



## General Chemistry I

CEM 142-SI1

Sp 2021

**Number of Credits:** 5

**Contact Phone:** 734-408-1377

**Recitation Times**

2-3:30 M/W online

**Contact Email:** ottmark@jccmi.edu

**Office Hours:** T,W,R 9-11a / by appointment

**Online Reference:** 142.docott.com

**Instructor:** Dr. Mark Ott

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### Course Description

This course is the second semester of general chemistry and extends material covered in CEM 141. Covered concepts include chemical thermodynamics, electrochemical reactions, reaction kinetics, acid-base theories, nuclear chemistry, and aqueous solutions with emphasis on equilibrium. Experiments include quantitative methods, stoichiometry, colorimetry, and gravimetric analysis. This course transfers to the University of Michigan as CHEM 125. Almost every college or university offers a two semester general chemistry course. It is the student's responsibility to determine transferability in each case.

Prerequisite(s) CEM 141

### Course Objectives

Students successfully completing this course should be able to:

The course goals and objectives incorporate specific General Education Outcomes (GEOs) established by the JC Board of Trustees, administration, and faculty. These goals are in concert with four-year colleges and universities and reflect input from the professional communities we serve. GEOs guarantee students achieve goals necessary for graduation credit, transferability, and professional skills needed in many certification programs. The GEOs and course objectives addressed in this class include the following:

This course satisfies GEO #4, [Demonstrate Scientific Reasoning](#)

Students successfully completing this course should be able to:

1. Define and explain intermolecular forces and their effects on various measurable properties.
2. Understand solutions in terms of how they are formed and their quantitative and qualitative properties.

3. Perform basic kinetics calculations as well as predict basic reaction mechanisms.
4. Explain equilibrium systems, how they reaction to external stimuli, and associated calculations.
5. Understand qualitative properties and quantitative calculations associated with enthalpy, entropy and Gibbs free energy.
6. Explain simple electrochemical cells and perform associated quantitative calculations.
7. Predict basic nuclear decay reactions and explain fundamental nuclear systems including nuclear weapons and nuclear power

## Textbook

**Follett Access! Please review the cost of your required materials at the following link to determine the best option for you to purchase your materials:**

<https://www.bkstr.com/jacksonstore>

For more information on the Follett ACCESS Program, you can view the frequently asked questions here: <https://www.jccmi.edu/bookstore/student-services-follett-access/>.

If after reviewing the costs, you choose to opt out, you may do so here: [www.jccmi.edu/optout](http://www.jccmi.edu/optout).

Please note your opt out selection is for your entire semester schedule. You cannot opt out and opt in to individual courses. And you must opt out by the due date of your first class, which is the 3<sup>rd</sup> day after the start of your earliest course.

If you have questions about materials, please contact the Jackson College Follett bookstore at [jackson@bkstr.com](mailto:jackson@bkstr.com). For account billing questions, please contact the Jackson College Cashier at [jccashier@jccmi.edu](mailto:jccashier@jccmi.edu).

## Extra Requirements

Course pack from JC bookstore

## Grading Procedure

Grades will be posted on the course JetNet page. It is the student's responsibility to periodically check the accuracy of the posted scores. *1 week after a particular assignment grade is posted, they cannot be changed, so make sure you check often!*

<b>Assignments</b>		
3 exams = 300		
~30 Quizzes 10 pts per = 300 ish		
~12 lab assignments @ 15 pts = 180 ish		
<b>Total Points Possible = 780 ish</b>		

### Assessments:

#### Quizzes

Each section of the course pack has a quiz (found in JetNet) that is worth 10 points. These questions cover material in that section and can be short answer, calculations, multiple choice, essay,

depending on the nature of the material. **Quizzes (only) are open note** While you might think that will make the assessment easy, since you can look in your notes while you take the quizzes, they are of a high enough difficulty, that if you have not practiced/studied the material you likely will not have enough time to complete it. Each quiz has a hard time limit that is *not extended*. Open 'note' means you **cannot** use another human being, this includes any online webpage that offers live tutoring

### Exams

Exam formats may include multiple choice, matching, fill-in, short answer, essay, application, and problem solving. Exams will be 100 points each. There is no final exam, but concepts build in this course, so mastery of early material will be important for later content instruction and testing. During exams, you will be using the Respondus system which will lock down your computer and your camera will be watching you as you take your exam. Obviously, the exams are NOT open note. More details about Respondus will come out in class.

