

Chemistry 116 M009
General Chemistry II Lecture Spring 2019

General Course Information:

Instructor: Dr. Jonathan French

Office: Center for Science and Technology, 4th floor, room 14D

Office Hours: Monday/Wednesday 12:00 – 2:00 PM

Tuesday 12:30 – 3:00 PM

Thursday 1:30 – 3:00 PM or by appointment

Email: jmfrench@syr.edu

Teaching assistants:

- Emily Ripka, email: egverdon@syr.edu
- Alec Beaton, email: aabeaton@syr.edu
- Nicole Spanedda, email: nspanedd@syr.edu

Class Time: Tu and Th 3:30-4:50 PM HB Crouse Gifford

Recitations: Attend the recitation for which you are registered

CHE 116 M010	W	03:45 PM to 04:40 PM	Life Sciences 011 (TA: NS)
CHE 116 M011	M	12:45 PM to 01:40 PM	Physics Building 106 (TA: NS)
CHE 116 M012	M	05:15 PM to 06:10 PM	Shaffer Art Building 205 (TA: NS)
CHE 116 M013	M	06:45 PM to 07:35 PM	Life Science 011 (TA: AB)
CHE 116 M014	Tu	09:30 AM to 10:25 AM	Bowne Hall 105 (TA: ER)
CHE 116 M015	Tu	02:00 PM to 02:55 PM	Sims Hall 241 (TA: AB)
CHE 116 M016	Tu	05:00 PM to 05:55 PM	Life Sciences 011 (TA: AB)
CHE 116 M017	W	10:35 AM to 11:30 AM	Lyman Hall 227 (TA: AB)
CHE 116 M020	M	10:35 AM to 11:30 AM	Life Sciences 200 (TA: AB)

Course Description:

Builds upon the fundamental chemical principles learned in CHE 106 and introduces chemical kinetics, chemical equilibria, acid base chemistry, solubility, thermodynamics, intermolecular forces, an introduction to organic and biochemistry, and modern materials. (3 credits)

Learning Outcomes:

- Be able to determine the rate of chemical reaction
- Understand factors that influence reaction rate and equilibrium
- Understand the role concentration and equilibrium play in determining pH and solubility
- Understand the role of enthalpy and entropy in determining the thermodynamics of a chemical reaction or process
- Understand intermolecular forces and the role they play in the properties of solutions
- Understand the basic nomenclature and structure of organic chemistry and biochemistry
- Understand topics at the conceptual and quantitative levels
- Solve new problems related to chemical behavior

APPROXIMATE LECTURE SCHEDULE

Please complete the reading before the scheduled lecture.

