MECH POLY ENGINR (4700)

4700:281. 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.

4700:321. Polymer Fluid Mechanics. (3 Credits)
Prerequisite: 4600:310 or equivalent. Rheological properties and flow characteristics of polymer fluid systems; non-Newtonian viscosity, viscoelasticty.

4700:381. Polymer Morphology for Engineers. (3 Credits)
Prerequisites: 3150:151, 3650:292, 4600:380 or permission. Fundamental understanding of solid structure, crystallography and morphology, processed polymers, co-polymers and their blends.

4700:422. Polymer Processing. (3 Credits)
Prerequisites: 4700:321 and 4600:315 or equivalent. Polymer processing technology. Basic studies of flow in extrusion, molding, and other processing methods.

4700:425. Introduction to Blending & Compounding of Polymers. (3 Credits)
Prerequisites: [4200:321 or 4300:341 or 4600:310] or permission. Nature of polymer blends and compounds and their applications. Preparation and technology using batch and continuous mixers, mixing mechanisms.

4700:427. Mold Design. (3 Credits)
Prerequisites: 4700:422 or permission. Molding methods to manufacture polymeric products. Machinery, materials, molds, equipment, computer-aided design.

4700:450. Engineering Properties of Polymers. (3 Credits)

4700:451. Polymer Engineering Laboratory. (2 Credits)
Prerequisite: 4700:321 and 4600:483. Corequisite: 4700:422 or permission. Laboratory experiments on the rheological characterization of polymer melts, fabrication of engineering products, structural investigation of polymeric parts.

4700:497. Honors Project. (2 Credits)
Prerequisite: Senior standing in the Honors Program. Individual creative project in mechanical polymer engineering, supervised by faculty member of the department. This course must be designed oriented if used in place of 4700:499.

4700:499. Polymer Engineering Design Project. (2 Credits)
Prerequisite: Senior standing and permission. Corequisite: 4600:400. Analysis and design of mechanical polymer systems.