



Welcome to Fundamental Chemistry!

CHEM 105, Fall 2017

Lecture Schedule:

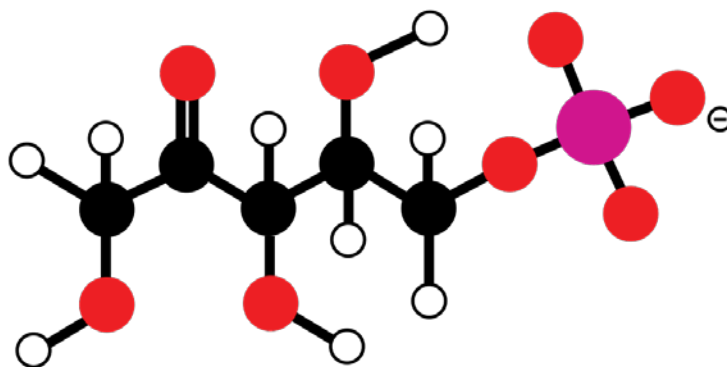
Monday, Tuesday, Thursday, 2:00 – 2:50, SCI A-121

Discussion and Laboratory Schedule:

Section #	Discussion Day/Time	Discussion Room	Lab Day/Time	Lab Room
04L1/04D1 [†]	Wed 11:00 – 11:50	SCI A-110	Tue 8:00 – 10:50	SCI B-140
04L2/04D2 [*]	Wed 1:00 – 1:50	SCI A-111	Thurs 8:00 – 11:50	SCI B-140
04L4/04D4 [†]	Wed 3:00 – 3:50	SCI A-111	Wed 11:00 – 11:50	SCI B-140

*Lab Instructor: Snyder

†Lab Instructor: Lemke



Dr. Dave Snyder
dave.snyder@uwsp.edu

Office Location: Science Building, D-143

715-346-2155

Please come and see me or contact me with your questions or concerns!

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Drop-in Office Hours

Mon, Tue, Thur, Fri: 11 AM – 12PM
Wed: 9 – 10 AM

By Appointment Office Hours

Mon and Tue: 9 – 11 AM
Thur and Fri: 12 – 1 PM

About the Instructor



My name is Dr. Dave Snyder, and I'm excited about the opportunity to work with you this fall. I teach courses in general and analytical chemistry here at UWSP (CHEM 105, 106, 248, and 446) and conduct air pollution-related research with a small group of students each semester. I love teaching and interacting with my students, and I hope that you will enjoy being in my class. This course will be challenging, but please be assured that I will be there to support you and guide you along the way.

What is this course all about?

Chemistry 105 and 106 together provide a broad introduction to the field of chemistry. In Chemistry 105 we focus on modern atomic and molecular theory. We will study the structure of matter, from the subatomic particles that make up atoms to the formation and structure of simple molecules and ionic compounds that can be readily studied in the laboratory. You will study how molecules interact with one another and work to understand the interaction between matter and energy. Finally, you will learn how chemists describe chemical and physical changes and how to predict the outcomes of chemical and physical interactions in both descriptive and mathematical terms. This course provides the foundation for Chemistry 106, which focuses in more detail on the nature of chemical interactions.

Learning Outcomes

After successful completion of this course, you should be able to

- Describe how the chemical and physical properties of matter arise from the fundamental properties of atoms, molecules, and ions
- Accurately perform fundamental chemical calculations including balancing chemical equations, converting between mass and moles, determining theoretical yields, calculating concentrations, and converting between concentrations and the amount of a solute in a solution
- Quantitatively and qualitatively describe the flow of energy that takes place during chemical reactions and physical changes
- Demonstrate proficiency in making measurements and performing experiments in the chemical laboratory
- Record data and report & interpret the results of laboratory experiments with appropriate levels of precision

Inclusive Excellence

I recognize that students in my classroom may have diverse racial, ethnic, cultural, and religious backgrounds, sexual orientations and gender identities. I further recognized that students in my classroom may face unique challenges due to health conditions, family obligations, current or past military service, and other situations that may result in significant obstacles to learning.