DATE	TOPIC	TEXT READING
Tuesday, January 15 th	Syllabus/Course Overview	Syllabus
Thursday, January 17 th	Reaction Rates, Concentration, and Rate	14.1 – 14.3
Tuesday, January 22 nd	Conc. Vs. Time, Temperature, and Rate	14.4 – 14.5
Thursday, January 24 th	Reaction Mechanism, Catalysis	14.6 – 14.7
Tuesday January 29 th	Chemical Equilibrium, Equilibrium Constants	15.1 – 15.3
Thursday, January 31 st	Equilibrium Constants	15.4 – 15.7
Tuesday, February 5 th	Le Chatelier's Principle	15.4 – 15.7
Thursday, February 7 th	Acids and Bases, pH	16.1 – 16.4
Tuesday, February 12th	Exam #1 (Chapters 14, 15)	-
Thursday, February 14 th	Strong/Weak Acids and Bases	16.5 – 16.8, 16.11
Tuesday, February 19 th	Common Ion Effect, Buffers	17.1 – 17.2
Thursday, February 21 st	Solubility Equilibria	17.4
Tuesday, February 26 th	Solubility Equilibria, Precipitation	17.5 – 17.6
Thursday, February 28 th	Intermolecular Forces, Liquids	11.1 – 11.3
Tuesday, March 5th	Exam #2 (Chapters 16, 17)	-
Thursday, March 7 th	Phase Changes, Phase Diagrams	11.4 – 11.6
Tuesday, March 12th	NO CLASS – SPRING BREAK!	-
Thursday, March 14th	NO CLASS – SPRING BREAK!	-
Tuesday, March 19 th	Entropy, Laws of Thermodynamics	19.1 – 19.2
Thursday, March 21 st	Entropy, Laws of Thermodynamics	19.3 – 19.4
Tuesday, March 26 th	Gibbs Free Energy	19.5 – 19.7
Thursday, March 28 th	Solutions	13.1 – 13.3
Tuesday, April 2 nd	Solutions, Colligative Properties	13.4 – 13.6
Thursday, April 4 th	Hydrocarbons: Alkanes, Alkenes, Alkynes	24.1 – 24.3
Tuesday, April 9th	Exam #3 (Chapters 11, 13, 19)	-
Thursday, April 11 th	Functional Groups, Chirality	24.4 – 24.5
Tuesday, April 16 th	Introduction to Biochemistry	24.6 – 24.7
Thursday, April 18 th	Structure of Solids, Semiconductors	12.1 – 12.4
Tuesday, April 23 rd	Solids	12.5 – 12.7
Thursday, April 25 th	Materials: Polymers, Nanomaterials	11.7, 12.8 – 12.9
Tuesday, April 30th	Review All Chapters	-
Tuesday, May 7th	FINAL EXAM 12:45 PM to 2:45 PM	ALL CHAPTERS

TEXTBOOK AND SUPPORTING MATERIALS:

MODIFIED MASTERINGCHEMISTRY: an on-line Homework 31-digit login/registration key with access to the e-text. It is important that you access modified MasteringChemistry **ONLY through the Blackboard course website**. This package comes with access to the e-text and the modified MasteringChemistry. Login can be purchased directly through Blackboard. This will automatically link your accounts. If you would like a physical copy of the textbook, that is also available at the bookstore or online but not required for the course.

BLACKBOARD: Lecture material, solutions to homework problems, review material for exams, and answer keys will be posted here.

COURSE GRADING:

RECITATION: a weekly class that will carry 5% of your grade. The class is much smaller than the lecture component (20 – 40 students), and is taught by a graduate teaching assistant (TA). Recitation is a great setting to work through problems in a smaller group environment. Recitations are designed to help you learn and practice the material from lecture.

Recitation will offer a weekly problem set or quiz that will cover key material from the previous week's lecture. The problem set will take place in small groups, and last approximately 30 minutes. Following completion of the problem set, different groups **MUST** present their solution to a problem. Your grade for recitation will be assigned based on two components, your participation during group work as determined by the TA, and your participation during the answer session. There are 13 scheduled recitation dates and the content reviewed is outlined below. Your grade will be determined by your participation in 12 of those sessions.

Recitation	Week	Recitation Content
-	January 15 th	NO RECITATION
#1	January 22 nd	Review of CHE 106
#2	January 29 th	Reaction rates, conc, time, temp
#3	February 5 th	Equilibrium, Le Chatelier's Principle (Quiz)
#4	February 12 th	Acid/Base chemistry
#5	February 19 th	Strong/Weak Acid Base, Common ion
#6	February 26 th	Solubility equilibrium (Quiz)
#7	March 5 th	Intermolecular Forces
-	March 12 th	– SPRING BREAK –
#8	March 19 th	Phase Diagrams
#9	March 26 th	Thermodynamics
#10	April 2 nd	Gibbs Free Energy, Solutions (Quiz)
#11	April 9 th	Organic Chemistry
#12	April 16 th	Functional Groups
#13	April 23 rd	Modern Materials (Quiz)

HOMWORK SCHEDULE:

The following is an APPROXIMATE schedule of material that will be covered in homework that is due on the MasteringChemistry website organized by week. **ALL** homework is to be done and turned in on the MasteringChemistry website. No exceptions. Students are encouraged to seek help when needed for homework. Students are encouraged to utilize recitation, TA office hours, or my office hours to find help with homework.

