Basic Inorganic Chemistry
Chemistry 106 - Section 001
Spring 2011

Instructor: Dr. A. W. Herlinger, 418 Flanner Hall, 773-508-3127, **email:** aherlin@luc.edu.

Office Hours: Tu, Th 3:00 – 4:00 PM, other times by appointment.

Textbook: Chemistry, The Central Science, T.L. Brown, H.G. LeMay, B.E. Burston, and C.J. Murphy, Prentice Hall, Inc., 11th ed., 2009. Access to Mastering Chemistry is **not required**.

Suggested: Student's Guide to Chemistry, the Central Science, J.C. Hill, Prentice Hall, Inc., 11th ed., 2009.

Lecture: Lecture is scheduled for Tuesday and Thursday at 1:00 – 2:15 PM in FH – 007.

Lecture Outlines for each chapter are posted periodically on Blackboard.

Discussion: Discussion is scheduled for Tuesday and Thursday at 4:00 – 5:00 PM in FH – 133.

Exams and quizzes will be given during discussion as indicated in the schedule of topics.

Course Description: A study of basic inorganic chemical principles and reactions with emphasis on the development of a scientific attitude and an understanding of fundamental concepts.

Course Objectives: Provide a foundation for advanced work in inorganic chemistry with special emphasis on problem solving. Acquire knowledge about the phases and reactions of matter. Gain an understanding of solution properties, chemical kinetics, thermodynamics, chemical equilibrium, electrochemistry, radiochemistry, and coordination chemistry.

Calculators: Only the most **basic scientific calculator** may be used during examinations, e.g., the TI-30XA or FX-60. **Cell phones, graphing calculators, and programmable calculators are not allowed to be used during examinations.**

Examinations: Course grades will be determined from the scores achieved on examinations, quizzes, and laboratory work. Examinations are cumulative and may include material that has appeared on previous exams. **Five points will be deducted from your exam score if the answer sheet is turned in after the exam has ended and/or your name and identification number are not filled in properly.**

Laboratory: Chemistry 106 has a laboratory component, section 003 that meets in FH–305/308 on Wednesdays at 2:45 – 5:30 PM. **Laboratory work will begin on 1/19/11.**

Tentative Schedule of Topics

Date	*Day*	*Topics*	*Chapter*	*Pages*
1/18	**T**	Intermolecular Forces Discussion	11	436 – 448
1/20	**Th**	Phase Changes & Diagrams Discussion	11	449 – 458
1/25	**T**	Solids Discussion	11	458 – 470
1/27	**Th**	Solutions Discussion	13	526 – 541
2/1	**T**	Concentration Terms Discussion – **Quiz 1**	13	542 – 546
2/3	**Th**	Colligative Properties Discussion	13	546 – 563
2/8	**T**	Reaction Rates Discussion	14	572 – 585
2/10	**Th**	Conc. & Temp. Dependence Discussion	14	585 – 597
2/15	**T**	Reaction Mechanisms Discussion	14	597 – 614
2/17	**Th**	Chemical Equilibrium Discussion – **Exam I**	15	626 – 638
2/22	**T**	Heterogeneous Equilibria Discussion	15	639 – 647
2/24	**Th**	LeChatelier's Principle Discussion	15	648 – 658
3/1	**T**	Acids & Bases Discussion	16	666 – 680

3/3	**Th**	Weak Acids & Bases Discussion – **Quiz 2**	16	681 – 695
3/7–12	**M-F**	Spring Break – No Classes		
3/15	**T**	Lewis Acids & Bases Discussion	16	695 – 709
3/17	**Th**	Aqueous Equilibrium – Buffers Discussion	17	718 – 729
3/22	**T**	Acid-Base Titrations Discussion	17	730 – 737
3/24	**Th**	Solubility Equilibrium Discussion – **Exam II**	17	737 – 757
3/29	**T**	The Second Law Discussion	19	800 – 809
3/31	**Th**	Entropy Discussion	19	809 – 818
4/5	**T**	Gibbs Free Energy Discussion	19	819 – 833
4/7	**Th**	Electrochemistry Discussion – **Quiz 3**	20	842 – 854
4/12	**T**	Voltaic Cells – EMF Discussion	20	855 – 870
4/14	**Th**	Batteries & Electrolysis Discussion	20	870 – 883
4/19	**T**	Coordination Compounds Discussion	24	1012 – 1030
4/21	**Th**	Crystal Field Theory Discussion – **Exam III**	24	1031 – 1042
4/26	**T**	Radioactivity Discussion	21	892 – 910

