

Instructor: Dr. Emily Sylvester
Class: TR 9:30 – 10:45 am; ASC G10

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Office: ASC-114A

Office Hours: Open door policy – if my office door is open, you are welcome to see if I'm available. You can also see me before/after class or email me to set up an appointment.

Required Texts and Materials:

- 1) *Principles of General Chemistry*, 3rd edition, by Martin S. Silberberg.
- 2) Subscription to WebAssign, the course online homework program. **Course key: wju 2886 0997**
- 3) Scientific calculator (This does *not* have to be a graphing calculator.) *Bring to each class period.

Course Description:

Modern concepts of atomic structure and chemical properties, chemical bonding, stoichiometry, chemical equilibrium and kinetics. Satisfies the general chemistry requirements for chemistry and biology majors as well as prerequisites for medical, veterinary and other health related graduate programs. *CHEM 141 and 142 are prerequisites. CHEM 152 is a corequisite. A drop or withdrawal in the lecture must be matched by a drop or withdrawal in the corresponding laboratory course.* This course addresses the primary educational goal (PEG) to develop critical thinking skills.

Student Learning Objectives:

The goal of this course is for the student to meet the objectives listed below. All assessments (homework, quizzes, exams, etc.) are based on these objectives. They are classified as low (L), medium (M), and high (H) based on the level of learning required – not based on the difficulty of these concepts or the effort involved. Upon completion of CHEM-151, General Chemistry II, the student will be able to:

1. Predict and describe the intermolecular forces that exist in bulk matter. (M)
2. Correlate intermolecular forces with the physical properties of pure substances and simple mixtures. (M)
3. Summarize the colligative properties of solutions. (L)
4. Use empirical chemical kinetics data to determine whether a reaction is zeroth, first, or second order with respect to each reactant in the system. (M)
5. Express the relationship between reaction rate and temperature. (L)
6. Describe the behavior of systems in chemical equilibrium and predict the result(s) of stresses applied to the system. (M)
7. Differentiate acids, bases, and salts and their unique chemical reactivity. (L)
8. Obtain equilibrium concentrations of reactants and products in chemical mixtures and calculate equilibrium constants. (M)
9. Interpret and solve problems related to buffer solutions and titrations. (M)
10. Use standard thermodynamic data to calculate standard reaction enthalpies, entropies and Gibbs energies. (L)
11. Understand the interrelationships between enthalpy, entropy, Gibbs energy, and equilibrium. (M)
12. Construct and label electrochemical cells and calculate cell potential. (L)
13. Understand the relationship between free energy, equilibrium, and cell potential. (M)

Important Dates: Last day to drop the course: Fri., Jan. 11. Last day to withdraw with a W: Tues, Mar. 26.

Evaluation Methods:

Attendance Policy: You are expected to attend every class. Your participation is imperative for the learning of the entire class and for my assessment of class progress. You are allowed **two unexcused absences** without penalty. Each absence beyond those two will result in a 25% deduction from your attendance grade. Three tardies count as one absence. At all times, treat your classmates with respect. This means listening to each other in turn, no texting, etc. Please have your devices PUT AWAY and silenced during the entire class.

Homework: Assignments are performed through WebAssign, the course online homework system. All assignments are due by 11:59 pm of the due date, listed on the course schedule. **It is highly recommended that you work each calculation-type question out on paper.** If you need homework help, bring your written work with you to me or the ARC tutor. You are allowed *three attempts* for each calculation-type question. *The lowest homework grade will be dropped.* Assignments are submitted automatically on the due date, but you may ask me *before the due date* for an extension if you need one.

Quizzes: Each Tuesday class period will begin with a 10-point quiz, covering the previous week's material and/or related homework problems. 3-point quizzes may also be given on Thursdays, but will be unannounced. If you are late to class, you will not get extra time. *The lowest 10-point quiz grade will be dropped.* **There will be no make-up quizzes for unexcused absences.**

Exams: Three, 65-minute, in-class exams will be given throughout the semester. The exams are cumulative, but will likely emphasize the most recently covered material. Exam dates are on the course calendar. ****There will be no make-up exams for unexcused absences.** Absences due to serious illness or personal emergency may be excused with proper documentation. You must contact me within 24 hours to reschedule an exam. If you know of your absence ahead of time, contact me at least 48 hours in advance to discuss your options.

Assessment Breakdown:

Attendance	3 %
Homework	13 %
Quizzes	12 %
Exams	52 %
<u>Final Exam</u>	<u>20 %</u>
Total	100 %

Grading Scale:

90-100 %	A range (mastery of course material)
80-89 %	B range (very good understanding of concepts)
70-79 %	C range (sufficient understanding of major concepts)
60-69 %	D range (memorized the facts from class notes)
0-59 %	F (insufficient effort/performance)

I will return all graded quizzes and exams, and homework grades are available in WebAssign. This way you can calculate your grade in the course at any time. Grades will typically be posted in Blackboard at regular intervals.

Academic Honesty Policy: Students are advised that WJU's Academic Integrity Policy will strictly be enforced in this course (see www.wju.edu/studenthandbook). Questions regarding the policy may be directed to the Office of the Academic Vice-President.

How to Succeed in Chemistry 151

Rule of Thumb: 1 hour in class (1 credit hour) = 3 hours of work out of class

Fully participate in class

Take notes, pay attention, participate, ask questions!

