Chemistry 102
Spring 2010 Course Guidelines

Instructor: Dr. Conrad Naleway
Flanner Hall Rooms 103 (office and voice-mail: 773 508-3115)
Loyola Chemistry Office: 773 508-3100
FAX: (773) 508-3086;
email: cnalewa@luc.edu

Class/Lecture Hours: Flanner Hall 133
Office Hours: Tuesday & Wednesday 4-5pm and by appointment on MTh.
Optional Weekly Review Sessions: Time to be announced

Materials:

Text: Chemistry and Chemical Reactivity, Seventh Edition (2009) by Kotz, Treichel, and Townsend.
Please note that the text is a secondary source of information to help clarify concepts presented in lecture.
The primary information is presented in class and also appears on website and lecture handout
materials.

Calculators will be needed for homework assignments and exams but do not need to be programmable, but
should have log/trig functions (typically under $20)
Website: _www.geocities.com/conradnaleway/chem102_ (also found on LUC blackboard)

This course will cover essential material of Chapters 14 - 20 and 23 of _Kotz/Treichel/ Townsend_
The topics will include:

1. Solutions and their Behavior	(Chapter 14).
2. Chemical kinetics, reaction rates, and reaction mechanisms	(Chapter 15).
3. Chemical equilibrium in gas and liquid phases	(Chapter 16).
4. Acids and bases, equilibrium in aqueous solutions	(Chapter 17).
5. Additional aspects of solution equilibria	(Chapters 18).
7. Chemical Thermodynamics: Entropy and Free Energy	(Chapter 19).
8. Electrochemistry and electron transfer reactions	(Chapter 20).
9. Nuclear chemistry	(Chapter 23) _(selected topics)_
Special Topics in Chemistry	_Handouts_

Exams:

There will be three fifty-minute exams and one cumulative final exam. Each exam will consist of questions
and problems representative of the text, lecture, and discussion material. A calculator, periodic table, and a
single page of _handwritten_ notes (8.5 x 11 inches, both sides) may be used during each exam.

The single page of notes must be included with the exam prior to hand-in. All exams must be signed in the
front, upper right hand corner. This signature will be taken as a statement of honest and completely
independent work. Instances of academic dishonesty will warrant immediate failure of the course plus
referral to the Dean's office. For more information on university policy, please read:
_http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf_

Exams will be graded and returned as soon as possible, usually the next class period. ALL grading questions,
points of clarification and grading errors must be brought to the instructor's attention during office hours **no
later than one week after exam is returned.** There will be no exceptions to this rule!

Exam Grade (80% of total grade) will be assigned according to the highest percentage computed by the two methods:

a) The average of the three 50 minute class exams, each weighing 1/3, plus completion of the final exam even though no included in grade. *Please note that attendance and completion of the final exam are mandatory and a grade of at least 50% must be achieved in the final!*

b) The average of the top two 50 minute class exams plus the cumulative final. Thus the exams will weigh 1/3 each and the final will weigh 1/3. This relates to dropping the lowest in-class exam.

NOTE: Grade is NOT based upon a class curve. Thus individual performance determines one's grade and is not influenced by other's performance. This thus encourages each student to work collectively to help each other learn. Often discussing and working through a problem with someone else, helps one more than the other person, since it forces one to more critically see through a problem..

Homework Problem Sets (10%): Several sets of problems will be assigned during the semester, roughly one each week. These assignments will largely utilize the OWL homework system as well as the a few hand-outs.

Quizzes (10%):
Multiple quizzes will be given during discussion periods throughout the semester based on the text and lecture materials. Completion and hand-in of **each quiz** will warrant **one point of credit applied to the up-coming exam**.

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Final Assignment of Grades will be based upon:

80%   Exam Grade (Above)
10%   Discussion Participation & Quizzes, and
10%   Homework (OWL)

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The following **grading scale** will be used:

90% - 100%	A
76% - 89%	B
60% - 75%	C
50% - 59%	D
< 50%	F

The aim of the grading policy is to allow time and incentive for improvement. Chemistry is not easy to learn, but the process can be rewarding if extensive, daily effort is made to master fundamentals as they appear. Students are urged to contact the instructor to discuss problems before they become serious.

Help/Review Sessions:
In preparation for exams, help/review sessions will be scheduled. Dates, times, and locations will be announced in class.

Xerox Materials:
There will be multiple hand-outs during the semester. These will include quizzes, problem sets, and old exams. Errors should be brought to the instructor's attention as soon as possible.

