General Chemistry for Majors
Chemistry 105
Section 001

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

Office Hours: Tu, Th 2:30 – 4:00 PM, other times by appointment.

Required Textbooks: Chemistry, The Central Science, T. L. Brown, H. G. LeMay, B. E. Burston, C. J. Murphy, and P. M. Woodward, Prentice Hall, Inc., 12th ed., 2012. ISBN-10: 0321696727 | SBN-13: 97816967274. Access to Mastering Chemistry is not required.

Slowinski's Chemical Principles in the Laboratory for Chemistry 105: Loyola University Edition, E. J. Slowinski, W. C. Wolsey, and R. C. Rossi, Brooks/Cole, 2011. ISBN-10: 113368825X | ISBN-13: 9781133688259

Recommended Textbook: Student's Guide, Chemistry, The Central Science, J. C. Hill, Prentice Hall, Inc., 12th ed., 2012. ISBN-10: 0321704584 | ISBN-13: 9780321704580. This paperback contains numerous additional, detailed, worked-out examples as well as many practice exam questions. This could be shared to reduce cost.

Lecture: Lectures are scheduled for Tuesday and Thursday at 1:00 – 2:15 PM in Dumbach Hall, Room 227. Lecture **outlines** for each chapter will be periodically sent to all enrolled students via Loyola's email system, GroupWise. Written reminder of exam dates and coverage will also be provided via this medium.

Discussion: Discussion is scheduled Tuesday and Thursday at 4:00 – 5:00 PM in Flanner Hall, Room 133. **Exams and quizzes** will be given **during Thursday discussion periods** as indicated in the schedule of topics.

Course Description: A study of chemical principles, reactions, and bonding with emphasis on the development of a scientific attitude and an understanding of fundamental 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: Only the most **basic scientific calculator** may be used during examinations, e.g., a TI-30XA, TI-34 II, or FX-60. **Cell phones, graphing calculators, and programmable calculators are not allowed to be used during examinations.**

Laboratory: Chemistry 105 has a laboratory component, section 003, which meets in FH-305 and 308, Wednesday at 2:45 – 5:45 PM. Laboratory work begins on 8/31/11.

Tentative Schedule

Date	*Day*	*Topics*	*Chapter*	*Pages*
8/30	**T**	Matter & Measurements Discussion	1	2 – 31; xxix-xxx 1051 – 1057
9/1	**Th**	Atomic Theory of Matter Discussion	2	38 – 51
9/6	**T**	Molecules & Ions Discussion	2	52 – 68
9/8	**Th**	Chemical Equations Discussion – **Quiz 1**	3	76 – 85
9/13	**T**	Stoichiometry (Mole Relations) Discussion	3	86 – 104
9/15	**Th**	Aqueous Reactions Discussion	4	114 – 138
9/20	**T**	Solution Stoichiometry Discussion	4	139 – 149
9/22	**Th**	Thermochemistry Discussion – **Exam I – Ch 1 – 4**	5	158 – 174
9/27	**T**	Calorimetry Discussion	5	175 – 180
9/29	**Th**	Hess's Law Discussion	5	181 – 195
10/4	**T**	Atomic Spectra Discussion	6	206 – 218
10/6	**Th**	Quantum Mechanical Model Discussion – **Quiz 2**	6	219 – 232
10/11	**T**	Mid-Semester Break – No Class		

10/13	**Th**	Electron Configurations Discussion	6	233 – 239
10/18	**T**	Periodic Properties Discussion	7	248 – 268
10/20	**Th**	Group Trends Discussion	7	269 – 279
10/25	**T**	Basic Chemical Bonding Discussion	8	288 – 304
10/27	**Th**	Lewis Structures Discussion – **Exam II – Ch 5 – 7**	8	305 – 314
11/1	**T**	Covalent Bond Strength Discussion	8	315 – 322
11/3	**Th**	Molecular Geometry Discussion	9	330– 344
11/8	**T**	Orbital Overlap & Hybrid Orbitals Discussion	9	345 – 357
11/10	**Th**	Molecular Orbitals Discussion – **Quiz 3**	9	358 – 373
11/15	**T**	Gas Laws Discussion	10	382 – 390
11/17	**Th**	The Ideal-Gas Equation Discussion	10	391 – 401
11/23	**T**	Kinetic Theory & Real Gases Discussion	10	402 – 415
11/23 - 11/26	**Th**	Thanksgiving Break – No Classes		
11/29	**T**	Intermolecular Forces Discussion	11	424 – 438
12/1	**Th**	**Discussion – Exam III – Ch 9 & 10** **4:00 PM – FH-133**		

12/6	**T**	Phase Changes Discussion	11	439 – 444
12/8	**Th**	Phase Diagrams Discussion **– Laboratory Final Exam**	11	445 – 453
12/15	**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. Solutions to selected problems will be presented during discussion.

Selected End-of-Chapter Problems:

Chapter 1: 4, 6, 7, 9, 13, 19, 21, 25, 31, 33, 37, 39, 41, 49, 55, 59, 69, 71, 72, 78

Chapter 2: 4, 9, 13, 15, 17, 21, 23, 29, 31, 39, 43, 47, 55, 61, 65, 69, 73, 87, 92, 94, 101

Chapter 3: 3, 7, 9, 11, 19, 25, 31, 39, 43, 49, 57, 59, 65, 69, 73, 79, 83, 89, 94, 101

Chapter 4: 2, 7, 13, 25, 31, 39, 43, 45, 49, 51, 59, 69, 75, 77, 85, 96, 99, 103, 114

Chapter 5: 5, 11, 13, 21, 27, 31, 35, 45, 49, 51, 53, 59, 63, 69, 73, 79, 87, 91, 97, 114

Chapter 6: 6, 8, 15, 17, 24, 29, 31, 35, 41, 43, 47, 49, 53, 57, 61, 63, 65, 69, 75, 90

Chapter 7: 2, 5, 15, 17, 21, 29, 31, 33, 39, 41, 43, 51, 53, 57, 65, 67, 73, 83, 93, 106

Chapter 8: 2, 7, 9, 15, 19, 23, 31, 35, 37, 41, 47, 51, 55, 59, 63, 65, 71, 80, 87, 90

Chapter 9: 3, 5, 9, 11, 25, 31, 34, 39, 43, 45, 47, 49, 53, 61, 63, 65, 67, 73, 96, 114

Chapter 10: 2, 5, 19, 25, 31, 37, 41, 45, 55, 59, 61, 71, 73, 75, 71, 77, 83, 91, 97, 95, 109

Chapter 11: 5, 7, 9, 11, 15, 19, 21, 33, 39, 41, 43, 51, 53, 55, 57, 67, 70, 72, 84

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 during examinations and in the laboratory. Please read the University policy on academic honesty.

Grading Scheme: Course grades are based on the number of points earned on examinations (4), quizzes (3), and in the laboratory. The 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 are assigned proportionately within these ranges. Grading contributions are 80% from test articles and 20% from laboratory work.

Note: The Tutoring Center offers free small group tutoring and lab (drop-in) tutoring for Loyola students. To learn more or request tutoring services, visit the Tutoring Center online at www.luc.edu/tutoring.