Review the material covered in class that night.

Review your notes; fill in the gaps. If you have any questions, write them down so you can ask before or during the next class!

“Read” your text early and often.

A chemistry textbook is different than a novel; it must be “read” with pencil and paper in hand!

Work many problems.

Work in-text *sample problems* as you read the text. Work several homework problems each night. Work additional end-of-chapter problems to prepare for an exam.

Don't go it alone, but don't be dependent on a group!

Find a study buddy or group. Take turns explaining concepts or homework solutions.

Make an appointment with an ARC chemistry tutor.

The ARC has several faculty-recommended chemistry tutors. They often have evening and weekend hours. Ask the tutor to email your professor to alert them that you made the visit.

Academic Resource Center (ARC):

The Academic Resource Center (ARC) is a totally free academic-support service available to all enrolled Wheeling Jesuit University students and staffed almost exclusively by WJU students recommended for employment by WJU faculty. The ARC is located in Bishop Hodges Library and is open five days a week:

Sundays 6:00-8:00 p.m.

Mondays-Thursdays 1:00-9:00 p.m.

Please visit the ARC's website (readily accessible on the Cardinal homepage under "Quick Links" or as the first listing under "Student Services") to learn about the ARC's services (emphasizing writing, math, and the sciences) and to schedule appointments.

Disability Services:

Wheeling Jesuit University offers students with documented disabilities individual accommodations on a case-by case basis with confidentiality in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973.

In order to receive academic or physical accommodations, students with disabilities must provide current (within three years) and comprehensive documentation concerning the nature and extent of the disability and communicate their needs to the Disability Services Director, located in Ignatius Hall Room G 24 or call 304-243-4484. Students are required to meet with the director to develop accommodation plans that they will present to their course instructors at the beginning of each semester. Students with disabilities that require specific housing accommodations must contact both the Director of Residence Life and the Disability Services Director.

Ultimately, all students with disabilities are responsible for their own academic achievement. They must attend classes, complete course assignments, and fulfill all university requirements for their chosen field of

study. It is up to students with disabilities to seek out available assistance on campus and to utilize individualized accommodations that promote academic success.

Title IX Statement: Wheeling Jesuit University seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment, misconduct, or assault we encourage you to report this. If you report this to a faculty member, she or he must notify our college's Title IX coordinator about the basic facts of the incident (you may choose whether you or anyone involved is identified by name). For more information about your options at WJU, please go to <http://wju.edu/titleix/>.

*Schedule is tentative and subject to change. Refer to daily class announcements and Blackboard for changes.

CHEM-151-02 Spring 2019 Course Schedule

Week	Day	Date	Chapter ^a	Sections	Homework
1	T	8-Jan	12 Intermolecular Forces	12.1-2	
	R	10-Jan	12 Intermolecular Forces	12.2-3	<i>Syllabus quiz (Blackboard)</i>
2	T	15-Jan	12 Intermolecular Forces	12.4-6	
	R	17-Jan	13 Properties of Solutions	13.1-2	Ch. 12 due FRI, 1/18
3	T	22-Jan	13 Properties of Solutions	13.2-4	
	R	24-Jan	13 Properties of Solutions	13.4-5	Ch. 13 due MON, 1/28
4	T	29-Jan	16 Kinetics: Rates & Mechanisms	16.1-3	
	R	31-Jan	Exam I	Ch. 12,13	
5	T	5-Feb	16 Kinetics: Rates & Mechanisms	16.3-5	
	R	7-Feb	16 Kinetics: Rates & Mechanisms	16.5-7	
6	T	12-Feb	17 Equilibrium	17.1-3	
	R	14-Feb	17 Equilibrium	17.4-5	Ch. 16 due FRI, 2/15
7	T	19-Feb	17 Equilibrium	17.5-6	
	R	21-Feb	18 Acid-Base Equilibria	18.1-3	Ch. 17 due FRI, 2/22
8	T	26-Feb	18 Acid-Base Equilibria	18.3-5	Ch. 18A due WED, 2/27
	R	28-Feb	Exam II	Ch.16,17,18	
	M-F	3/4-3/8	SPRING BREAK		
9	T	12-Mar	18 Acid-Base Equilibria	18.5-6	
	R	14-Mar	18 Acid-Base Equilibria	18.7-8	
10	T	19-Mar	19 Aqueous Ionic Equilibria	19.1-2	Ch. 18B due MON, 3/18
	R	21-Mar	19 Aqueous Ionic Equilibria	19.2-3	
11	T	26-Mar	19 Aqueous Ionic Equilibria	19.3-4	
	R	28-Mar	20 Thermodynamics	20.1-2	Ch. 19 due FRI, 3/29
	T	2-Apr	RESEARCH DAY - No Class		
12	R	4-Apr	20 Thermodynamics	20.2-3	
13	T	9-Apr	20 Thermodynamics	20.3-4	
	R	11-Apr	21 Electrochemistry	21.1-3	
14	T	16-Apr	Exam III	Ch.18,19,20	Ch. 20 due MON, 4/15
	Th-M	4/18-4/22	EASTER BREAK		
15	T	23-Apr	21 Electrochemistry	21.3-4	
	R	25-Apr	21 Electrochemistry	21.5-7	Ch. 21 due FRI, 4/26
	T	30-Apr	FINAL EXAM (8-10:30 am)	Cumulative	