

SYLLABUS

CHEMISTRY 116

SPRING 2015

LECTURES: MWF 12:10 PM Fulmer 201
INSTRUCTOR: Prof. Ken Nash Fulmer 639a 335-2654 *email: via Blackboard email tool*
Office Hours: TBA

GENERAL CHEMISTRY OFFICE: Nikki Clark Fulmer 319A 335-1516 nikki_clark@wsu.edu
LABORATORY SUPERVISOR: Ryan Rice Fulmer 313 335-6358 rwrice@wsu.edu

COURSE WEBSITE: <https://learn.wsu.edu>

GRADING:	3 "midterm" exams	300	GRADE RANGES: (minimum points to achieve)		
	6 tutorial/in class quizzes	60	900 points	A	740 points C+
	13 Homework sets (best 12)	120	870 points	A-	700 points C
	1 tutorial discussion presentation	36	840 points	B+	670 points C-
	8 tutorial discussion synopses	40	800 points	B	640 points D+
	8 tutorial discussion comments	24	770 points	B-	600 points D
	10 laboratory experiments/wrkshts	220			Less than 600 points: F
	<u>Final Exam</u>	<u>200</u>			
	TOTAL	1000			

MIDTERM EXAMS: Thursday Feb 12 6:00– 7:00 pm (Chapters 19, 12-13.4 + Experiments 13 & 14)
Thursday Mar 12 6:00– 7:00 pm (Chapters 13.5-15 + Experiments 15 & 16)
Thursday Apr 16 6:00– 7:00 pm (Chapters 16-18.5 + Experiments 17, 18 & 19)
FINAL EXAM Thursday May 4 TBA (Chapters 12-20 + all Experiments)

PREREQUISITES for this class are: (You will be dropped if you do not meet these pre-requisites.)

You must have passed Chemistry 105 or its equivalent with a grade of C or better.

You must have passed or been placed beyond Math 106 or Math 107 or the equivalent. Courses that are considered beyond Math 107 are Math 140, 171, 172, 182, or 202.

COURSE OBJECTIVES, LEARNING GOALS AND EXPECTED OUTCOMES:

Chemistry 116 is a four credit course that fulfills three credits of Inquiry in the Physical Sciences [PSCI] and one credit of laboratory course requirements. Chemistry 116 is designed to advance students toward the WSU Learning Goals, especially Scientific Literacy, Critical and Creative Thinking, Quantitative Reasoning, and Information Literacy. Specifically, students who successfully complete Chemistry 116 will be able to:

1. Complete the development of an understanding of the concepts, models, and theories that form a foundation for the field of chemistry (the understanding of how the behavior of matter is determined by the properties of atoms and molecules).
2. Learn and apply the principles of nuclear reactions, half-life and radiation safety.
3. Learn the principles of thermodynamics as they apply to chemical equilibrium, including the relationships between equilibrium constants, free energy, enthalpy and entropy.
4. Apply the principles of equilibrium to solubility, pH, and electrochemical equilibrium in aqueous solution.
5. Learn and apply the principles of chemical kinetics as they apply to chemical reactions in general and how they are linked to and contrasted with equilibrium principles.
6. Learn the basic concepts of organic chemical nomenclature and some principle reactions as a preparation for more advanced study in later courses.
7. Create procedures to solve problems by applying single and multiple concepts to new situations.
8. Apply chemical procedures and evaluate experimental results to develop an appreciation for the experimental basis of chemical knowledge and experimental methods through laboratory work.
9. Write effectively about scientific experiments by describing laboratory procedures and results, and then evaluating and presenting a discussion of these results in the manner of a scientific report.

TEXT: *Chemistry: A Molecular Approach* by Tro, 3rd edition, Pearson (2014). ISBN: 978-1-269-93261-5 (hardcover) or 978-1-269-92640-9 (eText). The text and access to the Modified Mastering Chemistry homework site are required. The bookstores have new texts bundled with a Modified Mastering Chemistry

access code. Modified Mastering Chemistry access codes can also be purchased separately at the bookstores or on the publisher's website (<http://www.pearsonmylabandmastering.com/northamerica/>).

