

# SYLLABUS

# CHEMISTRY 106

FALL 2017

**LECTURES:** Section 1: MWF 10:10AM Fulmer 226 Section 2: MWF 12:10PM Todd 130

**INSTRUCTOR:** Dr. Krista Nishida Fulmer 317A 335-9435 [krista\\_nishida@wsu.edu](mailto:krista_nishida@wsu.edu)  
Office Hours: Tu and Th 10-11am, Wed. 3-4pm, or by appointment

**GENERAL CHEMISTRY OFFICE:** Nikki Clark Fulmer 319A 335-1516 [nikki\\_clark@wsu.edu](mailto:nikki_clark@wsu.edu)

**LABORATORY SUPERVISOR:** Ryan Rice Fulmer 309 335-6358 [rwrice@wsu.edu](mailto:rwrice@wsu.edu)

**COURSE WEBSITE:** Blackboard Learn (Bb) <https://learn.wsu.edu>

<b>GRADING:</b>	3 "Midterm" Exams	300	<b>GRADE RANGES:</b> (minimum points to achieve)		
	Final Exam	150	900 points	A	740 points C+
	Homework Sets	100	870 points	A-	700 points C
	Reading Assignments	100	840 points	B+	670 points C-
	Learning Catalytics Sets	100	800 points	B	640 points D+
	Tutorial Participation	30	770 points	B-	600 points D
	11 Laboratory Experiments	<u>220</u>	Less than 600 points: F		
	<b>TOTAL</b>	<b>1000</b>			

**MIDTERM EXAMS:** Thursday Sept 21 6:00– 7:30 pm  
Thursday Oct 19 6:00– 7:30 pm  
Thursday Nov 16 6:00– 7:30 pm  
**FINAL EXAM** Tuesday Dec 12 7:00– 8:50 pm

**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 106 is designed to advance students toward the WSU Learning Goals, especially Scientific Literacy, Critical and Creative Thinking, Quantitative Reasoning, and Information Literacy. In particular, students who successfully complete Chemistry 106 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) begun in Chemistry 105.
2. Learn the principles of thermodynamics as they apply to chemical equilibrium, including the relationships between equilibrium constants, free energy, enthalpy and entropy.
3. Apply the principles of equilibrium to solubility, pH, and electrochemical equilibrium in aqueous solution.
4. 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.
5. Learn and apply the principles of nuclear reactions, half-life and radiation safety.
6. Learn the basic concepts of organic chemical nomenclature and some principle reactions as a preparation for more advanced study in later courses.

**TEXT:** *Chemistry: A Molecular Approach* by Tro, 4<sup>th</sup> edition, Pearson (2017). ISBN: 978-1-323-45432-9 (hardcover) or 978-1-323-43344-7 (eText). The text, access to the Modified Mastering Chemistry homework site and access to Learning Catalytics are required. The bookstores have new texts bundled with a Modified Mastering Chemistry and Learning Catalytics combined access code. Modified Mastering Chemistry access codes can also be purchased separately at the bookstores or on the publisher's website accessed through Bb, but do not come with Learning Catalytics. Learning Catalytics access can be purchased through their website.

**ONLINE COMPONENTS:** There are several aspects of the course, described below, that are accessed through the Blackboard Learn online course management system (<https://learn.wsu.edu>). Mastering Chemistry and Learning Catalytics are accessed through the Mastering Chemistry link on Blackboard. 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 Bb course website. Detailed instructions for accessing the Mastering system and Learning Catalytics the first time are given at the end of the syllabus. (Required)

**LAB TEXT:** None. All laboratory procedures and reference materials will be posted online through the course Blackboard site under Laboratory Experiments.

**LABORATORY NOTEBOOK:** Duplicating with numbered pages, Required for lab data collection. (Sold in Fulmer 318 the 1<sup>st</sup> and 2<sup>nd</sup> week of class and in the bookstores.)

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

**LABORATORY COAT:** Required for Chem 106. (sold in Fulmer 318 the 1<sup>st</sup> and 2<sup>nd</sup> 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 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 examinations. You are responsible for bringing your calculator to all tutorials, lectures, labs and exams.

**CLASSROOM DEVICES:** In order to participate in the in-class polling questions using Learning Catalytics (part of the Mastering Chemistry package) students must bring to lecture a device that is Wi-Fi enabled and log in to their Mastering Chemistry account in the lecture room. This can be a cell phone, tablet, or laptop.

**COURSE WEBSITE:** We will be using the Bb course management system for the course website. This can be accessed via <https://learn.wsu.edu>. 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 Bb Course Email tool.

