

CHEM 6482

Fall 

SYLLABUS
Kinetics and Reaction Dynamics

Class Meetings:

Monday, Wednesday and Friday, 11:05 – 11:55, Howey Physics (S107).

Holidays:

Sept. 3, 2012

Oct. 13-16, 2012

Nov. 22-23, 2012

Credit Hrs: 3



Office Hours: By appointment

Textbook: Chemical Kinetics and Reaction Dynamics, Paul Houston.

Description: A course on the fundamental concepts and modern theoretical and experimental techniques in molecular reaction dynamics and chemical kinetics is offered. An emphasis will be placed on understanding gas-phase, gas-surface (solid), and liquid-solid reactions. Basic reaction rate theory, reactive scattering theory and transition-state theory will be covered. Specific examples to illustrate these concepts will be chosen from current research areas in atmospheric chemistry, surface physics and environmental science.

Grading Policy: The final grade will be based on graded class assignments and participation (25%), a short proposal (20%), a written mid-term (25%) and final exam (30%).

A T-square site will be established for the purpose of posting copies of the lectures.

Schedule: We will try to keep to the schedule below. However, there will be some adjustments as the course evolves. Class participation is expected, so the schedule will conform somewhat to the level of participation.

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| Aug. 20. | Course Introduction |
| Aug. 22-27 | Kinetic Theory of Gases |
| Aug. 29-Sept. 5 | Molecular Beam Techniques and Collision Dynamics |
| Sept. 7-17 | Rates of Chemical Reactions |
| Sept. 19-21 | Activated Collision Complex Theory |
| Sept. 24-28 | Transition State Theory |
| Oct. 1-10 | RRKM Theory |
| Oct. 12 | Midterm Exam (25% of Grade) |
| Oct. 13-16 | Student Recess |
| Oct. 17-26 | Time Dependent Scattering Theory |
| Oct. 29-Nov. 5 | Reactions at Aerosol/liquid Interfaces |
| Nov. 7-16 | Reactions on Solid Surfaces |
| Nov. 16 | Short proposal due (20% of Grade) |
| Nov. 19-21 | Overview and work on Group Projects |
| Dec. 3-7 | Present Group Projects |
| Dec. 10-14 | Final Exam (30% of Grade) |