ONLINE COMPONENTS: There are several aspects of the course, described below, that are accessed through the Mastering Chemistry system, accessed through the Blackboard Learn site (<https://learn.wsu.edu>) using the Mastering Chemistry link on the left of the page. You will need an access code to establish your account. Mastering Chemistry access codes are bundled with new copies of the textbook and sold separately in the bookstores. You may also purchase a Mastering Chemistry registration code or a 14-day free trial, through the Pearson website when you initially register. This initial registration is only through the Blackboard Learn course website. (Required)

LAB TEXT: *Chemistry 105-106 General Chemistry Laboratory Manual* by WSU Chemistry Department, Star Publishing (2014) is needed to complete the laboratory portion of this course. (Required)

LABORATORY NOTEBOOK: Duplicating with numbered pages. (Sold in Fulmer 318 the 1st and 2nd week of class.)

GOGGLES: Required by State Law. (Sold in Fulmer 318 the 1st and 2nd week of class.)

LABORATORY COAT: Required for Chem 106. (sold in Fulmer 318 the 1st and 2nd week of class and at the bookstores.)

CALCULATORS: You are expected to have and to be able to use a scientific calculator. Graphing calculators are allowed but not required. ***The use of any stored information/programs in a programmable calculator will be considered cheating. Calculators with a full QWERTY keyboard (such as the TI-92 or Voyage 200); PDAs; palmtop, laptop and handheld computers; and cell phone/calculator combinations may not be used during quizzes and examinations.*** You are responsible for bringing your calculator to all tutorials, lectures, labs and exams.

COURSE WEBSITE: We will be using the Blackboard Learn course management system for the course website. This can be accessed via <https://learn.wsu.edu>. All official communications for this class will be through the Blackboard Learn site. You are responsible for checking this site regularly. Use your WSU network ID and password to log in. You can also send email to the course instructor, TAs, or other students via the Blackboard Learn Course Mail tool.

FULMER 318/319: All chemistry TA's hold their office hours in Fulmer 318 or 319 (Monday through Thursday from 10 am to 4 pm and 6pm to 9pm, and Friday from 10 am to 1 pm). You may ask any Chem TA for help in this course.

STEPHENSON TUTORS: The Chemistry Department provides tutors for Chem 116 in the Stephenson tutoring center Sunday through Wednesday evening from 6 to 9 pm. These tutors are available to all students in Chem 106/116.

DISCUSSION FORUMS ON BLACKBOARD LEARN AND FACEBOOK: The Discussion section of Blackboard is open to everyone involved in the course. Through it you can post questions and get answers from other students as well as the instructors and TAs, and you can see the questions and answers posed by others.

QUESTIONS ABOUT ELECTRONIC RESOURCES: When encountering difficulties with either Mastering Chemistry or Learning Catalytics, you are encouraged to use the built-in Help & Support system. If you would rather not communicate electronically, you can call Pearson's WSU Priority phone number at (855) 875-1797 or the General Student Help phone number at (800) 677-6337 24-hours a day. The Discussion Forums and Facebook Community are also resources.

LECTURES: Lectures must be attended on a regular basis. You will be expected to read the textbook **BEFORE** coming to class. Lectures will more often supplement and clarify the information from your text rather than reiterate it. Lectures will include some problem solving and demonstrations of chemical reactions. There may be in-lecture writing and problem assignments that will be graded and counted towards your total point score. These in-lecture assignments will be unannounced, cannot be made up, and constitute the only possible 'extra credit' points in this course. *Bring a calculator to all lectures.* Please bring any questions that come up during your reading to class for discussion.

How to study: Before coming to class, it is important to re-read your notes from the previous lecture, to read the textbook material for the current lecture and to attempt **ALL** of the in-chapter practice problems in the material covered. Bring your calculator to all lectures. You are encouraged to form collaborative study groups outside of class.

EXAMS: There will be three midterm exams and a comprehensive final. Exams will be open format, i.e., not all multiple choice as in Chem 105/106. Space for your answers will be provided on the exam itself. You will be responsible for bringing a calculator and a pencil to all exams. No notes or books are allowed. Exams may be given in rooms other than the regular classroom. These rooms will be announced. No make-up exams will be given. If you are unable to take a scheduled midterm exam for academic reasons beyond your control, you will be allowed to schedule the exam at an earlier time. Midterm exams missed due to illness will be excused, with the other exams plus the final pro-rated to count for more. **By university rule, evening exams take precedence over all other university activities.**

QUIZZES: There will be six 10-point quizzes. Quizzes are given either in tutorial or in class, the former scheduled, the latter potentially unannounced. Quizzes will cover lecture, homework and laboratory material. For scheduled quizzes, you will be allowed to prepare a single 3" x 5" card containing your **HAND-WRITTEN** notes for use during each of the quizzes. No other handwritten material and no printed or photocopied material may be used during the quiz, except for an approved periodic table (the table that appears on the back of your laboratory manual).

