General Chemistry A
Chemistry 105 - Section 001
Fall 2009

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 (with **Math Review Kit** and Media Companion): ISBN 0-13-5031486. **Companion Web site http://chem.prenhall.com/brown.**

Suggested: Student's Guide to Chemistry, The Central Science, J.C. Hill, Prentice Hall, Inc., 11th ed., 2009, IBSN: 0-13-6002641.

Lecture: Lectures are scheduled Tuesday and Thursday at 1:00 – 2:15 PM in Flanner Hall 133.

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

Exams and quizzes will be given during the discussion period on Thursday as indicated in the schedule of topics. The exception is Exam 3 which will be given in lecture on Tuesday, Nov. 24.

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

Course Objectives: Provide a foundation for advanced work in chemistry and an appreciation for the scientific method with special emphasis on problem solving. Acquire knowledge about the properties and reactions of matter. Gain an understanding of the basic principles of chemistry and its many applications.

Calculators: Any scientific calculator is sufficient, however, **calculators may not be shared during examinations** and the **case and/or cover must be removed**.

Laboratory: Chem. 105 has a laboratory component, sections 003 & 004, which meet in FH-308 on Wednesday at 2:45-5:30 PM and Friday at 8:30 – 11:15 AM, respectively. **Laboratory work will begin the week of 8/31/09.**

Tentative Schedule of Topics

Date	Day	Topics	Chapter	Pages
8/25	**T**	Matter & Measurements Discussion	1	1 – 35; 1104 – 1110
8/27	**Th**	Atomic Theory of Matter Discussion	2	36 – 50
9/1	**T**	Molecules & Ions Discussion	2	51 – 76
9/3	**Th**	Chemical Equations Discussion – **Quiz 1**	3	78 – 88
9/8	**T**	Stoichiometry (Mole Relations) Discussion	3	89 – 117
9/10	**Th**	Aqueous Reactions Discussion	4	118 – 141
9/15	**T**	Solution Stoichiometry Discussion	4	142 – 163
9/17	**Th**	Thermochemistry Discussion – **Exam I – Ch 1 – 4**	5	164 – 178
9/22	**T**	Calorimetry Discussion	5	179 – 184
9/24	**Th**	Hess's Law Discussion	5	185 – 209
9/29	**T**	Atomic Spectra Discussion	6	210 – 223
10/1	**Th**	Quantum Mechanical Model Discussion – **Quiz 2**	6	224 – 233
10/6	**T**	Mid-Semester Break – No Class		

10/8	**Th**	Electron Configurations Discussion	6	234 – 253
10/13	**T**	Periodic Properties Discussion	7	254 – 270
10/15	**Th**	Group Trends Discussion – **Quiz 3**	7	271 – 295
10/20	**T**	Basic Chemical Bonding Discussion	8	296 – 313
10/22	**Th**	Lewis Structures Discussion	8	314 – 324
10/27	**T**	Covalent Bond Strength Discussion	8	325 – 339
10/29	**Th**	Molecular Geometry Discussion – **Exam II – Ch 5 – 8**	9	340– 356
11/3	**T**	Hybrid Orbitals Discussion	9	357 – 367
11/5	**Th**	Molecular Orbitals Discussion	9	368 – 391
11/10	**T**	Gas Laws Discussion	10	392 – 401
11/12	**Th**	The Ideal-Gas Equation Discussion – **Quiz 4**	10	402 – 413
11/17	**T**	Kinetic Theory & Real Gases Discussion	10	414 – 435
11/19	**Th**	Intermolecular Forces Discussion	11	436 – 448
11/24	**T**	**Exam III – Ch 9 & 10**		
11/26	**Th**	Thanksgiving Break – No Classes		

12/1	**T**	Phase Changes Discussion	11	449 – 457
12/3	**Th**	Solids Discussion	11	458 – 478
12/10	**Th**	**Final Exam (1:00-3:00 PM) – Chapters 1-11**		

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 and complete solutions to all listed problems will be posted in the display case on the 4th floor of Flanner Hall.

Selected End-of-Chapter Problems:

Chapter 1: 3, 5, 6, 9, 13, 19, 21, 25, 31, 33, 37, 39, 41, 47, 55, 58, 68, 71, 77

Chapter 2: 4, 9, 13, 15, 17, 21, 23, 29, 31, 39, 43, 47, 55, 61, 65, 69, 73, 88, 93, 95, 100

Chapter 3: 3, 7, 9, 11, 19, 25, 31, 39, 43, 47, 53, 55, 61, 65, 69, 75, 77, 85, 89, 97

Chapter 4: 3, 7, 13, 25, 31, 39, 43, 45, 49, 51, 59, 69, 75, 77, 85, 97, 100, 104, 115

Chapter 5: 4, 9, 11, 13, 19, 25, 29, 33, 43, 47, 49, 53, 57, 61, 67, 71, 77, 85, 87, 93, 115

Chapter 6: 5, 7, 13, 15, 21, 27, 29, 33, 39, 41, 45, 47, 51, 55, 59, 61, 63, 67, 69, 75, 90

Chapter 7: 2, 5, 15, 17, 21, 29, 31, 33, 39, 41, 43, 51, 53, 57, 65, 67, 73, 83, 94, 106

Chapter 8: 2, 5, 7, 13, 17, 21, 29, 33, 35, 39, 45, 49, 53, 57, 59, 61, 63, 67, 75, 85, 88

Chapter 9: 3, 5, 9, 11, 19, 25, 28, 31, 35, 37, 39, 41, 45, 51, 53, 55, 57, 61, 82, 101

Chapter 10: 2, 5, 17, 23, 29, 35, 39, 43, 51, 55, 57, 65, 67, 69, 71, 73, 75, 81, 87, 85, 99

Chapter 11: 4, 7, 9, 11, 13, 17, 19, 29, 33, 35, 37, 45, 47, 49, 51, 59, 61, 63, 65, 71, 90

Examinations and Academic Honesty: Course grades will be determined from scores achieved on quizzes, examinations 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 properly filled in.**

All students are responsible for exercising the highest level of academic honesty while taking examinations. Please read the University policy on academic honesty in the Catalog of Undergraduate Studies.

Grading Scheme: Course grades are based on the number of points earned on lecture examinations and quizzes, and in the laboratory.

The total number of lecture points, out of a total of 500 achievable points, will be determined in one of two ways depending upon your final exam score. The method giving the highest score 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, i.e., 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, i.e., Method 2.

Test Article	Method 1	Method 2
Exam 1	**100**	**100**
Exam 2	**100**	**100**
Exam 3	-	**100**
Quizzes	**100**	**100**
Final Exam	**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. If one 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 test articles and 20% from laboratory work.