

Colloids, Polymers and Surfaces, Minor

Professor Robert Tilton, Director of CPS Minor
Location: Doherty Hall A207C

Colloids, Polymers and Surfaces Minor

Overview

The sequence of courses in the Colloids, Polymers and Surfaces (CPS) designated minor provides an opportunity to explore the science and engineering of fine particles and macromolecules as they relate to complex fluid formulations and interfacially engineered materials. These topics are broadly applicable to product formulation and underpin technology and product development in industries that manufacture pharmaceuticals, coatings and paints, natural products, biomaterials, cleaning products, cosmetics and personal care products, food products, textiles and fibers, nanoparticles, polymers/plastics, composite materials, and agrochemicals.

Course Requirements

Minimum units required for minor: 45 units

This minor requires a total of five or more classes and a minimum of 45 units.

Primary Requirement

Students must complete two (2) courses from the following primary list:

	Units
06-607 Physical Chemistry of Colloids and Surfaces	9
06-609/09-509 Physical Chemistry of Macromolecules	9
06-612 Formulation Engineering	12

Electives

For the remaining three (3) courses, students may choose an additional course from the primary list above or courses from the elective list below. Students must meet any prerequisites for these courses.

06-426 Experimental Colloid Surface Science	9
06-466 Experimental Polymer Science	9
06-610 Rheology and Structure of Complex Fluids	9
06-686 ST: Polymers for a Sustainable Future	9
06-714 Surfaces and Adsorption	12
09-502 Organic Chemistry of Polymers	9
09-507 Nanoparticles	9
09-224 Supramolecular Chemistry *	3
24-684 Nanoscale Manufacturing Using Structural DNA Nanotechnology	12
27-477 Introduction to Polymer Science and Engineering	9
27-565 Nanostructured Materials	9
27-570/42-613 Polymeric Biomaterials	12
27-577 Advanced Polymer Science and Engineering	9
27-704 Principles of Surface Engineering and Industrial Coatings	6
33-355 Nanoscience and Nanotechnology	9
42-611 Biomaterials	12
42-676 Bio-nanotechnology: Principles and Applications	9
xx-xxx Undergraduate Research (must be supervised by a Carnegie Mellon University faculty member and topic must be approved by Director of the CPS Minor)	6-12

Other CPS electives are possible but must be approved by the Director of the CPS Minor, Professor Robert Tilton, Department of Chemical Engineering

* If a course with fewer than 9 units is taken, the units shortfall must be compensated by other course selections to total at least 45 units.