Chem 567  Chemical Dynamics  Winter 2012

Professor  e-mail  Office Hour  Office
Eitan Geva  eitan@umich.edu  Upon request  2000D Chem.

Prerequisites:
Chem571 (or an equivalent advanced course in quantum mechanics).
Chem575 (or equivalent course statistical mechanics).

Website:
Course materials will be posted on the course CTools web site (https://ctools.umich.edu/).

Textbook:

The textbook is available electronically through MLibrary at the following URL: http://mirlyn.lib.umich.edu/Record/010346412

Class Schedule:
MWF 11:00 AM -12:00 PM  Room 1640 CHEM

Grading:
2 Problem Sets  200 pts.
Final Project  200 pts.
Total pts:  400 pts.

Problem Sets

Chem 567 students are required to submit 2 problem sets and a final project. Each problem set is worth 100 points. The final project will consist of writing a literature review or a research proposal related to the material covered in the course. The problem sets will be posted on the web site a few weeks before submission deadline. The submission deadlines are given below:

<table>
<thead>
<tr>
<th>Problem set #</th>
<th>Submission deadline</th>
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<tbody>
<tr>
<td>1</td>
<td>February 20</td>
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<tr>
<td>2</td>
<td>March 19</td>
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<tr>
<td>Final project</td>
<td>April 23</td>
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Problem sets must be prepared legibly with work shown in an orderly and logical manner. Explanations of your procedure should be given as needed to make clear what you have done. A specific numerical answer for each problem must be given with correct units and highlighted (or enclosed in a box).
Tentative list of topics

1. Time correlation functions (Chapter 6).
2. Introduction to stochastic processes (Chapter 7).
3. Stochastic equations of motion (Chapter 8).
4. Introduction to quantum relaxation processes (Chapter 9).
5. Quantum open systems (Chapter 10).
6. Linear response theory (Chapter 11).
7. The spin-boson model (Chapter 12).
8. Vibrational relaxation (Chapter 13).
9. Chemical reactions in the condensed phase (Chapter 14).
10. Solvation dynamics (Chapter 15).
11. Electron transfer processes (Chapter 16).
12. Resonance energy transfer (Chapter 18.4).