

Advanced Physical Chemistry 5370

Fall Semester, 2017

Course Description: An Introduction to Graduate Physical Chemistry Concepts in Thermodynamics, Kinetics, Quantum Theory, and Molecular Spectroscopy.

Class Meetings: Wednesday, 5:30-8:25 pm, Room: 108 CHEM 5370.

Dr. Ozge Gunaydin-Sen, Chemistry Bldg. Rm. 121P 409-880-8275 ozge.sen@lamar.edu	Office Hours Tuesday 1-3 pm, Wednesday, 2-5 pm, or by appointment
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Required Textbook: No Single Assigned Textbook. All Materials will be distributed on Blackboard and/or in class.

Recommended Books:

- Physical Chemistry, 10th Edition by Atkins and dePaula
- Silbey, R.J., Alberty, R.A. and Bawendi, M.G., Physical Chemistry, 4th edition, 2005, John Wiley & Sons, Hoboken, NJ, pp944.

Grading (subject to change)

Assessment	Percentage
Participation and Assignments	20%
Exam 1 (October 18)	25%
Exam 2 (November 22)	25%
Final Exam (Dec 6, 5:00-7:30 pm)	30%

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	< 60%

Course Information and Policies

Major topics covered:

Thermodynamics, Kinetics, Quantum Theory, and Molecular Spectroscopy.

POGIL: Active and cooperative learning

Process Oriented Guided Inquiry Learning (POGIL) method of learning uses guided questions and problems to be solved in class by students working in groups of 2 or 3. Each student is expected to contribute to the group – some more, some less. All types of material (books, notes, etc) can be used in answering question and solving problems.

Learning Outcomes:

- 1) Fundamental knowledge of the relationship between structure of molecules and their physical properties
- 2) Discuss and understand the details of the law of thermodynamics, learn the key definitions such as heat, work, internal energy, enthalpy, entropy, etc. and their relationships with each other (in which direction will a reactions go spontaneously and how much heat will be released)
- 3) Discuss and analyze kinetics, reaction mechanisms, rate of chemical reactions and rate laws. How do reactions occur? And how fast do they occur?
- 4) Learn the origins of quantum mechanics such as energy quantization and Schrödinger equation (a more fundamental concept than thermodynamics).
- 5) Understand the basics of spectroscopy (the absorption or emission of electromagnetic radiation by matter in quantized energy levels of atoms and molecules) such as molecular spectroscopy and nuclear magnetic resonance.
- 6) The ability to solve numerical problems.
- 7) The ability to recognize physical chemistry solutions to practical problems

Exams: There will be two exams during the semester. Requests for make-ups for medical reasons or other situations will be considered on a case-by-case basis, with written documentation required at my discretion. After proper documentation:

MAKE-UP EXAM = FINAL EXAM

The FINAL EXAM grade will replace the properly documented missed exam grade.

Final Exam: The final exam will be cumulative. The time is scheduled: 12/06/2017, Wednesday 5:30-8:25 pm.

Cell phones are prohibited during class. Turn them off and leave them in your bag. Only calculators are permitted during exams. All other electronic devices such as cell phones, tablets, computers, etc. are not allowed.

Attendance:

Regular class attendance is important to the attainment of the educational objectives of the University. Attendance will be checked daily (see federal policies).

Federal Policies:

Title IV Policy: Each semester, every faculty member will be required to check attendance records, and then indicate any student who is no longer attending the class. The checked rolls will be signed by the faculty member and returned to the Registrar's office.

FERPA (Family Education Rights Privacy Act of 1972): Due to the privacy laws regarding student grades in FERPA, a student's grade cannot be discussed with anyone other than student – no one else including parents and/or friends. This includes emails, voice mails, over the phone, answering services, etc. Therefore the student must appear in person to insure identity and can only access their grade.

OTHER ISSUES

- Academic dishonesty will not be tolerated. A grade of F will be assigned to anyone who cheats. See current issue of your Student Handbook for details. The use of cell phones and other communications device is strictly prohibited during tests.
- If you are registered as a student under the Americans with Disabilities Act (ADA), you must inform the instructor (Dr. Gunaydin-Sen), during the first week of classes so that reasonable accommodations may be made.

Emergency Procedures

Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at:

<http://www.lamar.edu/about-lu/administration/risk-management/index.html>. Following are procedures for the first two:

Severe Weather:

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

Violence/Active Shooter (CADD):

- **CALL** - 8311 from a campus phone (880-8311 from a cell phone). Note: Calling 911 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- **AVOID**- If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY**- Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- **DEFEND**- Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.