

POLYMER SCIENCE AND POLYMER ENGINEERING (PSPE)

PSPE 100 Introduction to Polymers (3 Units)

Polymers are ubiquitous in modern society. They are in everything from everyday products (tires, paint, and milk jugs) to specialty items (bullet proof vests, lithium batteries, and graphite shaft golf clubs) to the human body (DNA and proteins). This undergraduate course introduces students to unique properties of polymers starting from their early history and discovery to modern day efforts in advanced materials, recycling and sustainability. (Formerly 9821:100)

PSPE 201 Introduction to Polymer Science (3 Units)

Prerequisites: CHEM 151 and MATH 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. (Formerly 9821:201)

PSPE 202 Introduction to Polymer Engineering (3 Units)

Prerequisites: MATH 222 and PHYS 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. (Formerly 9821:202)

PSPE 281 Polymer Science for Engineers (2 Units)

Prerequisites: CHEM 151 and CHEM 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. (Formerly 9821:281)

PSPE 301 Polymer Materials Science and Engineering (3 Units)

Corequisites: CHEM 313 or PHYS 340 or MECE 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. (Formerly 9821:301)

PSPE 310 Impacts of Polymers on Modern Life (3 Units)

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. (Formerly 9821:310)

Gen Ed: Complex Issues Facing Society

PSPE 381 Polymer Morphology for Engineers (3 Units)

Prerequisites: PSPE 281, CHEM 151, and PHYS 292. Fundamental understanding of solid structure, crystallography and morphology, processed polymers, co-polymers and their blends. (Formerly 9821:381)

PSPE 411 Special Topics in Polymer Science and Polymer Engineering (3 Units)

Prerequisite: Permission of instructor. Special topics in polymer science and polymer engineering is an elective course focused on advancing students' knowledge in specialized topics in polymers. (Formerly 9821:411)