

## General Chemistry B (CHEM 102-020) Spring 2016

**Description:** This lecture and discussion course is a continuation of Chemistry 101 and includes topics on solutions, kinetics, equilibrium systems, acids and bases, chemical thermodynamics, electrochemistry, nuclear chemistry, and some additional topics. The emphasis of this class is on understanding of chemical principles and fundamental concepts.

**Course Prerequisites:** Chemistry 101 or 105 and completion of Math 118 with a grade of C– or better.

**Instructor:** Wei-Tsung Lee, office FH 402, telephone (773)508-3205.

**Time and Location:** Tuesday and Thursday, 7:00–8:15 pm, Auditorium (lecture)  
Tuesday and Thursday, 8:30–9:20 pm, Auditorium (discussion)

**Office Hours:** Tuesday, Wednesday, and Thursday 4:00–5:00 pm or by appointment.

**Textbook:** *Chemistry The Central Science*, Brown/LeMay/Bursten/Murphy/Woodward, 13th edition.

**Grading:** You have two other avenues of learning besides lecture, which will prepare you for the exams.

1) **Discussion (Best 12/14):** Preparatory problems are demonstrated in the discussion sections. After demonstration, roughly half the class period will be spent working through similar problems, and then more challenging problems.

2) **Homework (MasteringChemistry) (Best 12/14):** Homework for the class can be accessed via course number CHEM102LEE2016. In addition to acting as the online homework system, MasteringChemistry also has a “study area” available with additional resources.

A typical exam will be about 25–40% more difficult than the problem sets. There are three exams (best 2/3), each worth 100 points, and a final (150 pts) which is **cumulative**. Exams should not be missed, but in the case of hardship or debilitating illness can be made up. Under such circumstances, evidence of hardship should be presented and you and I can arrange a makeup. This must be scheduled within one week of the original exam date.

### Grading Scale:

Homework	12 × 5 pts	50 (Best 12 out of 14)	A > 90%
Discussion	12 × 5 pts	60 (Best 12 out of 14)	B > 80%
Exams	2 × 100 pts	200 (Best 2 out of 3)	C > 70%
Final	150 pts	<u>150</u>	D > 60%
Total		470	F > 50%

Pluses and minuses are not indicated in the grading scale but will be given. This will be done according to natural breakdown of the grade distributions. Expect this to be the closest to 1–2% to the final A–B, B–C, and C–D divisions.

In light of the recent federal privacy act, grades will not be posted nor will graded work be left outside my door. I will be available during normal office times to discuss mid-term grades during the week preceding the final drop date. I will hand back graded work once in class and thereafter when a student comes to my office, with ID, to pick it up.

***Academic Honesty and Discipline:*** In the discussion, no student will submit work that is not his/her own by verbatim copying the work of another student or by using the work or solutions from this course in previous years. During the examination, a student will not either accept or use information of any kind from other students or use aids to memory other than those expressly permitted by the examiner. Departure from the above standard will result in disciplinary penalties that range anywhere from deduction of points to awarding a failing grade for the entire class. If a student is caught cheating, **100 points** will be deducted from the total grade, and he/she will be brought to the attention of the Department Chair and Dean of the College who will determine if further action should be taken. Full details on Loyola University's academic policy can be found at the following site: <http://www.luc.edu/media/lucedu/cas/pdfs/academicintegrity.pdf>

***Disabilities:*** Students who have disabilities which they believe entitle them to accommodations under the Americans with Disabilities Act should register with the Services for Students with Disabilities (SSWD) office. Students should contact SSWD coordinator at least four weeks before their first semester or term at Loyola. Returning students should schedule an appointment within the first two weeks of the semester or term. More information is available at: <http://www.luc.edu/sswd/register.shtml>

***Computers and Cell Phones:*** All laptops, computers, and cell phones must be turned off prior to the beginning of class.

***Recording Devices:*** No audio or video recordings of the class lectures are permitted. Any violation of this will result in an automatic failure.

***Class Attendance:*** Your grade is based in part on classroom attendance and participation. Therefore, it behooves you to attend all classes.

***Tentative Syllabus: Must read the scheduled chapter before each class.***

<b>Week</b>	<b>Dates</b>	<b>Contents</b>
<b>1</b>	January 19 January 21 (D01,02)	Introduction Ch 13: Solution Process; Solubility; Solution Concentration; Colligative Properties
<b>2</b>	January 26 (D01) January 28 (D02)	Ch 13: Colligative Properties Ch 14: Reaction Rates; Rate Laws
<b>3</b>	February 2 (D01) February 4 (D02)	Ch 14: Half-Life; Collision Model; Arrhenius; Activation Energy; Reaction Mechanisms
<b>4</b>	February 9 February 11 (D01, 02)	<b>EXAM 1 (February 9th)</b> Ch 15: Dynamic Equilibrium; Equilibrium Constant
<b>5</b>	February 16 (D01) February 18 (D02)	Ch 15: Equilibrium Constants and Concentrations; Reaction Quotient; LeChatlier's Principle
<b>6</b>	February 23 (D01) February 25 (D02)	Ch 15: Bronsted-Lowry Acids and Bases; Relative Acidity/Basicity Ch 16: pH Scale; Strong Acid/Base Calculations
<b>7</b>	March 1 (D01) March 3 (D02)	Ch 16: Weak Acid/Base Equilibria; Salt Solutions Ch 17: Common Ion Effect
<b>8</b>	March 8, 10	Spring Break
<b>9</b>	March 15 March 17 (D01, 02)	<b>EXAM 2 (March 15th)</b> Ch 17: Buffer Solutions and Their Preparation
<b>10</b>	March 22 (D01, 02)	Ch 17: Acid-Base Titrations; Solubility Equilibria
<b>10</b>	March 24	Easter Holiday
<b>11</b>	March 29 (D01) March 31 (D02)	Ch 19: Thermodynamics; Spontaneous Processes; Entropy
<b>12</b>	April 5 (D01) April 7 (D02)	Ch 19: Entropy; Gibbs Free Energy; Gibbs Free Energy and Equilibrium
<b>13</b>	April 12 April 14 (D01, 02)	<b>EXAM 3 (April 12th)</b> Ch 20: Balancing Redox Reactions; Electrochemical cells
<b>14</b>	April 19 (D01) April 21 (D02)	Ch 20: Free Energy, Equilibrium; Nernst; Batteries; Fuel Cells; Electrolysis Ch 21: Radioactivity; Nuclear Chemistry
<b>15</b>	April 26 (D01) April 28 (D02)	Ch 21: Nuclear Chemistry Additional Topics
<b>16</b>	TBA	<b>FINAL EXAM</b>