**This syllabus and all course-related materials, presentations, lectures, etc. are our intellectual property and may be protected by copyright. Selling class notes and photos through commercial note taking services, without our written advance permission, could be viewed as copyright infringement and/or an academic integrity violation, WAC 504-26-010 (3)(a,b,c,i). Further, the use of University electronic resources (e.g., Blackboard) for commercial purposes, including advertising to other students to buy notes, is a violation of WSU's computer abuses and theft policy (WAC 504-26-218), a violation of WSU's Electronic Communication policy (EP 4), and also violates the term of use for the Blackboard software program.**

**FULMER 318:** All chemistry TA's hold their office hours in Fulmer 318 (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.

**FUMLER 401:** All chemistry students have access to free computer use and printing (limited to 200 pages).

**DISCUSSION FORUMS ON BLACKBOARD LEARN AND FACEBOOK:** The Discussion section of Bb 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. There is also a Facebook Community page for Chem 106, located at [www.facebook.com/WSUChem106](http://www.facebook.com/WSUChem106) that will serve as an additional resource.

**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 and complete a Reading Assignment ahead of coming to class. Lectures will supplement and clarify the information from your text rather than reiterate it. Lectures will focus on problem solving, including Learning Catalytics questions to answer, as described below, and include demonstrations of chemical reactions. *Bring a calculator and Wi-fi enabled device to all lectures.* You are encouraged to form collaborative study groups and to sit with your group members during lecture.

**READING ASSIGNMENTS:** There will be reading assignments due at **7:00AM before each lecture.** These reading assignments are available through the Mastering Chemistry website. The assignments for the week are available from 4:00PM on the previous Friday. They are not a replacement for the reading, but do help you check on your understanding of selected concepts and methods from each text section, and help prepare you for the upcoming lecture. There will be reading assignments for each lecture. Each reading assignment is worth 3 points, and your score is determined by the fraction correct multiplied by the 3 points possible. There will be ~120 Reading Assignment points, 100 of which will be counted toward your grade. It is important to note that the completion of these assignments is independent of lecture attendance. If you are sick or out of town, it is still possible to complete the assignments.

**LEARNING CATALYTICS:** There will be a Learning Catalytics session for each lecture. These sessions are interactive and require a Wi-fi-enabled device, such as a smartphone, laptop, or tablet. You will log in to each session through Bb and then the Mastering Chemistry link, and answer questions posed to you by the instructor throughout the lecture period. This system also allows you to submit questions to the instructor or indicate you do not understand the material, giving real-time feedback to your instructor. Each Learning Catalytics session is worth 3 points. There will be ~120 Learning Catalytics points possible, 100 points of which will be counted toward your grade. Each assignment is graded on both participation (75%) and correctness (25%). The assignment grade is the assignment fraction multiplied by the 3 points possible.

**EXAMS:** There will be three midterm exams and a comprehensive final. All exams will be multiple-choice. You will be responsible for bringing a calculator and a pencil to all exams. A bubble-in answer sheet will be provided. 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. A single midterm exam missed due to illness can be excused with instructor approval, 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.**

The final exam will be a multiple choice, standardized exam created by the American Chemical Society. Study guides for this exam are available for purchase at <http://chemexams.chem.iastate.edu/students/study-materials>

**HOMEWORK:** There will be weekly homework assignments administered through the Mastering Chemistry website accessed through Bb. A new homework assignment will be made available each week (no later than 7:00AM each Tuesday). Each assignment must be completed by 7:00AM the following Tuesday. 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 fraction correct and multiplying it by the 10 points possible. You are encouraged to use the available Hints. You will neither gain nor lose points for the use of the Hints. There will be 150 homework points possible, 100 points of which will count toward your grade.

**TUTORIALS:** These are small classroom meetings associated with your laboratory section and led by your TA. Tutorial participation is required and is worth 30 course points. Students who miss tutorial will **not** be allowed into the lab. Tutorials are interactive problem solving sessions driven by your questions. Bring your text, lab materials and calculator to tutorial. Help with pre-labs and lab reports will not be available in tutorial. **Tutorial sessions are never canceled!** If your TA fails to arrive for a tutorial section, send one person to contact the General Chemistry office (335-1516, Fulmer 319A) 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 (participation points, lab, etc).

**LABORATORIES:** Your course section includes a lecture time and a laboratory time. This is a laboratory UCORE course, and 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. There will be 12 laboratory experiments and reports, 11 of which will count toward your grade. No late lab reports will be accepted.

**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:** You may go 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 (one week after you should have attended lab) and will be worth no more than  $\frac{1}{2}$  credit.