HOMEWORK: There will be weekly homework assignments administered through the Mastering Chemistry website: <http://www.pearsonmylabandmastering.com>. You will need an access code and a course ID code to access the course homework. Mastering Chemistry registration codes are bundled with new copies of the textbook in the bookstores. You may also purchase a Mastering Chemistry registration code on the Pearson website (<http://www.pearsonmylabandmastering.com/northamerica/>) or at the bookstores. Please follow the instructions and use the access code to register for the system. The course ID code for this course is WSUChemistry.

When you create an account in Mastering Chemistry, you will be asked for a student ID number. Make certain that your eight-digit WSU student ID is entered correctly in that space. Failure to enter the correct student ID will make it impossible to transfer your homework scores and you will receive no credit for the homework sets you complete.

A new homework assignment will be made available each week (no later than 12:00AM each Tuesday). Each assignment must be completed by 11:59 PM the following Monday. The due date/time for each assignment will be listed with the assignment on the homework site. **Each homework set will be pro-rated to have a value of 10 course points, by taking the percent correct and multiplying it by the 10 points possible.** The best 12 assignments will count toward your grade.

TUTORIALS: These are small classroom meetings associated with your laboratory section and led by your TA. Students who miss tutorial will **not** be allowed into the lab. Quizzes are given in tutorial most weeks (see the course schedule). Tutorials are interactive problem solving sessions driven by your questions. Bring your text, lab manual and calculator to tutorial. Pre-labs and lab reports are due at the start of tutorial. Help with pre-labs and lab reports will not be available in tutorial as they must be completed before attending tutorial. **Tutorial sessions are never canceled!** If your TA fails to arrive for a tutorial section, send one person to contact Dr. Wherland, Dr. Clark or Ryan Rice immediately. All others must remain in the tutorial room until the TA or a substitute arrives. Students who leave tutorial under these circumstances will forfeit all points associated with that tutorial/laboratory session (lab report, lab, and quiz).

LABORATORIES: Your course section includes a lecture time and a laboratory time. This is a laboratory GER course, thus the laboratory must be completed in order to pass the course. Thus, **obtaining a score of zero for 3 or more experiments will result in an F for the course.**

- **Make-up labs:** Labs missed for reasons beyond your control, may be made up, on a space available basis, in the same week that the lab is missed. You will be allowed to make up a maximum of two labs per semester in this manner. Permission for a make-up lab must be obtained, in writing, from the Chemistry Office, Fulmer 319A. The permission slip will be collected and signed by the make-up TA. **We cannot guarantee that make-up space will be available.** If you know in advance that you will

miss a lab, visit Fulmer 319A as soon as possible in order to maximize the chance that make-up space will be available. **If make-up space is not available:** Bring your completed pre-laboratory assignment to Ryan Rice's office (Fulmer 309) to be supplied with make-up data for the scheduled experiment. Do this as soon as you can! Reports based on make-up data are due at the normal time (in tutorial one week after you should have attended lab) and will be worth no more than ½ credit.