I am committed to providing a civil, respectful, and equitable classroom where all my students have the opportunity to succeed and feel safe and valued. I believe diversity should be celebrated and embraced because it helps to create an optimal environment for shared inquiry and the development of sophisticated graduates who recognize the value of diversity and human dignity.

I welcome your suggestions and ideas on how we can create and maintain an inclusive and equitable learning environment during the semester.

Course Format

Lecture

Lecture periods will be an interactive mix of discussion, problem solving, and presentation of concepts and examples. I expect you to be an *active* participant in class discussions and activities. I employ many different learning strategies that are research-based and have been shown to improve student learning, but no strategy works unless you are a willing and engaged participant! You are responsible for all material presented during lecture periods, and should take careful notes. As is customary in university courses, not all material will be covered in class, so be sure to complete all assigned reading activities and homework assignments. If anything is unclear to you, please come and see me! My role in this course is to facilitate your learning experience, and my favorite part of being a professor is meeting with you, whether it is in the classroom, lab, my office, or walking down the hallway or sidewalk. Don't ever think that you are bothering me when you come to see me – you are the reason why I am here!

Discussion

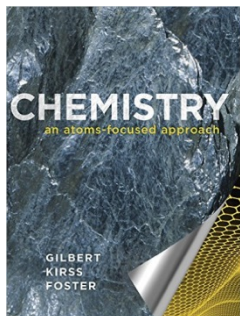
Discussion periods provide me with an opportunity to meet with you in small groups. During discussion, I will answer questions about course material, and we will work together in small groups to explore concepts covered in lecture. Please note that some discussion activities will be graded.

Laboratory

Lab periods will provide you with the opportunity to make observations, engage in scientific reasoning, interact directly with natural phenomena, use scientific tools, and learn to record, analyze, and report scientific data and results. Getting the most out of lab requires that you be punctual, attentive, and curious. It is also critical that you come to lab prepared, so please read the lab procedure thoroughly before attending lab.

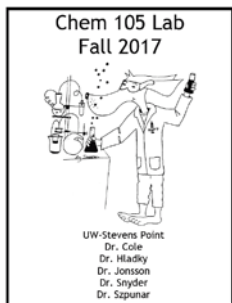
Learning Resources and Required Materials

Textbook



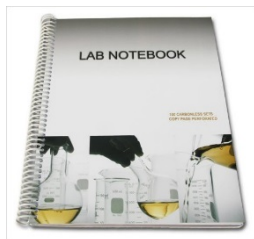
Chemistry: An Atoms Focused Approach, by Gilbert, Kirss, and Foster
Available through text rental at the University Store

Lab Manual



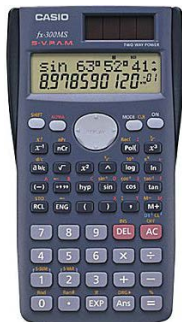
CHEM 105 Lab Manual, Fall 2017, by UWSP Dept. of Chemistry
Available for purchase at the University Store.

Lab Notebook



You will need a laboratory notebook with carbonless duplicate pages such the one shown here, which is available for purchase at *the University Store*.

Scientific Calculator



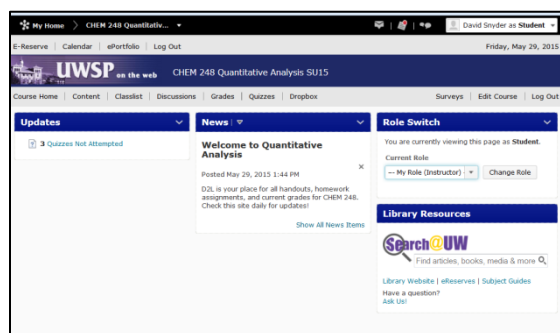
You will need a scientific calculator with log functions. It does not have to be a fancy, expensive one. My trusty Casio fx-300 ES solar (shown at left) costs \$11.49 at Staples, got me through college and graduate school, and never needs new batteries!