### Labs

Labs (since this is completely online) are a little different than a traditional class. The labs will be 'virtual', with some using the software that needs to be downloaded. More information will be given in the JetNet repository.

### Schedule:

The course schedule is listed at the end of this syllabus, but can change, depending on circumstances. The most up-to-date schedule can be found at [142.docott.com](http://142.docott.com). For each lecture section, labs, and exams are listed a 'due date'. You can (and are encouraged to) work ahead. What is listed in the schedule is the last day (time is always 11:59pm) you can submit the material. **Late work is not accepted.**

### Grading Scale

**Your final grade will be based on the following percentages.**

4.0 : >90.00%    3.5 : 85.00 – 89.99    3.0 : 80.00 – 84.99    2.5 : 75.00 – 79.99  
2.0 : 70.00 – 74.99    1.5 : 65.00 – 69.99    1.0 : 60.00 – 64.99

### Academic Honesty Policy

I do not allow any cheating. There will be no leniency on this point. Submitting someone else's work as your own is dishonest and unfair to that person. Penalties are severe **including expulsion**, this is your only warning. The official JCC policy can be found at <https://www.jccmi.edu/wp-content/uploads/1004.pdf>

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

**Plagiarism is defined as the failure to give credit for the use of material from outside sources.**

**Plagiarism includes but is not limited to:**

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

**Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:**

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical

Allowing your work to be submitted by others is also considered cheating.

## **Accessibility**

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

## **Attendance- Participation Policy**

### **For online sections:**

Just as in a traditional classroom course, regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams BEFORE the last day they are due. If problems occur, there is time to fix them before the deadline.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate *within the first couple days of the term* to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you.

## **Course management**

### **Attendance**

Attendance is taken each day class meets and is required.

### **Being Dropped from Class:**

JC faculty are required to drop students from classes if they are not participating. You may be dropped from this class if you miss more than 4 class periods or quizzes. After the drop date, a student missing sufficient days will receive a 0.0 for the course.

Students own the responsibility of the effect of being dropped. Be aware that being dropped from the class may affect financial aid or housing status. If you are dropped, the drop status will **NOT** be changed due to the impact on financial aid, housing status, etc.

### **Incompletes:**

Incompletes will only be issued if the student and is unable to complete the course due to extenuating circumstances. In order to receive an incomplete the student must have completed a vast majority (over 90%) of the course and have been earning a minimum of a 2.0 at the time of the request. If a grade of incomplete is issued all grades/scores earned to that date will be used in calculated the course grade.

Students that have medical issues or extreme family hardships such as a death in the family during the term should discuss the possibility of a medical withdrawal from the course with the Admissions Office.

### **Communication:**

Students are expected to check their JC email on a regular basis or have the JC email forwarded to another address. However, for purposes of this class, I will only respond to emails from the JC email as I am unable to verify other addresses. You should also sign up for Nixle notifications so you can get notifications in case the College is shut down.

### **Grievances:**

If you have a concern about any aspect of the course it is your responsibility to bring it to the instructor's attention. This is the first step of handling any academic concern. Academic complaints need to be handled by having a scheduled meeting with the instructor.

### **Help**

**Study Hints:** There is a nice webpage on the JCC Science department page [http://www.jccmi.edu/Departments/Science/How\\_To\\_Study\\_Science/](http://www.jccmi.edu/Departments/Science/How_To_Study_Science/) or <http://tinyurl.com/j1gp> with study hints and how to be successful in this and other science classes. It is worth your time to peruse it sooner rather than later.

