Chemistry 395/435 Fall 2017 Course Guidelines

Instructor: Daniel Graham, Flanner 401, 773-508-3169, dgraha1@luc.edu

DG Office Hours: M, W 1100 – 1200, Th 10:30 – 11:30, or by arrangement.

Class Hours: M, W, F: 13:40 – 14:30, Life Science Building, Room 412

Chemistry 395/435 is a special topics course entitled *Thermodynamics with Applications to Protein Structure Analysis.* The first half of the semester will focus on the core ideas of classical thermodynamics. This will include a few notions of statistical thermodynamics.   The second half will focus on protein structure analysis, both for individual molecules and systems of molecules.

Recommended Texts:

Thermodynamics by Enrico Fermi (Dover paperback, bargain price ☺♫)

Invitation to Protein Sequence and Systems Analysis Through Probability and Information, by DJG.

Thermodynamics Topics:

Fundamentals, types of systems, equations of state, ideal versus non-ideal behavior, thermodynamic laws, reversible versus irreversible pathways, ergodic versus non-ergodic behavior, thermodynamic potentials, and solutions.

Protein Structure Topics:

Building blocks and assembly of molecules, protein complexity, mathematical probability and information, base and base+ structure analysis, systems analysis, sequence design.

Exams:

There will be three exams consisting of questions and problems representative of the lectures and assignments. There is an honor code: one's exam signature will be taken as a statement of honest, independent work. Instances of academic dishonesty will warrant immediate failure of the course plus referral to the Arts and Sciences Dean's office. Please review the College's policy on academic integrity via the Loyola University website.

Exams will be graded and returned as soon as possible. All grading questions, points of clarification, and errors must be brought to light no later than one week after return of an exam.

If special provisions are needed for the exams and other aspects of Chemistry 395/435, please consult with DG during the first week.

Assignment of Grades:

The following scale will be used: 87% - 100%   A-, A;   72% - 86%   B-, B, B+;

59% - 71% C-, C, C+; 50% - 58% D, D+; < 50% F.   Grades will be assigned by weighting the exams 3 x 0.25 = 0.75 and assignments 0.25.

It goes without saying that physical chemistry and related topics are not easy to learn. However, the process is rewarding if effort is made to master fundamentals as they appear. Students are urged to work with one another and the instructor to alleviate problems before they become serious.

Assignments: There will be weekly assignments: problems, exercises, and essays.   Students are urged to complete these with the help of each other and the instructor.

Sakai Materials: There will be regular postings on *Sakai* during the semester. Please check the website every few days for the latest.   Errors should be brought to light as soon as possible.

Schedule:

The typical week will feature M, W, F lectures starting at 13:40.   Major dates are as follows:

M   082817: First Class Meeting.