Time



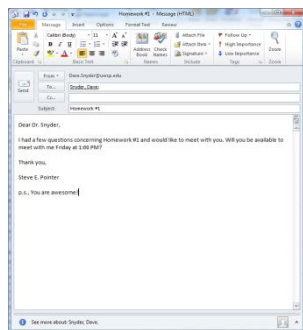
Your education is a significant investment that you should get the most out of. In order to get the most out of this class and earn a solid grade, you need to be willing (and able) to invest a significant amount of time and energy. How much time? Between readings, homework, and lab preparation/reporting, you will need to set *at least* aside 1 - 2 hours *each day*. If you have question about how to organize and use your time out of class wisely, please come a talk to me!

D2L Course Site



All course documents, including assignments, rubrics, the syllabus, and other supporting material, can be found on the course D2L site (login at <https://uwsp.courses.wisconsin.edu>). Your exam, quiz, assignment, and lab grades, along with your overall course grade, can be found on this site as well. I will post content and update grades almost every day, so be sure to check D2L often.

E-Mail



Please feel free to e-mail me at dave.snyder@uwsp.edu if you have any questions or concerns during the semester. While I may not be able to reply to your messages instantly, I will do my best to reply as quickly as possible. E-mail messages should be professionally formatted, should include an appropriate salutation (e.g., "Dear Dr. Snyder"), an appropriate closing ("Sincerely, Steve E. Pointer"), and should be written in Standard English. Sending me e-mails is a good opportunity to develop or improve your professional communication skills. Please keep in mind that university e-mails are public records.

Support and Help is Available!

Instructor and Tutoring Support

- **Instructor Office Hours:** During office hours, I am available to assist you in all aspects of this course. You do not need to make an appointment to stop by during "drop-in" office hours but should contact me in advance for appointments at other times (see page 2 of this syllabus for

the weekly schedule for “drop-in” office hours and “by appointment” office hours). I expect that you will need help with this course and am always happy to work with you.

- **Supplemental Instruction (SI):** Ms. Lisa Fowle will be facilitating structured group study sessions this semester for our class. SI study sessions are active learning opportunities in which students study collaboratively. They have been shown to be an effective study tools, and frequent and consistent participation in SI sessions may help you be more successful in this class. Lisa will hold at least two study sessions each week and will hold one or more office hours each week. The days and times for SI sessions will be announced during the first two weeks of class.
- **Individual Tutoring:** Drop-in tutoring is available through the UWSP Tutoring/Learning Center (TLC). Schedules and locations for tutoring can be found on the TLC website: <http://www.uwsp.edu/tlc>

Disability Services

The University of Wisconsin Stevens Point is committed to providing students with disabilities the academic accommodations and auxiliary aids necessary to ensure access to all university services, programs and activities. In addition to the university's campus wide efforts to promote access and inclusion, students with disabilities are further accommodated based on specific individual needs. The Disability and Assistive Technology Center (DATC) is responsible for determining these accommodations. They provide services and assistance to enrolled students who are either permanently or temporarily disabled.

- The registration process can take up to 3 weeks to complete, so if you believe you will require accommodations, begin the process as soon as possible. To start the process, contact The Disability and Assistive Technology Center (DATC) at 715-346-3365 or emailing datctr@uwsp.edu
- UWSP has many services for students offered by various offices. Although decisions regarding disability specific accommodations are made on a case by case basis.
- Visit the Disability and Assistive Technology Center (DATC) website at: <http://www.uwsp.edu/disability/Pages/default.aspx> for information on services offered to students with specific disabilities

Course Policies

Participation and Attendance Policy

No formal attendance policy will be enforced during the semester; however, failure to attend lecture, lab, or discussion is likely to have a negative impact on learning and grades. You are responsible for all materials and assignments regardless of whether you are in attendance or not. You should also be aware that, in some cases, failure to attend class on a regular basis may negatively affect your enrollment status and financial aid. I will take regular attendance for informational purposes.

