INTERDISCIPLINARY - POLYMER SCIENCE AND POLYMER ENGINEERING (9821)

**9821:201 Introduction to Polymer Science (3 Credits)**
Prerequisites: 3150:151 and 3450:221. Introduction to the field of polymer science including molecular weight distributions, polymerization, chain statistics, polymer mixtures, rubber elasticity, polymer glasses, semi-crystalline polymers and viscoelasticity.

**9821:202 Introduction to Polymer Engineering (3 Credits)**
Prerequisites: 3450:222 and 3650:291. Introduction to the field of polymer engineering including classification of polymer materials, mechanical properties, fundamentals of polymer melt flow, polymer processing operations and compounding.

**9821:281 Polymer Science for Engineers (2 Credits)**
Prerequisites: 3150:151 and 3150:152. Chemical bonds and structure of organic molecules, polymer chain structure, amorphous and crystalline morphology and structural characterization, polymerization and copolymerization, experimental demonstrations, typical solid-state and flow properties.

**9821:301 Polymer Materials Science and Engineering (3 Credits)**
Corequisites: 3150:313 or 3650:340 or 4600:300 or permission. Materials science and engineering of polymers. Topics covered are the phase behavior and morphology of polymer solutions and blends, glassy polymers, polymer crystallization, materials characterization and multi-component polymer materials.

**9821:310 Impacts of Polymers on Modern Life (3 Credits)**
Prerequisite: High school chemistry of equivalent. Qualitative introduction to plastics and polymers, intended for non-science majors. Course explores the history and use of polymers in commercial products including food, cosmetics, and medicine. The course will also explore the socioeconomic trade-offs in the use of polymers, where quality of life, food safety, lifesaving technologies are weighed against environmental and health impacts.

*Gen Ed: Tier 3 - Complex Systems*

**9821:381 Polymer Morphology for Engineers (3 Credits)**
Prerequisites: 9821:281, 3150:151, 3650:292. Fundamental understanding of solid structure, crystallography and morphology, processed polymers, co-polymers and their blends.