**Pre-laboratory assignments:** Pre-laboratory assignments are found online on the course Blackboard page and are due Tuesdays at 7:00am the week you are performing that experiment. Students who fail to submit a complete pre-lab assignment at this time will receive a zero on the pre-lab **AND** be assessed a late penalty on the full report, as well as be required to complete the pre-lab assignment before they are admitted to lab. A pre-lab verification slip must be obtained from the general chemistry office prior to being 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. The data and any computer-generated data must be written 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 required that you wear 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:** Each experiment will have a post-lab report, due at 11:59PM Wednesday, one week following the completion of that experiment. The specific instructions for these reports will be posted within Blackboard. Post-laboratory reports (including calculations) must be submitted online through the course Blackboard site. Failure to submit a post-lab for an experiment will result in zero credit for that experiment (no credit will be given for the pre-lab or data and observations sections in the absence of a submitted post-lab.)

**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 instructors reserve 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:**

**Late Work:** Pre-labs are the only assignments that may be completed late. All other late work will not be accepted. Pre-labs submitted late accrue a 20% per day (or portion thereof) late penalty. This penalty is applied to the entire lab report score, not just the pre-lab portion.

**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 and Reading assignments may be completed on the Mastering Chemistry system as soon as the assignment is posted.

**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 exams, any communication between students during an exam, and actively looking at another student's paper during an 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. Use of any electronic device other than an approved calculator during an 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 or exam. A second incident of cheating will result in an F (without the option to withdraw) for the course and possible dismissal from the University.

**ACCOMODATIONS:** 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>.

## Getting started with Modified Mastering and Blackboard

1. Log in to Blackboard Learn Learning Management System ( <https://learn.wsu.edu> ), using your WSU 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.

Pearson Username: \_\_\_\_\_

Pearson 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 106****Fall 2017**

Wk	Date	Chapter	Topic	Laboratory Experiment (Pre-labs due 7:00AM Tues)	Lab report due (11:59PM Wed)	Exam (6:00pm)	
1	Aug 21-25	11	Liquids, Solids, and Intermolecular Forces	Introduction to Cation Analysis	Introduction to Cation Analysis <b>(DUE Friday, 8/25 at 11:59PM)</b>		
2	Aug 28-Sept 1	11, 13	Liquids, Solids, and Intermolecular Forces, Solutions	Analysis of Cations, <b>Pre-lab due</b>	None		
3*	Sept 4-8 Labor Day	13, 14	Solutions, Chemical Kinetics	Analysis of Cations (continued)	None		
4	Sept 11-15	14	Chemical Kinetics	Analysis of Unknown Cations, <b>Pre-lab due</b>	Analysis of Cations		
5	Sept 18-22	14, 15	Chemical Kinetics, Chemical Equilibrium	Colorimetric Determination of Concentration, <b>Pre-lab due</b>	Analysis of Unknown Cations	<b>Exam 1</b> Thu 9/21	
6	Sept 25-29	15	Chemical Equilibrium	Kinetics I, <b>Pre-lab due</b>	Colorimetric Determination of Concentration		
7	Oct 2-6	16	Acids and Bases	Kinetics II, <b>Pre-lab due</b>	Kinetics I		
8	Oct 9-13	16	Acids and Bases	Determining an Equilibrium Constant, <b>Pre-lab due</b>	Kinetics II		
9	Oct 16-20	16, 17	Acids and Bases, Aqueous Ionic Equilibrium	Titration of a Polyprotic Acid, <b>Pre-lab due</b>	Determining an Equilibrium Constant	<b>Exam 2</b> Thu 10/19	
10	Oct 23-27	17	Aqueous Ionic Equilibrium	Buffers, <b>Pre-lab due</b>	Titration of a Polyprotic Acid		
11	Oct 30-Nov 3	17, 18	Aqueous Ionic Equilibrium, Free Energy and Thermodynamics	Analysis of Anions, <b>Pre-lab due</b>	Buffers		
12 <sup>#</sup>	Nov 6-10 Veteran's Day	18	Free Energy and Thermodynamics	Analysis of Anions (continued)	None		
13	Nov 13-17	19	Electrochemistry	Analysis of Unknown Anions, <b>Pre-lab due</b>	None	<b>Exam 3</b> Thu 11/16	
	Nov 20-Nov 24	<b>Thanksgiving break</b>					
14	Nov 27-Dec 1	19	Electrochemistry	Voltaic Cells, <b>Pre-lab due</b>	Analysis of Unknown Anions		
15	Dec 4-Dec 8	20.1-20.8	Radioactivity and Nuclear Chemistry	<b>Course Evaluations Online</b>	Voltaic Cells		
16	Dec 12	<b>FINAL EXAM: Tuesday, December 12<sup>th</sup>, 2017, 7:00-8:50pm</b>					

\* No Monday lecture due to holiday, homework is still due on Tuesday 7:00AM.

<sup>#</sup> No Friday lecture due to holiday.