Academic Integrity Policy

The Board of Regents, administrators, faculty, academic staff and students of the University of Wisconsin system believe that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin system. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards will be confronted and must accept the consequences of their actions. **Please be aware that the penalties for academic misconduct can include suspension or expulsion from the university.** More information on UWSP academic standards and disciplinary procedures pertaining to academic misconduct can be found at:

<http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

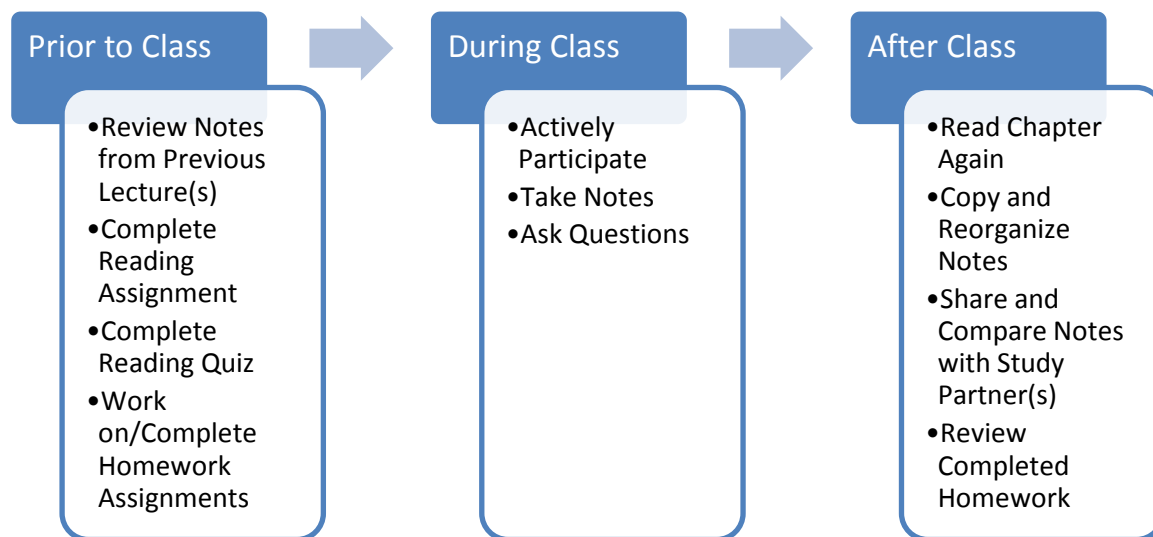
Late Work /Missed Test Policy

- Late homework will be assessed a 50% penalty. The deduction will be taken from the total points a student earns on the assignment (example: a student who earns 8/10 on a late homework will receive 4 points instead of 8). A homework assignment will be considered late if it is turned in after 5:00 PM on the day that it is due.
- No credit will be given for homework turned in after the assignment has been graded and returned and the solution key has been posted to D2L
- If you know that you will be unable to attend a period in which a test or exam is to be given, you must notify the instructor in writing (e-mail is fine) at least *one week* in advance in order to schedule a make-up test or exam. This includes students who must miss class due to university sanctioned events or scheduled military service.
- Final exams will not be given before the scheduled exam period. Final exams will not be returned to students but will be available for students to review until the end of the following semester
- Lab reports and discussion exercises must be completed by the end of lab or discussion period. No credit will be given for late lab reports or discussion exercises.
- The instructor reserves the right to change or amend these policies at his discretion on a case-by-case basis. He further reserves the right to require documentation of illness or extraordinary circumstances that might precludes students from successfully completing course requirements. Please know that requiring documentation is not meant to be intrusive or insensitive; it is a means of ensuring fairness.

Electronics use Policy

An electronics usage policy is included along with this syllabus. Students must sign and return the policy before the end of the second week of class. The purpose of this policy is to help ensure a safe and distraction-free learning environment. If a student repeatedly violates this policy or if there are significant complaints from other students regarding electronics usage in the classroom or lab, the instructor will have no choice but to pursue disciplinary action. This may include referral of the matter to the Dean of Students.

Your Learning Experience: Lecture



Lecture Prep Materials

Lecture prep materials will be posted to D2L in advance of each lecture. These materials will include a reading assignment, a set of suggested problems to work from the textbook, and a set of questions to answer while reading. While these assignments are ungraded, they are valuable study aids, and when preparing lectures, I assume that you have completed these exercises.

