# *SYLLABUS* *CHEMISTRY 105* *FALL 2015*

**LECTURES:** MWF 8:10AM, 1:10PM, and 3:10PM Fulmer 226


**INSTRUCTOR:** Dr. Paul Buckley Fulmer 120 335-8282 email: ptbuckley@wsu.edu
Office Hours: Tuesdays and Fridays 10-11 am or by appointment
Dr. Aurora Clark Fulmer 275 335-3362 email: auclark@wsu.edu
Office Hours: Mondays and Wednesdays 2-3 pm or by appointment
Dr. Zachariah Heiden Fulmer 40 335-0936 email: zachariah.heiden@wsu.edu
Office Hours: Wednesdays and Thursdays 4-5 pm or by appointment

**GENERAL CHEMISTRY OFFICE:** Nikki Clark Fulmer 319A 335-1516 nikki_clark@wsu.edu

**LABORATORY SUPERVISOR:** Ryan Rice Fulmer 313 335-6358 rwrice@wsu.edu

**BLACKBOARD/MASTERING/**
**LEARNING CATALYTICS:** Dr. Krista Nishida Fulmer 317A 335-9435 krista_nishida@wsu.edu


**COMPUTER LAB:** Fulmer 401

**GRADING:**

| | |
|---|---|
| 3 "midterm" exams | 300 |
| 5 quizzes in lecture (best 4) | 80 |
| 14 Homework sets (best 12) | 60 |
| 37 Reading Assignments (best 35) | 70 |
| 42 Learning Catalytics sets (best 35) | 70 |
| 9 laboratory experiments/worksheets | 220 |
| Final Exam | 200 |
| TOTAL | 1000 |

**GRADE RANGES**: (minimum points to achieve)

| | | | |
|---|---|---|---|
| 900 points | A | 740 points | C+ |
| 870 points | A- | 700 points | C |
| 840 points | B+ | 670 points | C- |
| 800 points | B | 640 points | D+ |
| 770 points | B- | 600 points | D |

Fewer than 600 points: F

| | | | | |
|---|---|---|---|---|
| **MIDTERM EXAMS:** | Thursday | Sep 24 | 6:00– 7:00 pm | (Chapters 1-4 + Lab WS #1&2 & Experiment 1) |
| | Thursday | Oct 22 | 6:00– 7:00 pm | (Chapters 5-7.4 + Experiments 3, 9, & 7) |
| | Thursday | Nov 19 | 6:00– 7:00 pm | (Chapters 7.5-9 + Experiments 6, 4, & 5) |
| **FINAL EXAM** | Tuesday | Dec 15 | 7:00pm–10:00 pm | (Chapters 1-11 + all Worksheets/Experiments) |

**PREREQUISITES** for this class are:

1. Enrollment in Math 106, or placement beyond Math 106. Students in Math 105 or lower cannot be enrolled for Chem 105. Credit for, or placement into, Math 140, Math 171, Math 172, or Math 202 meets this prerequisite.
2. One year of High School chemistry, credit for Chem 101, or one quarter of Chemistry from a community college.

**COURSE OBJECTIVES, LEARNING GOALS AND EXPECTED OUTCOMES:** Chemistry 105 fulfills three credits of Inquiry in the Physical Sciences [PSCI] and one credit of laboratory as part of the WSU Common Course Requirements (UCORE). As with all UCORE courses, Chemistry 105 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 105 will be able to:

1. Develop 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. Remember the basic vocabulary of chemistry, the metric prefixes and the names of the most common elements.
3. Apply standard algorithmic calculation procedures, individually and in combination, that relate macroscopic properties, including mass, volume, pressure, and temperature of substances. Be able to balance chemical reactions and relate amounts of reactants and products as well as associated energy changes. In addition, be able to relate macroscopic and atomic level properties of numbers of atoms and molecules, chemical formulas, and molecular structures.
4. Apply models of bonding to predict and describe the structure of molecules including their physical properties.
5. Create procedures to solve problems by applying single and multiple concepts to new situations.
6. Apply chemical procedures and evaluate experimental results to develop an appreciation for the experimental basis of chemical knowledge and experimental methods through laboratory work.
7. 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). (Required)

**ONLINE COMPONENTS:** There are several aspects of the course, described below, that are accessed through the Mastering Chemistry website http://www.pearsonmylabandmastering.com. 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, on 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 (2015) is required 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 and at the bookstores. (Required)

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

**LABORATORY COAT:** Recommended for Chem 105, but 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); tablets, laptops and cell phone/calculator combinations may not be used during quizzes or examinations. You are responsible for bringing your calculator to all tutorials, lectures, labs and exams.

