

## CHEMISTRY 152 COURSE INFORMATION

Instructor: Dr. Joe Lanzafame - just call me Joe

### I. Office Hours:

Office: By appointment only.  
Phone: 314-1240 (off campus)  
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### II. Goals

To build upon the understanding of basic chemical concepts and problem solving skills developed in Chem 151. The ultimate goal is the taking of the ACS General Chemistry exam which is cumulative, covering both Chem 151 and 152.

#### [CHE 152 General College Chemistry II](#)

1. Calculate solution concentrations: percent concentration (mass/mass, volume/volume and mass/volume), mole fraction, molarity and molality.
2. Determine reaction order from graphical and experimental data and make reaction predictions based on the integrated rate equations.
3. Calculate equilibrium concentrations based on: initial concentrations; initial and final concentrations.
4. Predict the direction of an equilibrium reaction based on changes in reaction conditions (concentrations, volume changes and temperature).
5. Write acid base hydrolysis reactions based on the Bronstead/Lowry theory of acids and bases. Calculate the pH of strong and weak acids and bases. Calculate the pH and changes in pH of acid/base buffer systems.
6. Calculate the solubility of sparingly soluble salts.
7. Perform a series of acid/base titrations.
8. Predict the spontaneity of a chemical process based on Free Energy calculations.
9. Write balanced oxidation/reduction reactions.
10. Demonstrate an understanding of electrolytic cells through cell diagrams and cell voltage calculations based on the Nernst equation.

### III. Textbooks, etc.

1. Textbook: The textbook is available free of charge as an open education resource: <https://courses.lumenlearning.com/sunv-mcc-chemistryformajors-2/>. The text can also be accessed on Blackboard (or course website). A copy of the text is available for purchase in the Bookstore.

2. Calculator with scientific functions (Log, ln,  $y^x$ , etc.)
3. Chem 152 lab manual (in bookstore)
4. Lab goggles (in bookstore)

#### **IV. Homework and in-class assignments**

These count as part of your grade as well as giving you valuable practice. Ultimately it is your responsibility to obtain as much practice as YOU need. If that means doing 3x as many exercises as I suggest, do them.

We will also have a few in-class assignments that will be graded to encourage participation and attendance.

#### **V. Grading**

3 exams (drop lowest) - 100 points each

Final Exam - 100 points

Laboratory Write-ups- 120 points

Homework & in-class assignments - 80 points

Total possible points - 500

Grading is NOT on a curve.

Grade	Points
A	460
A-	450
B+	435
B	410
B-	400
C+	385
C	350
C-	335
D	300
F	<300

**NO MAKE-UPS WILL BE GIVEN** except in cases of accident or serious illness. In the case of illness, you **ABSOLUTELY MUST** contact me in advance of the quiz/exam.

#### **VI. Learning Centers**

Monroe Community College has a number of Learning Centers at Brighton (for example, Accounting, Math, Psychology, Writing, the Electronic Learning Center, etc.) and at Damon (for example, the Integrated Learning Center, Electronic Learning Center, etc.). Learning Centers are staffed with instructional personnel and may be equipped with computers and software to assist students. It is recommended that students use the Learning Centers to get additional help with concepts learned in the classroom and with their homework. Please refer to your MCC student email to review your referral and objectives for your use of the Learning Center(s).

#### **VII. Emergency Closings**

If the College is **closed** or classes are cancelled due to inclement weather or some other emergency, all Rochester area radio and television stations will be notified no later than 5:30 a.m. or in the case of a mid-day decision, no later than 3:00 p.m. In addition, the home page on the MCC website ([www.monroecc.edu](http://www.monroecc.edu)) will display a message indicating the College is closed or classes are cancelled. Please do not call the College to avoid overloading the telephone lines.