**Tutors:** Tutors (plus additional services for academic success) can be accessed by calling 796-8415 or by stopping by the Center for Student Success, Bert Walker Hall Room 125.

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester.

<https://www.jccmi.edu/center-for-student-success/accommodations-for-students-with-disabilities/>

### **Academic Advising**

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester. Please e-mail [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Accommodations for Students with Disabilities](#) web page

## Calendar

M 6/7	1.05	Molecular Structure Review (SC)
	1.05	Dipole Moment review (SC)
T 6/8	1.1a	Intermolecular Forces pt 1(SC)
		Intermolecular forces pt2 (SC)
	1.1b	Surface Forces
	1.2a	Vapor Pressure (SC)
	1.2b	Boiling Point; Critical T&P
W 6/9	Lab	Evaporative Cooling
R 6/10	lab	Vapor Pressure Lab
F 6/11	1.3a	Phase Changes (SC)
	1.3b	Phase Diagrams (SC)
M 6/14	1.4a	Bonding in solids (SC)
	1.4b	Alloys (SC)
	1.5a	Solutions & Solvation process(SC)
		Solvation animation
	1.5b	Solubility (SC)
		Sodium Acetate Supersaturated
	1.5c	Henry's Law (SC)
T 6/15	Lab	Temperature & Solubility
W 6/16	1.6a	Qualitative Analysis (SC)
	1.6b	Units of Concentration (SC)
	1.7a	Vapor Pressure of Solns (SC)
	1.7b	Colligative properties (SC)
R 6/17	LAB	Solutions Lab
F 6/18	1.8a	Osmotic P (SC)
	1.8b	Other Mixtures (SC)

M 6/21 EXAM 1

T 6/22 2.1a/b Kinetics and Reaction Rates (SC)  
 2.1c/2.2a Orders of Reaction (SC)  
 2.2 Kinetic Molecular/Collision Theory (SC)

W 6/23 lab T kinetics Lab

R 6/24 lab Bromate Kinetics Lab

F 6/25 2.3 Reaction mechanisms (SC)  
 Rxn mechanisms (Ott SC)

M 6/28 2.4a Thermodynamics Intro (SC)  
 2.4b Entropy (SC)

T 6/29 2.5 Gibbs Free Energy (SC)

combined Q 2.6 Delta G Calculations (SC)

W 6/30 lab Titration Walkthrough

R 7/1 2.7 Electrochemistry Intro (SC)  
 Another Ecell vid

F 7/2 2.8a Balancing redox Half Rxns (SC)  
 2.8b Cell potentials (SC)

T 7/6 2.9 Delta G and Electrochemistry (SC)

W 7/7 lab Electrochemical Cells

R 7/8 2.10a Nuclear Chem Introduction (SC)  
 2.10b Binding E and Atom making (SC)  
 2.11a Nuclear Decay (SC)  
 2.11b Radioactive Dating (SC)

Sa 7/10 Exam 2

M 7/12 lab Nuke Movies/paper Lab  
 3.1a Equilibrium Intro  
 3.1b Equilibrium Constant, K

T 7/13 3.2 Ksp (SC)

	3.3	Shifts to Equilibria (SC)
W 7/14	lab	Shifting Equilibrium Lab
R 7/15	3.4	Equilibrium Calculations (SC)
F 7/16	3.5a	Acid Base Definitions
	3.5b	Ka and Kb
M 7/19	3.6	Strengths of Acids (vid)
T 7/20	3.7	Acid Base Calculations (SC)
	3.8a	Hydrolysis (SC)
	3.8b	Common Ion Effect
W 7/21	Lab	The Acid Base problem
R 7/22	3.9	Buffers (SC)
F 7/23	lab	Buffer Manipulation
M 7/26		EXAM 3

*calendar timelines and assignments are an approximation and could be changed.*

### **Caveat**

Some revisions may be necessary during the course. School closes, instructor illness and other procedural improbabilities are possible. If any change is made, student will be duly notified of effective syllabi changes.