Homework is due at midnight on the Sunday indicated in the schedule. Homework that is not turned in on time will be marked late at a penalty of 10% off per day late. **Turning in your homework late, is better than not turning it in at all.** The homework carries a weight of 10% of your final grade. Do not overlook the importance of the homework in determining your final grade. **CONSULT THE MASTERINGCHEMISTRY WEBSITE FOR ACTUAL ASSIGNED PROBLEMS.**

Week	Material	MasteringChemistry Assignments	Due Date (due at ~midnight, 11:59PM)
January 14 th	-	-	NO HOMEWORK DUE
January 21 st	Chapter 14	Homework #1	Sunday, January 27 th
January 28 th	Chapter 14	Homework #2	Sunday, February 3 rd
February 4 th	Chapter 15	Homework #3	Sunday, February 10 th
February 11 th	Chapter 16	Homework #4	Sunday February 17 th
February 18 th	Chapter 17	Homework #5	Sunday, February 24 th
February 25 th	Chapter 17	Homework #6	Sunday, March 3 rd
March 4 th	Chapter 11	Homework #7	Sunday, March 10 th
March 11 th	Spring Break	Spring Break	NO HOMEWORK DUE
March 18 th	Chapter 19	Homework #8	Sunday, March 24 th
March 25 th	Chapter 19	Homework #9	Sunday, March 31 st
April 1 st	Chapter 13	Homework #10	Sunday, April 7 th
April 8 th	-	-	NO HOMEWORK DUE
April 15 th	Chapter 24	Homework #11	Sunday, April 21 st
April 22 nd	Chapter 12	Homework #12	Sunday, April 28 th
April 29 th	Review	-	NO HOMEWORK DUE

CLASS PARTICIPATION:

Class participation will account for 5% of your course grade. During the semester, class participation will be determined through in-class questions. Questions will be related course content during lecture and some questions will also come from assigned readings that will be conducted outside of class. The assigned reading will be provided in advance. The in-class questions will be conducted through Top Hat. Top Hat will also be used for discussions of course material, both during and after class.

EXAMS: Exams will cover material from lecture, homework, and the assigned text readings. The majority of the questions will be problems similar to the assigned homework, in-class questions, and recitation exercises. Each exam will focus on specific chapters as noted in the syllabus and in the lecture notes.

Exams will be approximately 26 to 28 questions in length and contain a mixture of multiple choice and short answer questions. The exams will be approximately 90% multiple choice and 10% short answer questions.

Exam review will be limited to one calendar month. This means that if you take an exam on February 25th, that exam will be available, via office hours, for you to look at through March 25th.

EXAM REVIEW: A review session is scheduled the week prior to any regular in class exam.

Review Session	Date	Time	Location
Review #1	February 8 th	2:00 – 4:00 PM	LSB 001
Review #2	March 1 st	2:30 – 4:30 PM	LSB 001
Review #3	April 5 th	2:00 – 4:00 PM	LSB 001
Review #4	TBD	TBD	TBD

**BRING A NON-GRAPHING CALCULATOR TO ALL EXAMS.
cell phones/tablets/other devices are not allowed**

EXAM SCHEDULE: Exams are given during the regular class period, with the exception of the final exam.

Exam	Date	Time
Exam #1	Tuesday, February 12 th	3:30 – 4:50 PM
Exam #2	Tuesday, March 5 th	3:30 – 4:50 PM
Exam #3	Tuesday, April 9 th	3:30 – 4:50 PM
Cumulative Final	Tuesday, May 7 th	12:45 – 2:45 PM

MAKE YOUR TRAVEL PLANS NOW! NO ACCOMMODATIONS FOR STUDENT TRAVEL/EXAM CONFLICTS WILL BE MADE.

Final Grade Determination:

Course grades are based on 4 exam scores, recitation grades, and the on-line homework. The grading scale shown below is based on historical class averages and grade distributions for the general chemistry course. Additional “curving” of the class grades will normally NOT be applied,

but the Chemistry Dept. reserves the right to do so in extraordinary cases. In such a case, scores will only be curved up (not down) and therefore will never negatively impact your letter grade.