- **Pre-laboratory assignments:** Pre-laboratory assignments are due at the start of the tutorial. Students who fail to submit a complete pre-lab assignment at this time will be assessed a late penalty on the full report and be required to complete the pre-lab assignment before they are admitted to lab. The student will not be given extra time in the laboratory to make up for laboratory time spent completing the pre-lab.
- **Laboratory procedure:** Students are to perform the experiments individually unless the laboratory manual specifically requires partners for the experiment being performed. Each student is expected to record all data and observations for each experiment directly into their own laboratory notebook. Data may not be recorded on loose, 'scratch' paper then transferred to the notebook. ***Submission of identical data by two or more students who are not assigned to be laboratory partners will be considered cheating.*** Appropriate penalties will be applied to all parties. Some experiments will require you to transfer data from your notebook into a laboratory computer before you leave lab. This data must remain in the notebook! You are required to get your TA's signature on your data/observations at the end of the experiment. You will then submit the original copy of the data to your TA before you leave lab.
- **Laboratory dress code:** For your safety, a strict dress code will be enforced in the laboratory. Failure to comply with the dress code will result in expulsion from the laboratory and a consequent score of zero for that experiment. The dress code requires that you be fully clothed from shoulder to toe. No shorts, short skirts, or shoes that do not cover the entire foot are permitted. It is recommended that you purchase and use a full-length lab coat. This will adequately cover the upper body, but your legs, ankles and feet must be covered by your 'street clothing'.
- **Laboratory reports:** Laboratory reports will be due at the start of the tutorial in the week shown on the course schedule. Failure to submit a laboratory report for an experiment will result in zero credit for that experiment (no credit will be given for the pre-lab or data & observations sections in the absence of a full report.)
- **Adjustments to laboratory scores:** The instructor will make every effort ensure that the grading of laboratory reports is consistent and fair. To this end, the instructor reserves the right to normalize the laboratory scores from the different laboratory instructors to the same average. Any such adjustment will be made at the end of the semester after all scores have been submitted. TA performance will be assessed throughout the semester with the goal of eliminating any necessity for these adjustments. Students are encouraged to bring any concerns about the equity of the grading process to the attention of the course instructor.

CLASS POLICY ON LATE (OR EARLY) ASSIGNMENTS:

Laboratory reports: Late laboratory reports will be penalized by the loss of 20% of the total points per day (or portion thereof) that they are late. *Reports submitted after the start of tutorial are a day late!* This penalty is applied after the normal grading of the report. Late penalties are applied to the entire experiment, not just the portion of the report that is late. Late penalties assessed for different parts of the report are cumulative. Reports submitted more than one week late will receive zero points. No reports will be accepted after 5:00 pm on the last day of classes (Friday, May 1, 2015) even if they are not yet one week late.

Homework assignments: Late homework assignments will not be accepted for any reason.

Early submission: If you know that you will not be present at the time a laboratory report is due, they may be submitted early without penalty. Homework assignments may be completed on the Mastering Chemistry system as soon as the homework assignment is posted.

Method of submission: It is best to personally deliver late or early submissions to the instructor or TA. Note that, outside of class/laboratory times and posted office hours, we make no pledge to be present or available for this purpose. If you are submitting work at other than the specified time, it is your responsibility to find us. Material may be submitted to Fulmer 319A during normal business hours (8:00AM-5:00PM M-F).

Assignments delivered in any other way (slid under the instructor's or 319's office door, for example) will be considered to have been submitted at the time they are found, if they are found.

Procedure for submission

- Write your TA's name at the top of the assignment.
- Time-stamp your assignment using the time-stamping machine in Fulmer 319A.
- Place your assignment in the 105 box in Fulmer 319A.

ACADEMIC INTEGRITY: Cheating or plagiarism in any form will not be tolerated. Cheating includes, but is not limited to: copying work or allowing your work to be copied; use of unauthorized material at quizzes and exams, any communication between students during a quiz or exam, and actively looking at another student's paper during a quiz or exam. Students repeating the course must rework and rewrite all assignments. Plagiarism includes resubmitting previously graded homework or lab reports from a previous semester, even if they were your own work. Plagiarism also includes using laboratory data from another person or a previous semester. Obtaining information about quizzes taken in other sections is considered cheating. Use of any electronic device other than an approved calculator during a quiz or examination is cheating. All incidences of cheating will be reported to the Office of Student Affairs. The first incidence of cheating will result in a score of zero for that assignment, quiz or exam. A second incident of cheating will result in an F for the course and possible dismissal from the University.

ACCOMMODATIONS: Reasonable accommodations are available for students who have a documented disability. If you need accommodations to fully participate in this class, please visit the Access Center. All accommodations **MUST** be approved through the Access Center (Washington Bldg, Room 217). Please stop by or call 509-335-3417 to make an appointment with an Access Advisor. Further information is available at <http://accesscenter.wsu.edu>

EMERGENCY PROCEDURES

Fulmer Rally Point is the parking lot behind the Physics building. In case of emergency the class will meet there

Safety Resources (read these carefully)

