

Syllabus for Chemistry 8541
"Dynamics"
Fall Semester 2007, four credits

11:15-12:05, Mon, Wed, Fri (09/04/2007 - 12/12/2007)
140 Kolthoff Hall

<http://comp.chem.umn.edu/truhlar/index.htm#courses>

Instructor: Donald G. Truhlar

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Office hours: anytime on Monday, Wednesday, or Friday

Preferred method of contact: in person, except when directed otherwise

TA: to be announced

Prerequisite - Undergrad physical chemistry course

Description and scope of the course: Chemistry 8541 is a core graduate course in physical chemistry. It primarily covers mathematical methods for graduate physical chemistry and an introduction to classical mechanics and classical dynamics, including normal modes of vibration. If time permits, there will coverage of special topics such as the rotational motion, the Langevin equation, Brownian motion, time correlation functions, collision theory, cross-sections, energy transfer, molecular forces, potential energy surfaces, or classical electrostatics.

Objectives: To give the student the level of understanding of mathematical methods and classical dynamics that is required to begin most areas of graduate research in physical chemistry.

Textbooks:

1. "Mathematical Methods for Scientists and Engineers," by Donald A. McQuarrie, available in hardcover.
2. "Classical Mechanics," 2nd ed, by H. C. Corben, and Philip Stehle, available used in hardcover and new in paperback.

The course will also include material not covered in the textbooks. The textbooks are selected in part because they serve as useful reference books for students studying for a Ph. D. in Chemistry.

Class participation: The class will be taught in an experimental style emphasizing class discussion. Students should prepare for each class accordingly. The material to be prepared for each class will be announced at the previous class. Homework primarily consists of preparing for class discussion and problems worked in class.

Presentations: Every student will present at least one lecture on a topic to be determined approximately half way through the course.

Written examinations: There will be occasional written quizzes at the beginning of class, usually on random dates. A longer written examination in October and/or a final written examination in December may be scheduled if class participation is insufficient to gauge the progress of the class.

Written homework: Occasional written homework assignments may be worked in groups.

Grading: Final grades will be based on the instructor's evaluation of the level of active class participation (60%), presentations (20%), written quizzes (10%), and written homework (10%). Preliminary feedback on class progress will be provided by the instructor in October. If class participation is insufficient to gauge the progress of the registered students, there may be one or two written examinations (see above); if such examinations are scheduled, their percentage contribution to the grade will be announced when they are scheduled.

Incompletes: Registered students who do not complete the course will receive an F unless they officially withdraw from the course. Incompletes will be given only when discussed with and approved by the instructor before the end of the semester.

Schedule: The lecture schedule is flexible; we may cover more or less material depending on the needs and desires of the class.

Students with Disabilities: Students with disabilities that affect their ability to participate fully in class or to meet all course requirements can arrange reasonable accommodations through the Office of Disability Services (612-626-

1333) . Students who have concerns about disabilities should contact this office within the first week of class.

Academic Dishonesty: Scholastic dishonesty is discussed under the Institute of Technology's scholastic policies . According to the CLA Classroom Grading and Examination Procedures , scholastic dishonesty is defined as "any act by a student which misrepresents the student's own academic work or that compromises the academic work of another. Scholastic dishonesty includes (but is not necessarily limited to) cheating on assignments or examinations; plagiarizing, i.e. misrepresenting as one's own work any work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of all instructors concerned; depriving another of necessary course materials; or sabotaging another's work."

Additional information: Additional information is available at

<http://comp.chem.umn.edu/truhlar/index.htm#courses>