

2009 CH 380 Physical Chemistry
Syllabus

PERSPECTIVE:

This is an introductory course into the physics of chemistry. The material presented this first semester should make common sense: it is based on everyday macroscopic observables. Therefore, if you're having trouble comprehending a concept, it is not so much your lack of understanding as my lack of clear presentation: ask questions! Similar to most of first year physics, this first semester is supported by a strictly Newtonian world. You will be shown how we apply math to physical observables to create models regarding the nature of chemistry (as it is currently understood) and to develop chemical predictions.

You would not have made it this far in chemistry without having developed good study habits. You are encouraged to continue with these habits. A daily dose of p-chem is essential for health and happiness in this course. Your text gives good insight into the nature of physical chemistry. You will be held responsible for both the text and lecture material. Do not anticipate lecture to reiterate the text. They should compliment each other. Again, ask questions.

EVALUATION:

100% - 90.%	A		
89% - 80.%	B	Exams:	44%
79% - 70.%	C	Homework:	30%
69% - 60.%	D	Final:	26%
59% - 0	F		

There are four exams: each exam accounts for 11% of your grade. You will be given a chance to improve each exam score (except the final). After your exam is graded, you have the option to correct the mistakes, and the test will be graded again. The grade you receive for the exam is computed as an average of the two grades. At no time or under no circumstance are you permitted to collaborate with anyone else while working on exams.

Unlike the exams, you may collaborate on your homework assignments: you may not copy work, but you may exchange ideas and work together toward solutions.

The Final exam is comprehensive.

INSTRUCTOR INFORMATION:

Dr. Stephen A. Angel

Office Hours: Tue 10 – 12; Wed 1 – 2; Thurs: 1 – 2 ; and/or by arrangement
Open door for P-Chem students *except* for M 9 – 4; T 2 – 5 and W, F 9A – 1PM.

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Website: <http://www.washburn.edu/faculty/sangel/>

CALENDAR (Dates are approximate and subject to change.)

<u>Week</u>	<u>Reading</u>	<u>Title</u>	<u>Lecture Content</u>
8/17 8 /17 8/24 8/31	Introduction Chapter 1	Introduction	States of Matter; Units Equations of State; Kinetic Molecular Theory van der Waals, etc., Virial & Lennard Jones Eqs.; Corresponding States; Compression Distributions; Collisions; Mean Free Path
9/7	Exam # 1	Introduction & Chapter 1	
9/14	Chapter 2	Thermo: 1 st Law	Systems, Energy, Work, Heat, Heat Capacity, Internal Energy, State/Path functions, Reversible Enthalpy; Adiabats, Isotherms, Isobars
9/21	Chapter 3		Thermochemistry; Hess's Law; Bond Energies
9/28	Exam # 2	Chapters 2 & 3	
10/5	Chapter 4	Thermo: 2 nd Law	Carnot Cycle, Entropy, and Spontaneity
10/12 10/19	Chapter 5	Equilibria: Pure Sys.	Gibbs/Helmholtz Energies, Mixing Ideal Gases; Phase Diagrams Clapeyron Equation; Vapor Pressure
10/26	Exam # 3	Chapters 4 & 5	
11/2 11/09 11/16	Chapter 6 Chapters 7 & 8	Mixtures Chem Equilibrium	Partial Molar Volume; Chemical Potential; Mixing; Gibbs-Duhem; Ideal/Real Solutions; Raoult's/Henry's Law; Colligative Properties Activities; Chemical Equilibrium;
11/23	Chapter 9	ElectroChem Equil	Debye-Hückel Theory; Electrolytes EMF & Electrochemical Cells
11/26	Exam # 4	Chapters 6 – 9	
Tuesday 12/08		FINAL EXAM: Comprehensive @ 9:00AM	

TEXT: Elements of Physical Chemistry, 5th Ed., Peter Atkins, Julio de Paula, Freeman Publishers

Select Mission of the University:

Washburn University shall prepare qualified individuals for careers, further study and life long learning through excellence in teaching and scholarly work. Washburn University shall make a special effort to help individuals reach their full academic potential. Washburn University Board of Regents, 1999

Academic Misconduct Policy:

All students are expected to conduct themselves appropriately and ethically in their academic work. Inappropriate and unethical behavior includes (but is not limited to) giving or receiving unauthorized aid on examinations or in the preparation of papers or other assignments, or knowingly misrepresenting the source of academic work. Washburn University's Academic Impropriety Policy describes academically unethical behavior in greater detail and explains the actions that may be taken when such behavior occurs. For guidelines regarding protection of copyright, consult www.washburn.edu/copyright/students. For a complete copy of the Academic Impropriety Policy, contact the office of the Vice President for Academic Affairs, Bradbury Thompson Alumni Center Suite 200, or go on-line to: www.washburn.edu/admin/vpaa/fachdbk/FHsec7.html#VIII

Disability Services:

The Student Services Office is responsible for assisting in arranging accommodations and for identifying resources on campus for persons with disabilities. Qualified students with disabilities must register with the office to be eligible for services. The office MUST have appropriate documentation on file in order to provide services. Accommodations may include in-class note takers, test readers and/or scribes, adaptive computer technology, brailled materials. Requests for accommodations should be submitted at least two months before services should begin; however, if you need an accommodation this semester, please contact the Student Services Office immediately.

Location: Student Services, Morgan Hall Room 135 (new location)

Phone: 785-670-1629 or TDD 785-670-1025

E-Mail: student-services@washburn.edu

Students may voluntarily identify themselves to the instructor for a referral to the Student Services Office.

Center for Undergraduate Studies and Programs (CUSP):

As a Washburn student, you may experience difficulty with issues such as studying, personal problems, time management, or choice of major, classes, or employment. The Center for Undergraduate Studies and Programs (Office of Academic Advising, Educational Opportunity Program, and Office of Career Counseling, Testing and Assessment) is available to help students either directly through academic advising, mentoring, career counseling, testing and developing learning strategies or by identifying the appropriate University resource. If you feel you need someone with whom to discuss an issue confidentially and free of charge, contact CUSP in Morgan 122, 785-670-2299, advising@washburn.edu.

Withdrawal Policy:

During fall and spring semesters, students may withdraw from full semester courses through the second week of class with no recorded grade. From the third through the eleventh week a "W" is recorded for any dropped course. Beginning with the start of the twelfth week, there are NO withdrawals, and a grade will be assigned for the course. For short-term or summer course deadlines, please check the appropriate Semester/Session Course Bulletin Web Site (www.washburn.edu/schedule)

Official E-Mail Address:

Your Washburn University e-mail address will be the official address used by the University for relaying important messages regarding academic and financial information and the University will consider this your official notification for important information. It may also be used by your instructors to provide specific course information. If you prefer to use an alternate e-mail address to receive official University notices, you can access your MyWashburn e-mail account, choose the "Options" tab, and select "Settings", scroll to the bottom of the screen, click enable forwarding and enter the e-mail address you would like your Washburn emails forwarded to in the "mail forwarding" area. Click add and the click on save changes. This will complete the process of forwarding your Washburn e-mail. It is your responsibility to ensure that your official e-mail box does not exceed your message quota resulting in the inability of e-mail messages to be accepted into your mailbox