites: PLYS 340 and PLYS 404. This course will teach students the fundamentals of polymeric biomaterials. The course will cover the synthesis, characterization, processing and applications of polymeric biomaterials in medicine. (Formerly 9871:460)

## **PLYS 497 Honors Project in Polymer Science (1-3 Units)**

Prerequisites: Sophomore, junior, or senior standing in Honors College and permission of honors preceptor in the home department. Independent research leading to completion of honors thesis under guidance of project adviser. May be repeated for a total of 10 credits. (Formerly 9871:497)

## **PLYS 499 Research Problems in Polymer Science (1-9 Units)**

Prerequisite: Permission. Faculty-supervised undergraduate research problems in polymer science, culminating in a written report. (Formerly 9871:499)