

# SCIENTIFIC COMPUTING (SCMP)

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## **SCMP 5590 Multiscale Modeling of Chemical and Biological Systems**

This course provides theoretical, conceptual, and hands-on modeling experience on three different length and time scales - (1) electronic structure (Å, ps); (2) molecular mechanics (100Å, ns); and (3) deterministic and stochastic approaches for microscale systems (µm, sec). Students will gain hands-on experience, i.e., running codes on real applications together with the following theoretical formalisms: molecular dynamics, Monte Carlo, free energy methods, deterministic and stochastic modeling, multiscale modeling. Prerequisite: Undergraduate courses in numerical analysis and physical chemistry.

Not Offered Every Year

Also Offered As: BE 5590, CBE 5590

1 Course Unit

## **SCMP 5970 Master's Thesis Research**

For students working on advanced research leading to the completion of a master's thesis.

Fall or Spring

1-2 Course Units

## **SCMP 5990 Master's Independent Study**

For Scientific Computing master's students. Involves coursework and class presentations. The project will invariably include formally gradable work comparable to that of a CIS 500 level course. Students should discuss with the faculty supervisor the scope of the independent study, expectations, work involved, etc.

Fall or Spring

1-2 Course Units