**ELECTRONIC COMMUNICATIONS:** We will be using the Blackboard Learn course management system for the course website. This can be accessed via my.wsu or directly 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. All e-mail communications to the course instructor and TAs should be via the Blackboard Learn Course Mail tool. Faculty and TAs will be unable to respond to any emails from non-WSU email accounts. If you email the instructors or TAs directly using your WSU email account, you MUST include Chem 105 in the subject line. Confidential information such as scores and grades may not be transmitted via unsecured email.

**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 105 in the Stephenson tutoring center Sunday through Wednesday evening from 6 to 9 pm. These tutors are available to all students in Chem 105.

**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. There is also a Facebook Community page for Chem 105, located at www.facebook.com/WSUChem105 that will serve as an additional resource.

**LECTURES**: Lectures must be attended on a regular basis. You will be expected to read the textbook BEFORE coming to class and complete a Reading Assignment prior to lecture. 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 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. They are available starting the Friday before each week of lectures. They ensure you have completed the reading and are prepared for the upcoming lecture. There will be reading assignments for each lecture EXCEPT for the Friday lectures after a midterm exam. Each reading assignment is worth 2 points, and your score is determined by the percent correct multiplied by the 2 points possible. The best 35 assignments 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 WiFi-enabled device, such as a smartphone, laptop, or tablet. You will log in to each session through www.learningcatalytics.com or the Mastering Chemistry website and answer the 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 2 points. The best 35 assignments will be counted toward your grade. Each assignment is graded on both participation (75%) and correctness of answers (25%). The assignment grade is the assignment percentage multiplied by the 2 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 (Scantron) 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 midterm exam missed due to illness will be excused, with the other exams plus the final pro-rated to count for more. **By university policy, Evening exams take precedence over all other university activities.**

**QUIZZES:** Quizzes will cover lecture, homework and laboratory material, and will occur in lecture on Fridays according to the syllabus schedule. You will be allowed to prepare a single 3" × 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**: A new Mastering Chemistry homework assignment will be made available each week (starting at 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. Late homework assignments are subject to a 10% per day penalty until 50% has been reached, and that 50% credit continues until the exam covering that material has occurred.

Each homework set will be pro-rated to have a value of 5 course points. Your grade for the homework set is 5 points times the percentage of the credit you earned on the assignment. 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 arrive late or miss the tutorial will **not** be allowed into the lab. Tutorials are interactive problem solving sessions driven by your questions. Bring your text, lab manual, and calculator to the tutorial. Pre-labs and lab reports are due at the start of the 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 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 (lab report, lab, and quiz).

**LABORATORIES:** This is a laboratory UCORE course, thus the laboratory must be completed by submission of at least 7 complete laboratory reports based on your own work or approved make-up data 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**: Ensure your pre-lab assignment is complete and see Ryan Rice (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 half credit.

**Pre-laboratory assignments:** Pre-laboratory assignments are to be completed online through Mastering Chemistry and are due at 7:00AM the morning of your 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. In order to complete the pre-lab, you must see Nikki Clark (Fulmer 319A) to obtain an extension of 30 minutes, and complete the pre-lab in the chemistry computer lab (Fulmer 401) before returning to lab.

**Laboratory procedure:** Students are to perform the experiments individually unless otherwise instructed by the TA. 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. You are required to get your TA's signature on your data and calculations before you leave lab. Failure to do so will result in zero credit for that 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.) There will be a total of four formal lab reports in addition to the general lab reports completed. These formal lab reports will be assigned per lab section and will be an extension of the general lab reports already completed. The eight general lab reports will be completed for each of the experiments and are worth 20 points each (160 points total). The worksheet lab report is worth 15 points. The three formal lab reports will be worth an additional 15 points each (45 points total).

**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, December 11th, 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.

