CHPH - CHEMICAL PHYSICS

CHPH618 Special Projects in Chemical Physics (1-3 Credits)

Independent reading and study covering chemical physics subject areas not available in other courses.

Restriction: Permission of instructor.

Repeatable to: 6 credits.

CHPH633 Advanced Characterization of Soft Matter Materials (3 Credits)

This course is focused on both the theories and experimental works of studying structure and dynamics of soft matter materials using scattering techniques (light, x-ray and neutron scattering). These scattering techniques can probe the structure from a few Angstrom to micrometer and the dynamics from picosecond to second, are thus widely used to reveal the structure-performance relationship of different materials. The course discusses the physics principles of these techniques and explains the details of general theories and commonly used models in characterizing soft matter materials such as polymer, protein, colloidal, thin film, and gel systems.

Cross-listed with: ENMA633.

Restriction: Permission of ENGR-Materials Science & Engineering department.

Credit Only Granted for: ENMA633 or CHPH633.

CHPH703 Introduction to Nonequilibrium Statistical Physics (3 Credits)

Analysis and microscopic modeling of systems away from thermal equilibrium. Linear response theory, ergodicity, Brownian motion, Monte Carlo modeling, thermal ratchets, far-from-equilibrium fluctuation relations. Introduction to the theoretical tools of nonequilibrium phenomena and their application to problems in physics, chemistry and biology.

Prerequisite: PHYS603 or CHEM687; or permission of instructor. Cross-listed with: CHEM703, BIPH703, PHYS703. Credit Only Granted for: BIPH703, CHEM703, CHPH703, or PHYS703.

CHPH709 Seminar in Chemical Physics (1 Credit) Current research and developments in chemical physics.

CHPH718 Special Topics in Chemical Physics (1-3 Credits)

A discussion of current research problems in chemical physics. **Repeatable to:** 99 credits if content differs.

CHPH799 Master's Thesis Research (1-6 Credits)

CHPH898 Pre-Candidacy Research (1-8 Credits)

CHPH899 Doctoral Dissertation Research (1-8 Credits)