Homework Assignments

Homework assignments are designed to give you the opportunity to practice and demonstrate your mastery of skills taught in class and lab. In order for homework to be an effective learning tool, you must write complete solutions to all of your problems, including detailed explanations for your solutions where appropriate. When you receive your graded homework from me, it is vitally important that you review and correct any problems you missed. In order to receive credit for homework assignments, you must:

1. Submit your answers on the answer sheet provided on D2L. All answers must include appropriate significant figures, units, and labels in order to receive full credit. Answers are worth a maximum of 7 points.
2. Attach a complete set of solutions to your answer sheet. Complete solutions are worth a maximum of 3 points.

Failure to submit answers or solutions will result in a score of zero for the assignment.

I expect that homework will be a struggle! Homework assignments will be lengthy and require a significant amount of time to complete. Do not procrastinate! Begin working on homework assignments as soon as they are posted to D2L and come see me if you need help – I'm always willing to help.

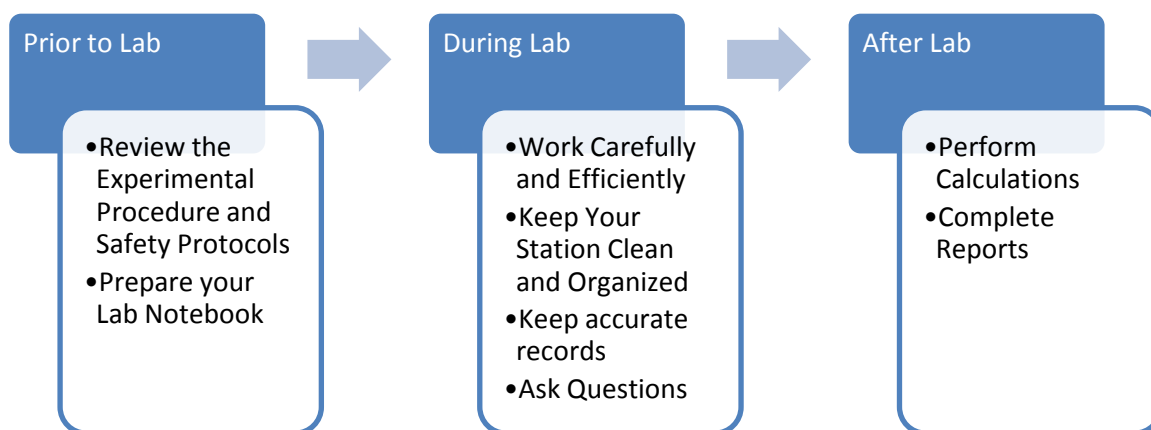
Unit Tests

Homework assignments are examples of *formative* assessments and are designed to help you to learn. Tests are examples of *summative* assessments and are designed for you to demonstrate what you have learned. Unit tests will be given in two parts. Part 1 will consist of extended response questions (“story problems”) and will be given in lecture. Part 2 will consist of multiple choice, matching, or fill-in-the-blank questions and will be given during discussion. *Unit tests are cumulative*, that is to say that any item from Test 1 is fair game for Test 2. Units test will take place during Tuesday lectures (see the tentative course schedule on page 12 of this syllabus) and the Wednesday discussion periods that follows that lecture.

The Final Exam

The final exam is a cumulative exam and will cover material from Units 1 – 3 and material not covered on the Unit 3 test (this will include material covered during the last week or so of class). The final exam will take place on Wednesday, December 20th, from 2:45 – 4:45 in the lecture hall (SCI A-121).

Your Learning Experience: Laboratory



Laboratory Notebook

Learning to keep proper laboratory records is critically important. Any time you are working in a lab, you should write your observations and measurements in a laboratory notebook. This semester, you will learn how to correctly set up and maintain a laboratory notebook. In successive chemistry courses, the requirements for your notebook will become more demanding, so learning the basics and developing good record-keeping habits will help you in the future. You will be expected to prepare your lab notebook *before* attending lab (your lab instructor will look over your notebook prior to lab each week) and to turn in duplicate copies of your lab notebook pages with your lab report. Deficiencies in your lab notebook will result in deductions from your laboratory report score.