**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

## *SCHEDULE* *CHEMISTRY 105* *FALL 2015*

| | Date | Chapter | Topic | Lab Experiment / Topic | Lab report due | Quiz/ Exam |
|---|---|---|---|---|---|---|
| **1** | Aug 24-28 | 1 | Matter, Measurement, and Problem Solving | Tutorial only. | | |
| **2** | Aug 31-Sep 4 | 2 | Atoms and Elements | Worksheet 1&2: *Inorganic Nomenclature and Stoichiometry.* | Wksht 1&2 | |
| **3*** | Sep 7-11 | 3 | Molecules, Compounds, and Chemical Reactions. | Experiment 1*: Laboratory Techniques and Measurements* | | Quiz 1 |
| **4** | Sep 14-18 | 4 | Chemical Quantities and Aqueous Reactions | Experiment 3: *Acids and Bases: Properties and Reactions* | Experiment 1 | Quiz 2 |
| **5** | Sep 21-25 | 5 | Gases | Tutorial plus Exam 1 practice | Experiment 3 | Exam 1 |
| **6** | Sep 28-Oct 2 | 6.1-6.5 | Thermochemistry | Experiment 9: *Preparation of an Iron Oxalate Complex* | | |
| **7** | Oct 5-9 | 6.6-6.10 | Thermochemistry continued | Observe Exp 9 Results.<br>Experiment 7: *The Density of Air* | Experiment 9 | Quiz 3 |
| **8** | Oct 12-16 | 7.1-7.4 | The Quantum Mechanical Model of the Atom | Experiment 6: *Enthalpy of Formation of Ammonium Chloride* | Experiment 7 | |
| **9** | Oct 19-23 | 7.5-8.5 | The Quantum Mechanical Model of the Atom<br>Periodic Properties of the Elements | Tutorial plus Exam 2 practice | Experiment 6 | Exam 2 |
| **10** | Oct 26-30 | 8.6-8.9 | Periodic Properties of the Elements continued | Experiment 4: *Molar mass of an known acid*<br>Tutorial plus Exam 2 practice | | Quiz 4 |
| **11** | Nov 2-6 | 9.1-9.6 | Chemical Bonding I: The Lewis Model | Experiment 5: *Molar mass of an unknown acid* | Experiment 4 | |
| **12#** | Nov 9-13 | 9.7-9.11 | Chemical Bonding I: The Lewis Model continued | %Tutorial on Tuesday and Thursday | Experiment 5 | Quiz 5 |
| **13** | Nov 16-20 | 10 | Chemical Bonding II: Molecular Shapes, etc. | Tutorial plus Exam 3 practice | | Exam 3 |
| | Nov 23-27 | *THANKSGIVING BREAK* | | | | |
| **14** | Nov 30-Dec 4 | 11.1-11.9 | Liquids, Solids, and Intermolecular Forces | Experiment 8: *The shapes of molecules and Ions* | | |
| **15** | Dec 7-11 | 11.10-11.13 | Liquids, Solids, and Intermolecular Forces continued. Catch-up and review. | Tutorial only | Experiment 8 | Quiz 6 (make-up quiz) |
| | Dec 15 | | *FINAL EXAM TUESDAY 7:00 PM-10:00 PM* | | | |

*Monday Holiday: No lecture on September 7th.

#Wednesday Holiday: No labs the week of November 9th-13th, students with a Wednesday tutorial may attend any other tutorial.

% Wednesday tutorial students will have Experiment 3 lab reports due by 5:00PM on Thursday Nov. 12, 2014 in Fulmer 319A. Students may attend T or Th tutorials.

# Getting Started with Modified Mastering Chemistry and Blackboard

1. Log in to Blackboard Learn learning management system (https://learn.wsu.edu), using your Network ID and password.
2. Select the course "**Principles of Chemistry I**."
3. Find the Mastering Chemistry link in the left-hand menu and click. This will bring up three links in the right-hand area.
4. Click on the "**Mastering Course Home**" text. This will start the registration process.
5. Accept the user agreement with Pearson Publishing.
6. You will be prompted to log in with your Pearson account information.
    a. If you already have a Pearson account, log in.
    b. If you have a Pearson account but do not remember it, use the help provided through Pearson's website. If you try to establish a new account, you will have to pay again.
    c. If you have **never** had a Pearson account, create one. Be sure to record your username and password, as you most likely will need it again.
7. If you purchased the textbook bundle from the bookstore, or otherwise purchased a **Modified Mastering Chemistry** access code, click the button "**Access Code**" and follow the directions on the next screen by replacing the example code with your code. Keep a record of this code, as well.
8. If you **have not** purchased the textbook bundle or the access code in any other form, click "**Use a Credit Card or Paypal.**" You may also choose to get a temporary access code, good for 14 days, but this only works once, so if you have previously used the same textbook and used the temporary access option then, you will be unable to do so again.
9. You should now be registered. Click on the "**Go to your course**" button to access the Mastering Chemistry course home and Learning Catalytics link.
10. If you have any issues with the registration process, please use the Pearson online support, or come in and see Krista Nishida in Fulmer 317A.