In the event of an **emergency**, such as a campus evacuation or closure, severe weather alert, fire in a building, hazardous material incident, etc., where time-sensitive, proactive actions need to be communicated, the **SUNY NY-Alert** system will be utilized to provide immediate notification to all MCC students and employees who have opted to receive such alerts. Those who sign up for SUNY NY-Alert can choose to receive emergency messages via a variety of communication technologies, such as e-mail (college and/or personal accounts), and audio and/or text message to a campus, home or cell phone, fax, etc. For more information on SUNY NY-Alert, including how to sign up, please visit <http://www.monroecc.edu/depts/pstd/NYAlert.htm>.

Information regarding **class cancellation** is available daily on the web or through the telephone. Simply go to the MCC website ([www.monroecc.edu](http://www.monroecc.edu)) and select the link in the second heading menu labeled “Current Students”, and then select the “Class Cancellations” link along the left column under the “Academics at MCC” section. Additionally, class cancellation information is available by dialing 292-2066, press “1” for the Brighton campus and “2” for the Damon City campus. If possible, please use the web, as there could be delays in the voice recordings based on the number of cancellations.

#### **VIII. Notice of Non-Discrimination**

Monroe Community College prohibits discrimination based on race, color, religion, sex, sexual orientation, pregnancy, familial status, gender identity or expression, age, genetic information, national or ethnic origin, physical or mental disability, marital status, veteran status, domestic violence victim status, socioeconomic status, criminal conviction, or any other characteristic or status protected by state or federal laws or College policy in admissions, employment, and treatment of students and employees, or in any aspect of the business of the College.

Inquiries regarding the application of Title IX and other laws, regulations and policies prohibiting discrimination may be directed to Kristin Lowe, Esq., Title IX Coordinator, (585) 292-2108 or [klowe5@monroecc.edu](mailto:klowe5@monroecc.edu) OR Melissa Fingar, Esq., Assistant Title IX Coordinator, (585) 292-2117 or [mfingar@monroecc.edu](mailto:mfingar@monroecc.edu).

## Learning Objectives

### 12. Intermolecular Forces

- A. Recognize the different types of intermolecular forces
- B. Understand the connection between the intermolecular forces and the corresponding physical properties of molecules.
- C. Be able to predict trends in physical properties based on the relative intermolecular forces involved.

### 13. Properties of Solutions

- A. Determine the Properties of solutions based on the different intermolecular forces present.
- B. Calculate boiling point elevation, freezing point depression and osmotic pressure.

### 16. Kinetics

- A. Be able to determine the rate of a reaction.
- B. Based on initial rates and concentrations, be able to determine the order of a reaction.
- C. Be able to calculate a rate constant.
- D. Be able to determine and apply the integrated rate equation based on the order of the reaction.

### 17. Equilibrium

- A. Be able to write the equilibrium constant expression based on the balanced equation.
- B. Be able to calculate the equilibrium constant for a reaction based on equilibrium concentrations.
- C. Be able to assemble an ice chart and determine the equilibrium concentrations if the equilibrium constant is known.

### 18. Acids & Bases

- A. Apply equilibrium principles to acids/base reactions.

### 19. Ionic Equilibria

- A. Apply equilibrium principles to ionic reactions.

### 20. Thermochemistry

- A. Be able to apply the idea of enthalpy to reactions.
- B. To be able to use Hess's Law to calculate enthalpies of reactions based on known reactions.
- C. To be able to predict spontaneity of reactions using Gibb=s Free Energy
- D. To understand the nature of entropy and enthalpy

21. Electrochemistry

- A. Recognize redox reactions.
- B. Balance redox reactions.
- C. Determine cell potentials using 2 reactions.
- D. Apply the Nernst equation to real systems.

14. Main Group Elements: Applying Principles of Bonding and Structure

- A. Recognize the connection between the bonding of a molecule and its physical properties
- B. To be able to use group properties to predict bonding similarities and rationalize similarities and differences in chemical and physical properties.

15. Introduction to Organic Chemistry

- A. Recognize organic molecules
- B. Identify and name simple hydrocarbons
- C. Recognize structural isomers
- D. Recognize and name alcohols, amines, and carboxylic acids.