CHEMISTRY 102 (8:30am Tuesday-Thursday)

	Topic	Pages	Class #	Dates	
14	Solutions and Their Behavior	616-655			
	Solution Process		1	Tuesday, January 19, 2010	
	Saturated Solutions & Solubility		1	Tuesday, January 19, 2010	
	Factors Affecting Solubility		1	Tuesday, January 19, 2010	
	Ways of Expressing Concentration		2	Thursday, January 21, 2010	
	Vapor Pressure(Clausius-Clapeyron Eq)		2	Thursday, January 21, 2010	
	Phase Diagrams		2	Thursday, January 21, 2010	
	Colligative Properties		3	Tuesday, January 26, 2010	
	Colloids		4	Thursday, January 28, 2010	
15	Chemical Kinetics	670-723			
	Factors Affecting Reaction Rates		4	Thursday, January 28, 2010	
	Reaction Rates		5	Tuesday, February 02, 2010	
	Concentration & Rates		5	Tuesday, February 02, 2010	
	Concentration with Time		6	Thursday, February 04, 2010	
	Temperature & Rate (Arrhenius Eq)		6,7	Thursday, February 04, 2010	Tuesday, February 09, 2010
	Reaction Mechanisms		7	Tuesday, February 09, 2010	
	Catalysis		7	Tuesday, February 09, 2010	
	EXAM 1		8	#########################	
16	Chemical Equilibrium	724-759			
	Concept of Equilibrium		9	Tuesday, February 16, 2010	
	Equilibrium Constant		9	Tuesday, February 16, 2010	
	Heterogeneous Equilibria		9	Tuesday, February 16, 2010	
	Calculating Equilibrium Constant		10	Thursday, February 18, 2010	
	Applications of Equilibrium Constant		10,11	Thursday, February 18, 2010	Tuesday, February 23, 2010
	LeChatelier's Principle		11	Tuesday, February 23, 2010	
17	Chemistry of Acid Base Equilibria	760-809			
	Overview		11	Thursday, February 25, 2010	
	Bronsted-Lowry Acids and Bases		11	Thursday, February 25, 2010	
	Lewis Acids and Bases		11	Thursday, February 25, 2010	
	Autoionization of Water		12	Tuesday, March 02, 2010	
	pH Scale		12	Tuesday, March 02, 2010	

#	Topic	Pages	Week	Date
	Strong Acids and Bases		12	Tuesday, March 02, 2010
	Weak Acids		12	Tuesday, March 02, 2010
	EXAM 2		**13**	**Thursday, March 04, 2010**
	SPRING BREAK			**March 8-12**
	Weak Bases		14	Tuesday, March 16, 2010
	Ka and Kb		14	Tuesday, March 16, 2010
	Salt Solutions		15	Thursday, March 18, 2010
	Chemical Structure		15	Thursday, March 18, 2010
18	**Other Aspects of Aqueous Equilibria**	810-859		
	Common-Ion Effect		16	Tuesday, March 23, 2010
	Buffers		**16**	Tuesday, March 23, 2010
	Acid Base Titrations		**16**	Tuesday, March 23, 2010
	Solubility Equilibria		17	Thursday, March 25, 2010
	Factors Affecting Solubility		17	Thursday, March 25, 2010
	Precipitation		17	Thursday, March 25, 2010
	Qualitative Analysis		17	Thursday, March 25, 2010
19	**Chemical Thermodynamics(Entropy & Free Energy)**	860-895		
	Spontaneous Processes		18	Tuesday, March 30, 2010
	Entropy and Second Law		18	Tuesday, March 30, 2010
	EXAM 3		**19**	**Thursday, April 01, 2010**
	EASTER BREAK			**Friday, April 02, 2010** **Monday, April 05, 2010**
	Molecular Interpretation of Entropy		20	Tuesday, April 06, 2010
	Chemical Reactions & Entropy		20	Tuesday, April 06, 2010
	Gibbs Free Energy		21	Thursday, April 08, 2010
	Free Energy and Temperature		21	Thursday, April 08, 2010
	Free Energy and Equilibria		21	Thursday, April 08, 2010
20	**Electrochemistry(Electron Transfer Reactions)**	896-947		
	Oxidation Reduction		23	Tuesday, April 13, 2010

	Balancing Redox Equations		23	Tuesday, April 13, 2010
	Voltaic Cell		24	Thursday, April 15, 2010
	Cell EMF		24	Thursday, April 15, 2010
	Spontaneity of Redox Reactions		24	Thursday, April 15, 2010
	Concentration effect on EMF		**25**	Tuesday, April 20, 2010
	Batteries		25	Tuesday, April 20, 2010
	Corrosion		25	Tuesday, April 20, 2010
	Electrolysis		25	Tuesday, April 20, 2010
23	Nuclear Chemistry	*1060-1095*		
	Radioactivity		26	Thursday, April 22, 2010
	Nuclear Stability		26	Thursday, April 22, 2010
	Nuclear Transmutations		27	Tuesday, April 27, 2010
	Rates of Decay		27	Tuesday, April 27, 2010
	Review		28	Thursday, April 29, 2010
	FINAL EXAM			**Saturday, May 08, 2010**