<http://safetyplan.wsu.edu>

<http://oem.wsu.edu/emergencies> <http://oem.wsu.edu>

<http://alert.wsu.edu>

Register your contact for the Crisis Communication System at <http://my.wsu.edu>

Getting started with Modified Mastering and Blackboard

1. Log in to Blackboard Learn Learning Management System (<https://learn.wsu.edu>), using your network ID and password. Select the course “Principles of Chemistry II”. From there, look for the link to “**Mastering Chemistry**” on the left and click it to begin the registration process.
2. Click the button “**MyLab and Mastering Course Home**”
3. Accept the user agreement.
4. You will be prompted to log in with your Pearson account. If you have a Pearson account, enter the username and password. If you do not remember your username and/or password, then use the help provided through Pearson to get this information. If you establish a new account, then you will have to pay again. If you have **never** had a Pearson account select the option to “**Create a New Pearson Account**” and do so. Be sure to record your username and password.
5. If you purchased the textbook bundle from the bookstore, or otherwise purchase the Modified Mastering Chemistry access code, click the button labelled “**Access Code**” and enter your access code on the next screen (replacing the sample code). Keep a record of this code also. Otherwise purchase instant access now by clicking on the purchase options under the “**Use a Credit Card or PayPal**” section. You may also select Temporary Access without payment for 14 days.
6. You are now registered! Click on the “**Go to your course**” button to access Mastering Chemistry.

SCHEDULE

CHEMISTRY 116

SPRING 2015

Wk	Date	Chapter	Topic	Laboratory Experiment	Lab report due	Quiz/ Exam	Homework Due	
1	Jan 12-16	19.1-19.6	Radioactivity and Nuclear Chemistry	13: Intro to Qualitative Analysis	13 10 pts	None	None	
2*	Jan 19-23 MLK Jan 19	19.7-19.10, 12.1-12.3	Radioactivity and Nuclear Chemistry, Solutions	14: Qualitative Analysis of Cations, Prelab	None	Quiz	1 Intro & Hw #1 Mon 1/19	
3	Jan 26-30	12.4-12.8	Solutions	14: (continued)	None	Discuss	1 Hw #2 Mon 1/26	
4	Feb 2-6	13.1-13.4	Chemical Kinetics	15: Qualitative Analysis of Anions, Prelab	14 35 pts	Discuss	2 Hw #3 Mon 2/2	
5	Feb 9-13	13.5-14.4	Chemical Kinetics, Chemical Equilibrium	15: (continued)	None	Exam 1 Thu 2/12	Hw #4 Mon 2/9	
6*	Feb 16-20 Presidents' Day	14.5-14.9	Complete Chemical Equilibrium	15: (continued)	None	Discuss	3 Hw #5 Mon 2/16	
7	Feb 23-27(BT)	15.1-15.4	Acids and Bases	16: Unknown Anions, Prelab	15 35 pts	Discuss	4 Hw #6 Mon 2/23	
8	Mar 2-6	15.5-15.9	Complete Acids and Bases	17: Unknown Cations, Prelab	16 15 pts	Quiz	2 Hw #7 Mon 3/2	
9 [#]	Mar 9-13	16.1-16.7	Aqueous Ionic Equilibrium	18: Unknown Salt, Prelab	17 15 pts	Exam Thu 3/12	2 Hw #8 Mon 3/9	
	Mar 16-20	SPRING BREAK						
10	Mar 23-27 (BT)	17.1-17.5	Free Energy and Thermodynamics	19: Colorimetric Determination of Concentration, Prelab	18 10 pts	Discuss	5 None	
11	Mar 30-Apr 3	17.6-17.9	Complete Free Energy and Thermodynamics	20: Determining an Equilibrium Constant, Prelab	19 20 pts	Discuss	6 Hw #9 Mon 3/30	
12	Apr 6-10	18.1-18.5	Electrochemistry	23: Voltaic Cells, Prelab	20 20 pts	Quiz	3 Hw #10 Mon 4/6	
13	Apr 13-17 (BT)	18.6-18.9	Complete Electrochemistry	22: Determining the pK _a of a Weak Acid, Prelab	23 20 pts	Exam 3 Thu 4/16	Hw #11 Mon 4/13	
14	Apr 20-24	20.1-20.9	Organic Chemistry	21: Kinetics, Rate Law & Activation Energy, Prelab	22 20 pts	Discuss	7 Hw #12 Mon 4/20	
15	Apr 27-May 1	20.1-20.14	Complete Organic Chemistry and Review	Course Evaluations Online	21 20 pts	Discuss	8 Hw #13 Mon 4/27	
			FINAL EXAM					

* No Monday lecture due to holiday, homework is still due on Monday 11:59 pm.

No Friday lecture.