4/28	**Th**	Nuclear Reactions Discussion	21	911 – 924
5/6	**F**	**Final Exam (1:00 – 3:00 PM)**		

End-of-Chapter Problems: Students who are making good progress in the course should be able to solve, independently, most or all of the end-of-chapter problems. The exemplary problems listed below should be attempt before attending discussion, but should not be submitted for grading. Solutions to selected problems will be presented during discussion.

End-of-Chapter Problems:

Chapter 11: 33, 35, 37, 45, 47, 49, 51, 59, 61, 63, 65, 71, 77, 90

Chapter 13: 1, 5, 9, 13, 15, 21, 25, 31, 35, 41, 53, 59, 63, 65, 69, 75, 81, 99

Chapter 14: 1, 3, 4, 5, 10, 15, 19, 29, 35, 43, 55, 57, 63, 67, 71, 73, 87, 96

Chapter 15: 1, 4, 9, 17, 21, 25, 27, 33, 37, 39, 43, 47, 51, 68, 71, 74, 78, 86

Chapter 16: 1, 5, 13, 15, 19, 25, 31, 37, 39, 43, 47, 53, 55, 69, 75, 77, 81, 85, 87, 91, 93, 101, 103, 127

Chapter 17: 1, 4, 7, 10, 13, 15, 17, 19, 25, 27, 29, 33, 39, 41, 43, 49, 51, 53, 57, 59, 63, 65, 73, 78, 85, 101

Chapter 19: 1, 4, 9, 13, 19, 21, 27, 33, 39, 43, 47, 49, 53, 63, 69, 71, 73, 75, 81, 90, 100

Chapter 20: 1, 10, 11, 13, 15, 19, 23, 29, 31, 35, 41, 43, 49, 51, 55, 65, 85, 87, 93

Chapter 24: 1, 4, 6, 11, 15, 19, 21, 25, 27, 29, 35, 39, 47, 49, 60, 64, 66, 78

Chapter 21: 1, 4, 11, 15, 19, 21, 25, 27, 31, 33, 41, 43, 47, 51, 55, 57, 65

Grading Scheme: Test contributions will be based on the percentage of points earned out of a total of 500 achievable points. Your exam total will be determined in one of two ways depending upon your final exam score. The method giving the highest total number of points will be used.

If your final exam score is higher than your lowest hour exam score, the lowest hour exam will be dropped and the final exam will be weighted twice an “hour” exam, Method 1. If your final exam score is lower than your lowest hour exam score, the final exam will be weighted the same as an hour exam and all hour exams will be used in calculating your score, Method 2.

Test Article	Method 1	Method 2
Exam 1	**100**	**100**
Exam 2	**100**	**100**
Exam 3	-	**100**
Quizzes	**100**	**100**
Final	**200**	**100**
Total	**500**	**500**

Make-up work will not be given for missed exams or quizzes. Proportionate scores will be used in cases of excused absences for quizzes. If an hour exam is missed, Method 1 will be employed dropping the missed hour exam from the calculation. If a second hour exam is missed, an excused absence will be given at the discretion of the lecturer. An excused absence will be given only in case of an extreme family crisis or serious illness, which must be verified by **a letter** from a parent or an attending physician no later than three calendar days after the scheduled date of the exam. A grade of "F" will be assigned if three exams and/or quizzes are missed.

Grading Scale: The following scale will be used to determine letter grades, **A** 100-86; **B** 85-74; **C** 73-62; **D** 61-50; **F** < 50. Plus and minus grades will be assigned proportionately within the designated ranges. Grading contributions are 80% from tests and 20% from laboratory work.

Note: The Center for Tutoring & Academic Excellence offers free Small Group tutoring for Loyola students. The groups meet once a week through the end of the semester and are led by a peer tutor who has successfully completed study in the course material. For selected subjects, Tutor-led Study Hall is also available. There is no need to make an appointment for Study Hall hours, simply bring your coursework and there will be tutors on hand to assist you. To learn more or request tutoring services, visit the Center online at www.luc.edu/tutoring.