M   090417: Labor Day Holiday☺♫

F   100617: First Exam

M   100917: Fall Break ☺♫

F   111717: Second Exam

W   112217: Beginning of Thanksgiving Break ☺♫

F   120817: Last Class Meeting

Th   121417: Third Exam, 13:00 – 15:00
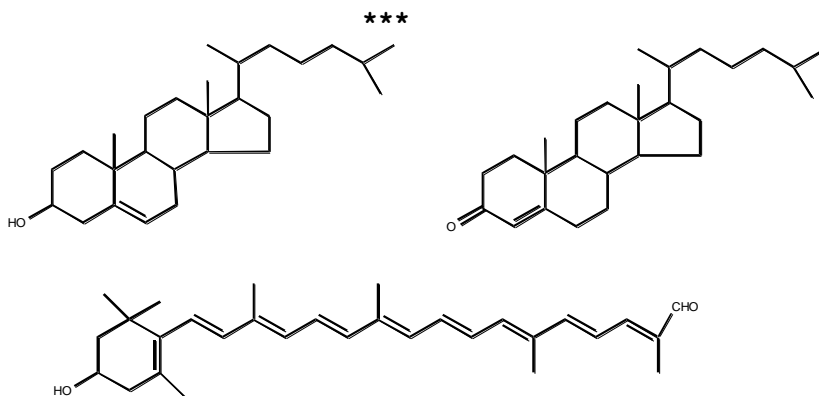
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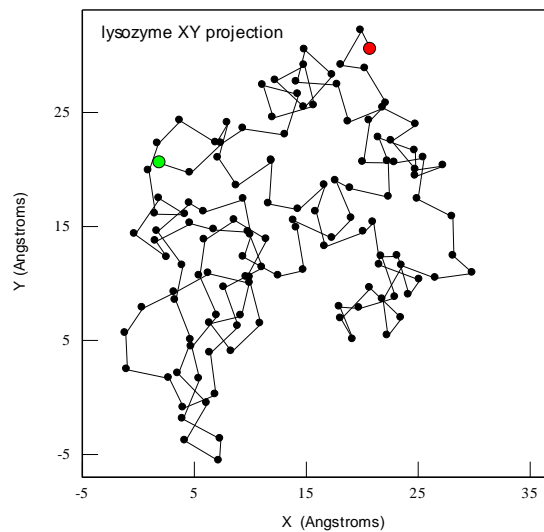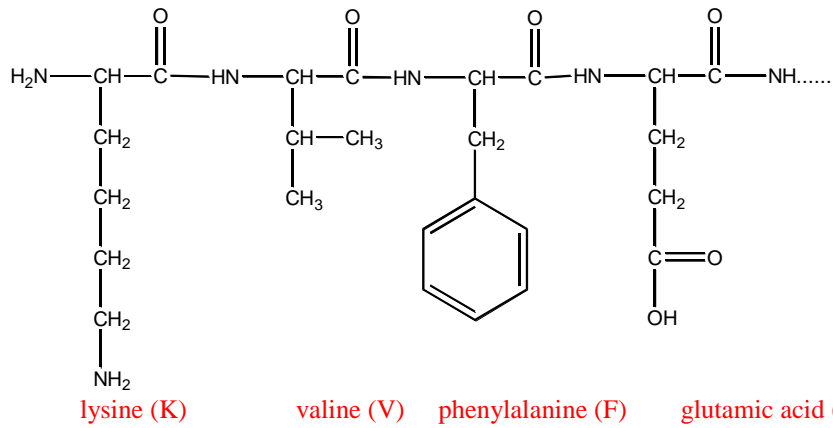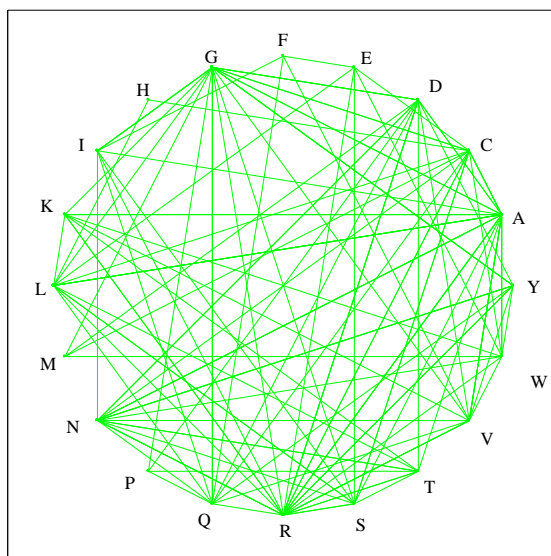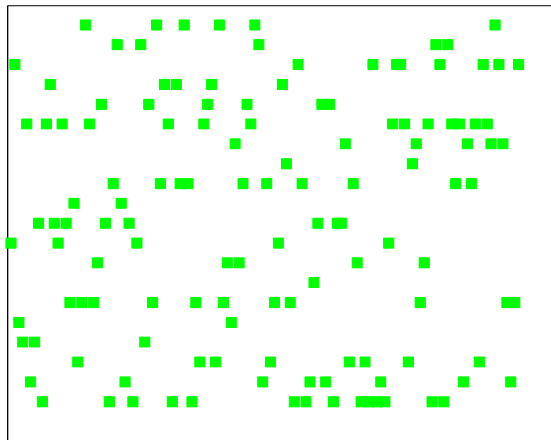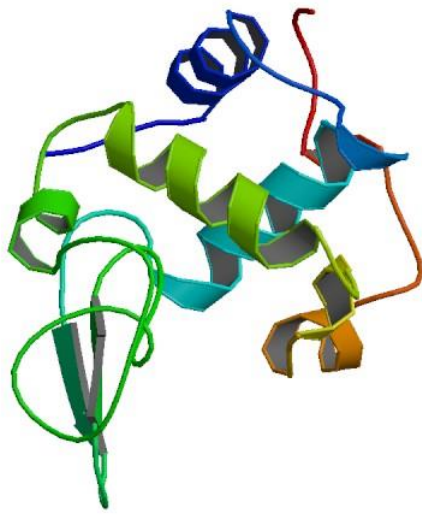
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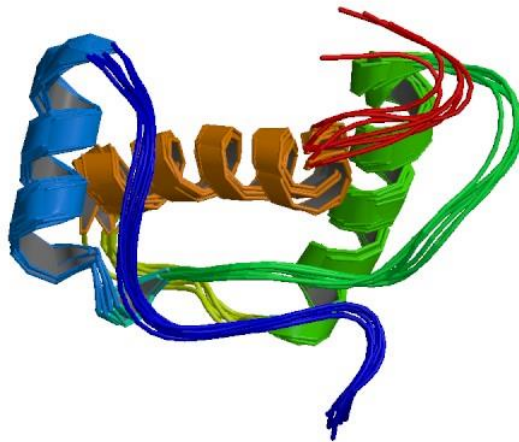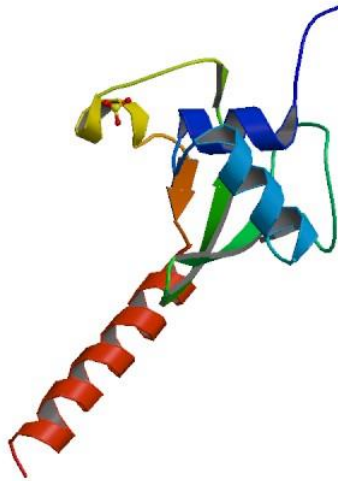
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