

**CHEM 1020 General CHEMISTRY 2, Section 1(CRN 2735)**  
**Winter Quarter, 2019**

**Instructor:** Dr. Verl (Balasingam Murugaverl)  
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**Office Hours:** Open Door  
**Lecture:** M W F, 8 – 8:50 AM, Olin Hall 205  
**Recitation:** Tuesday, 8 – 8:50 AM, Olin Hall 205.

**Text:** There is no specific textbook for my class since books are simply for reference. However, material covered in this course can be found in any **general Chemistry** text books and on various educational web sites. *You will be responsible for researching the topics covered in the lectures.*

**Course Overview:** Chemistry is an experimental science and all the theories and concepts that the students learn in the lectures originated from attempts to explain experimental observations. Chemistry is learned through understanding not memorization. The reason many people find chemistry difficult is because they do not fully understand the fundamental concepts. Chemistry in general is an ever expanding area of science and is pivotal in developing the logic and reasoning skills that are essential for the understanding reactions in chemistry and biology. This demands a higher level of thinking and the purpose of this course is to provide students with an in-depth knowledge of the principles and applications of chemistry. I do not believe in any gimmicks like clickers or on-line home work, they simply **do not enhance** student understanding of chemical concepts. Chemistry is about how well you can apply concepts to solve real life problems, not how well you can do exam problems. Please make sure that my teaching style better suite your learning style.

**Exams:**

- a)** There will be two one-hour exams and a final exam. **There will not be any make up exams under any circumstances** and your final grade for the course will be determined by your performance in **all the three exams**. If your score in the final exam is higher than any of the scores in the one-hour exams, the final exam score will replace the lowest score of the 1 hour exams.
- b)** If anyone for any reason had to take the exam outside of the scheduled time, arrangements need to be made with the instructor at least one week in advance. The instructor reserves the right to deny or accept the request and also to alter the exam. Often these non-scheduled exams will be much more difficult than the regularly scheduled exams.
- c)** **All exams will be comprehensive encompassing lecture materials, assignments, and laboratory material. The exams are designed to test your ability to apply the concepts covered in the lecture.**

**Lab:**

Although separate, the lab is an integral part of this course. Your comprehension of the material covered in the laboratory will be tested via the exams given in the lecture course.

**Grading:**

The breakdown of the course grades is as follows:

Exam 1	200 points
Exam 2	200 points
<u>Final Exam</u>	<u>200 points</u>
TOTAL	600 points

**All form of electronic devices must be turned off during the class.**

I reserve the right to modify the syllabus and calendar for the class as necessary. I will use Tuesdays for Lectures if necessary.

Power Point Presentations of the lecture topics will be made available under file section of Canvas. Each power point presentation is on a timer and will be available only during the coverage of the topics in lecture.

The power point presentations are just prelude to the extensive and detail coverage of the topics in the lectures. **The exams will cover everything that is covered in the lecture.**

### **Tentative Schedule of Lecture Topics**

1/6 M 1/8 W 1/10 F 1/13 1/15 W 1/17 F	<b>Thermodynamics</b> <i>Definitions, Sign Conventions, Internal Energy and 1<sup>st</sup> Law, PV work, Enthalpy, Entropy and 2<sup>nd</sup> Law, Spontaneity and Gibbs Free Energy, 3<sup>rd</sup> Law.</i>
1/20 M -no class 1/22 W 1/24 F	<b>Introduction to Equilibria</b> <i>Dynamic equilibrium and Le Chatelier's Principle and application.</i>
<b>1/27 Monday</b>	<b>Exam 1 (cumulative)</b> <i>(everything that was covered in Lectures and Lab)</i>
1/29 W 2/31 F 2/3 M 2/5 W 2/7 F	<b>Chemical Equilibria</b> <i>Equilibrium Expression and Constant, Reaction Quotient, Homogeneous and Heterogeneous equilibria, Concentration and Partial pressure, Solving equilibrium problems.</i>
2/10 M 2/12 W 2/14 F 2/17 M 2/19 W 2/21 F	<b>Acids and Bases</b> <i>Acid/Base theories, Bronsted-Lowry definition, Conjugate acid base pair, Electrolytes, auto ionization of water, Acid dissociation constant, pH, Acid-Base Strengths, <math>pK_a</math>, <math>pK_b</math>, <math>pK_w</math>, Buffers, Indicators, Titration Curves. Solving acid/base problems.</i>
<b>2/24 Monday</b>	<b>Exam 2 (cumulative)</b> <i>(everything that was covered in Lectures and Lab)</i>
2/26 W 2/28 F 3/2 M 3/4 W 3/6 F	<b>Solubility Product</b> <i>Solubility, precipitation, Common ion effect, Solving solubility problems.</i>
3/9 M 3/11 W 3/13 F 3/16 M	<b>Reaction Kinetics</b> <i>Kinetics and Thermodynamics, Collision Theory and Boltzmann distribution, Rate expressions, Order of reaction, Rate Laws, concentration dependent Integral and Differential rate laws, Rate and Molecularity and Mechanism,</i>
<b>3/20 Thursday</b>	<b>Final Exam (cumulative)</b> <b>8-9:50AM, Olin Hall 205</b> <i>(everything that was covered in Lectures and Lab)</i>