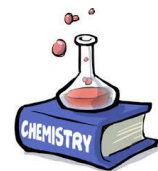




# General Chemistry II

CHEM 1200 A

Fall --- 2019



- **Lecturer:** Dr. Nick Thomas
- **Office:** Room: 310-I, Goodwyn Hall
- **Phone:** (334) 244-3327
- **E-mail:** nthomas@aum.edu
- **Class Days:** Monday/Wednesday
- **Class Times:** Starting 6:20 pm (period 8)
- **First Class Day:** Mon, Aug 19, Room 319 Goodwyn Hall

## Web site

[www.getnickt.org](http://www.getnickt.org) – Here you will find study questions from the text, instructions for using burets and pipets, and other important information about the course (note: instructor does not use Blackboard). Lecture note summaries are also available on the web site, but these are only a guideline and provided for students who have missed a class or two. They are not meant to replace class lectures which will often contain more information than the summaries. Reviews for each test are also provided.

## Course Description

General Chemistry II (3) Pr., CHEM 1100 and CHEM 1101. A detailed study of acid-base theory, kinetics, equilibria, and thermodynamics. Introductions to organic chemistry and nuclear chemistry will be included. Students who also take CHEM 1201 will conduct experiments which illustrate lecture topics.

## Text

*General Chemistry: The Essential Concepts*, Raymond Chang, 7<sup>th</sup> Edition. A laboratory manual and safety goggles must be obtained by the students who are also enrolled for CHEM 1201 (lab course).

## Course Objectives

Chapters 13-21, 11

The course will study the dynamic transformations of matter, looking at the thermodynamics and kinetics of reactions. Acid-base, redox, and nuclear reactions will be studied as well, and the student will be introduced to organic chemistry and coordination chemistry. Problem solving, data evaluation, and analysis are stressed.

Students should meet the following basic objectives:

Work with a variety of concentration units; Have a basic overview of hydrocarbons and functional groups; Understanding acid-base theory; Write and use equilibrium constants; Calculate pH in a variety of solutions; Work with free energy and entropy changes; Identify the geometry of coordination compounds; Balance redox reactions and determine cell potentials; Determine rate laws; Understand activation energies & temp dependence of reactions; Write chemical mechanisms; Balance nuclear reactions; Understand fission and fusion.

### Registration

All students must be officially registered. Contact the registrar's office if you have any doubts concerning your registration status.

### Attendance

Students have an obligation to attend all lectures and to be ON TIME. Lectures will begin promptly at 6:20 pm (period 8) on Mondays/Wednesdays in room 319 Goodwyn Hall. Students are required to sign an attendance roll each day for the first few weeks.

***Note: 1. Unless you have a pending emergency please switch off cellphone ringers in class as they are very distracting to all.  
2. No cell phone or earphones may be used during exams; only non-programmable calculators***

### Assistance

Office hours will be posted on the instructor's office door and web site. Additional appointments may be made with the instructor. The Instructional Support Lab (203G) can also provide tutoring.

### Special Needs

Students who require special attention should contact the AUM Center for Disability Services. *AUM attempts to make reasonable accommodations to meet the special needs of its disabled students.*

### Grading

There are 10 multiple-choice tests during the semester – each is worth **50 points**. The course grade is based on the best 8 of these tests (lowest or missed two dropped) plus a FINAL comprehensive exam which all students **MUST** take (this is a Chemistry Department requirement). The final exam is worth

**100 points** and will cover material from both CHEM 1100 and CHEM 1200. Material to be tested in each exam is as follows (see timetable for dates):

1st test	Chapter 13
2nd test	Chapter 14
3rd test	Chapter 15
4th test	Chapter 16
5th test	Chapter 17
6th test	Chapter 18
7th test	Chapter 19
8th test	Chapter 20
9th test	Chapter 21
10th test	Chapter 11
Final	Chapters 1-21

The final exam plus 8 best test scores will count **500 points** total which will be converted to percent and overall course letter grade assigned as follows:

A = 90-100%; B = 80-89%; C = 65-79%; D = 50-64%; F < 50%

A Scantron is needed for each test and the final exam (do not bend the Scantrons as they may read incorrectly; write in pencil and be careful if erasing answers to avoid smudges).

Grades for each test will be posted on the instructor's webpage. On each test, students must provide a code under which name the grades will be listed. The same code is to be used on all exams (so remember it!). The code may be any letter-single digit number-letter combination (e.g. A3B). Make up your own code, but do not to use the initials of your name.

**Make-up tests:** Individual make-up tests will **NOT** be given. If a test is missed **FOR ANY REASON** it will automatically be dropped (exception: official university activities, with written permission). If two tests are missed, both will be automatically dropped.

### Withdrawal

If you withdraw from this class during the semester, our department requires that you must also withdraw from CHEM 1201.

### Learning Outcomes

Learning Outcomes: After completion of this course, students will be able to analyze:

1. Properties of solutions, with respect to solubilities, molarities, and colligative effects
2. Chemical kinetics, including rate laws and mechanism.

3. Chemical equilibrium, such as acid/base equilibria.
4. Thermodynamic relationships, the 3 laws of thermodynamics and  $\Delta H$ ,  $\Delta G$ , and  $\Delta S$  calculations.
5. Oxidation / reduction reactions, including balancing and E calculations.

Students will also be able to describe:

1. Coordination compounds, including their nomenclature and magnetic properties.
2. Nuclear processes.
3. Acid / base properties, such as pH, buffers, and the Bronsted-Lowry definition
4. Organic compounds with respect to their classification and basic nomenclature

*Note: Significant home study is essential for any chemistry course. This is especially true for this course which contains some very difficult topics. In addition to reading the text, it is students should answer questions from the end of each chapter in the text (see list of suggested problems on web site). Several practice tests are also available on the website. Each contains 10-15 multiple choice questions typical of those you will encounter on actual exams for this course. Remember, these are just a sample of questions; the actual exams will be longer and contain questions on more course topics. Also study closely the worked examples in lectures notes as well as new concepts and terms found in those notes.*