FINAL GRADE:

Four Exams (200 pts each)	800 points
Mastering Chemistry Homework (HW)	100 points
Class Participation	50 points
<u>Recitation</u>	<u>50 points</u>

Course Total: 1000 points

The equation to calculate your overall course grade:

(Exam 1 + Exam 2 + Exam 3 + Exam 4 + Homework + Participation + Recitation) = Point total

For example: (165 + 152 + 172 + 146 + 85 + 45 + 45) = 810 or a B

Letter grade ranges based upon point total:

A = ≥ 900	A- = ≥ 880	B+ = ≥ 850	B = ≥ 800	B- = ≥ 750
C+ = ≥ 700	C = ≥ 650	C- = ≥ 600	D = ≥ 550	F = < 550

EXTRA RESOURCES:

OFFICE HOURS: I will hold weekly office hours and will be available to help with exam prep, exam review, homework help, and lecture material. I will be using **Orange S**Uccess to schedule office hours, meetings with students, and review sessions. You can also use Orange SUccess to seek extra help or signup for office hours. This platform will also be used to communicate your standing in the course and to recommend courses of action based on your class standing for the remainder of the course. I will also be hosting online office hours through Zoom meeting Sunday evening to help with any last minute homework questions. These online office hours can also be scheduled through Orange SUccess.

TEACHING ASSISTANTS (TA): TA office hours will be held in Center for Science and Technology (CST), room 1-004 (first floor, room #4). A schedule of office hours will be posted on the door of CST 1-004. Students are free to seek help from ANY of the CHE 116 TAs that are teaching this semester, not just the TA that is in charge of your particular recitation section.

GROUP TUTORING: There is free group tutoring available through the Center for Learning and Student Success located in Byrd Library. Students can sign up for these **FREE** group sessions (6 to 10 students) directly online by going to: <http://class.syr.edu/tutoring/get-a-tutor/>

COURSE POLICIES:

Students should review the University's policies regarding Disability-Related Accommodation; Diversity and Disability; the Religious Observances Notification and Policy; the Academic Integrity Policy; and Orange SUccess, which can be accessed via the Office of the Provost's website at: <http://provost.syr.edu/>

ACADEMIC HONESTY:

"Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information about the policy, see <http://academicintegrity.syr.edu>.

SYRACUSE UNIVERSITY'S RELIGIOUS OBSERVANCES POLICY:

(http://supolicies.syr.edu/emp_ben/religious_observance.htm) recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they **notify their instructors before the end of the second week of classes**. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances/Add a Notification from the first day of class until the end of the second week of class. The religious

observances policy requires **accommodation for the religious holiday itself, not for travel days** if a student will be observing the holiday elsewhere.

MEDICAL ABSENCES:

will be excused based on written advice from the Health Center or a health-care provider (based upon clinical findings and prescribed treatment recommendations). See: <http://health.syr.edu/students/policies.html>

NO VERBAL EXCUSES WILL BE ACCEPTED. The medical document must specifically indicate that you were unable to attend class/recitation. All such absences will be verified by Chemistry Department staff.

THERE WILL BE NO MAKEUP EXAMINATIONS EXCEPT IN THE CASE OF **ADVANCE-NOTICE** APPROVED ABSENCES. ALL ADVANCED-NOTICE APPROVALS WILL RESULT IN AN OPPORTUNITY TO TAKE THE EXAM IN ADVANCE, NOT AFTER THE REGULARLY SCHEDULED EXAM TIME.

DISABILITY-RELATED ISSUES:

If you have a learning or physical disability, please contact me as soon as possible (**during the first 2 weeks of the course**) to arrange for appropriate accommodations. No provisions/accommodations will be made if the instructor is notified after examinations. Students requiring special accommodations **MUST** register with the Office of Disability Services (ODS), 804 University Avenue, Suite 303, Phone: Voice: (315) 443-4498; TDD: (315) 443-1371, E-Mail: odsched@syr.edu. Exams **MUST** be administered by the Office of Disability Services.