

CHM 3400: *Physical Chemistry for the Biosciences*

Summer B Semester 2013 (3 credits)

Instructor: Nick Polfer, Chemistry Lab Building (CLB) 311C,
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**Dr Polfer
Office hours:** M, W, F (10:45-11:45 am) CLB 311C, and by
appointment

Lectures: M,T,W,R,F 2nd period (9:30-10:45 am) LEI 104

**TA office hours:
(Yanglan Tan)** tylif@ufl.edu
TBA CLB 313

Aims: To provide students with a solid understanding of
the concepts of Physical Chemistry and their
application to chemical and biological systems.

Text book: Physical Chemistry for the Biosciences, by
Raymond Chang; University Science Books,
Sausalito, CA. ISBN #1-891389-33-5.

Home work: Problem sets will be made available throughout
the semester, which will be graded.

Exams: The course consists of one in-class exam during
the semester as well as a comprehensive final
(August 9th). The exams will cover homework
problems and will emphasize understanding of the
lecture material and problem solving. There will
be no make-up exams. All exams will be closed
book.

Only for the final exam: you can bring one
hand-written letter-size sheet with your own
notes with formulae etc. that aid understanding of
the course.

Exam I Mon July 22nd in class

Final comprehensive exam Fri August 9th in
class.

Grading:

The **during-term exam** is worth **150 points**. The **final comprehensive exam** is worth **200 pts**. The total points for **homework** are **120 point** (6x20 points): each one is worth maximum point if turned in on time, and turning in late will cost 4 points per day. The homework assignments will also be graded for content. There will be unannounced in-class quizzes, worth a total of 30 points.

Total = 150 + 200 + 120 + 30 = 500 points

Proposed Grade Levels:

A: 461 – 500
A-: 441 - 460
B+: 421 - 440
B: 401 – 420
B-: 381 - 400
C+: 361 - 380
C: 341 - 360
C-: 321 - 340
D+: 301 - 320
D: 281 - 300
D-: 261 - 280
E: 260 and below

Course policies:

Attendance will not be recorded, but participation in lectures and demonstration periods is important in assimilating the course material. Since exams are during normal class hours, make-up exams are granted **solely** at the discretion of the instructor. Any request for make-up exams should have a legitimate excuse, and be made to Dr. Polfer as far in advance as possible.

Students should also familiarize themselves with the UF Student Honor Code posted on the web at www.chem.ufl.edu/~itl/honor.html.

Students with disabilities must first register with the Dean of Students Office, see <http://www.chem.ufl.edu/~itl/disabilities.html>; the Dean of the Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

For counseling, students should consult the webpage:

<http://www.chem.ufl.edu/~itl/counseling.html>

Advice:

We will cover **a lot of material** in a **short period of time**. It is hence essential that you keep up-to-date with the lecture material. It is recommended that you **read** the relevant chapter textbook pages **before** each lecture.

Miscellaneous:

Requests for letters of recommendation should only be made after the final exam.

The lecture, homework exercises, past exams can be found on Sakai (<https://lss.at.ufl.edu/>) under the *Resources* tab. Lectures are numbered in two-digit format: **year month day**, so **130701**.pdf is the first lecture.

Tentative Lecture Schedule CHM 3400

Date	Topic	Textbook	HW
M 07/01	Foundation of quantum mechanics	11 (401-426)	
T 07/02	Atomic orbitals and periodic table	11 (426-439)	
W 07/03	The chemical bond: Lewis structures, valence bond theory, molecular orbital theory	12 (447-465)	
R 07/04	<i>No class (Independence Day)</i>		
F 07/05	Resonance structures, coordination compounds	12 (466-483)	
M 07/08	Spectroscopy: fundamentals and micro-wave	14 (513-526)	H1
T 07/09	Infrared and electronic spectroscopy	14 (527-539)	
W 07/10	Magnetic resonance	14 (539-554)	
R 07/11	Luminescence, lasers, optical activity	14 (554-568)	
F 07/12	Photochemistry and photosynthesis	15 (575-586)	H2
M 07/15	Ideal and real gases	2 (7-21)	
T 07/16	Kinetic gas theory, collisions	2 (21-31)	
W 07/17	First Law of Thermodynamics	3 (39-49)	
R 07/18	Heat capacity and gas expansions	3 (49-59)	
F 07/19	Calorimetry	3 (59-74)	H3
M 07/22	DURING-TERM EXAM (in-class)		
T 07/23	Exam review		
W 07/24	Second Law of Thermodynamics: Entropy	4 (81-86)	
R 07/25	Second Law of Thermodynamics: Carnot engine, entropy change	4 (87-95)	
F 07/26	Third Law of Thermodynamics, Gibbs free energy	4 (95-110)	H4
M 07/29	Solutions: Raoult's Law, Henry's Law	5 (131-139)	
T 07/30	Colligative properties	5 (142-154)	
W 07/31	Chemical kinetics	9 (311-324)	
R 08/01	Molecularity of reaction	9 (324-332)	
F 08/02	Effect of temperature, PES, transition state theory	9 (332-342)	H5
M 08/05	Enzyme kinetics	10 (363-372)	
T 08/06	Enzyme inhibition, allosteric interactions	10 (377-393)	
W 08/07	Review lecture I		H6
R 08/08	Review lecture II		
F 08/09	FINAL EXAM (in-class)		