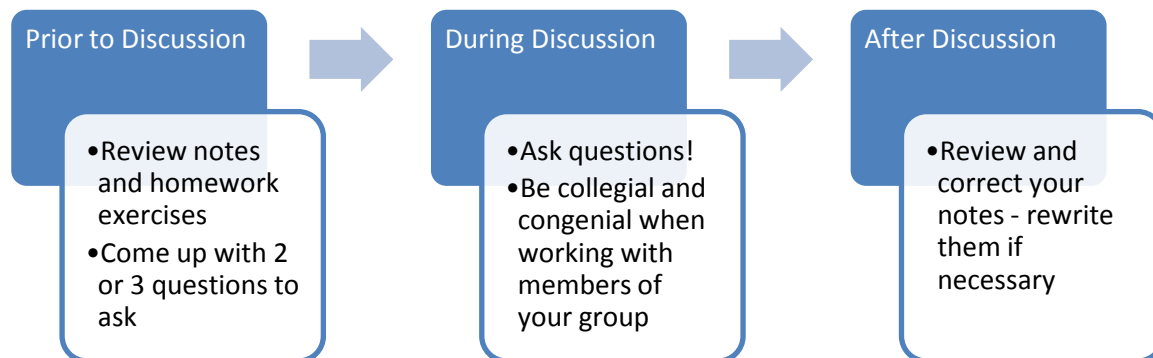
Laboratory Reports

At the conclusion of each lab, you will turn in a brief laboratory report. These reports may include observations, data analysis, and graphs/figures. Typically, you will turn in individual lab reports.

Assessment of Lab Skills: Laboratory Practical and Lab Exam

During lab, you will be learning fundamental laboratory skills. The Lab Practical, which will be given in Week 8, is a hands-on lab exam that will assess the development of your lab skills. During the final lab period of the semester, a written Lab Exam will evaluate your lab skills. Your lab instructor will provide you with additional information regarding the lab practical and lab exam.

Your Learning Experience: Discussion



Discussion Exercises

During discussion periods, you will work on both graded and ungraded exercises. Graded exercise will include both individual assignments and group assignments. Generally, you will be given the opportunity to work example problems and ask questions before working on graded exercises.

Grading Information

The final course grade will be determined by an absolute point scale as shown below. Numbers in parentheses represent the approximate number of items in each category. If the actual number of assignments is greater than what is shown, only the highest scores will be included in the final grade calculation. For example, if 11 lab scores are recorded, the highest 10 will be included in the final grade. In the unlikely scenario that the number of assignments is less than what is shown, the point value for each assignment will be increased so that the total number of points for that item remains unchanged. For example, if only 7 homework assignments are recorded, each assignment will be worth 11.42 points (i.e., $80 \div 7$).

Item	Point (Each)	Points (Total)	% of Final Grade
Unit Tests (3)	100	300	40%
Final Exam (1)	150	150	20%
Lab Reports (10)	10	100	13%
Lab Practical or Exam (2)	20	40	5%
Homework (8)	10	80	11%
Discussion Exercises (8)	10	80	11%
Total		750	100%

The following scale will be used to assign letter grades. Note that at UWSP, a grade of “D-” is not given.

Grade	Points Range	Grade	Points Range
A	750 – 694	C+	595 – 566
A-	693 – 671	C	565 – 544
B+	670 – 641	C-	543 – 521
B	640 – 619	D+	520 – 491
B-	618 - 596	D	490 – 476
		F	475 - 0

IMPORTANT – PLEASE READ THE FOLLOWING:

In addition to earning an overall grade of “D” or higher (i.e., a minimum of 476 points), students must receive a passing grade in *both* the lecture *and* laboratory portions of this course in order to receive a passing grade for the class. Information on the minimum points needed can be found below.

	Items Included	Total Points Available	Minimum Needed to Pass
Lecture Points	Units tests, Final Exam, Homework	530	339
Lab Points	Lab Reports, Lab Practicum, Lab Exam	140	90

A Note about Final Course Grades

I invite you to come and discuss your grade with me at any time during the semester. I welcome these conversations, and I am more than happy to help you to develop study strategies that can assist you in becoming a better thinker, learner, and problem solver – skills that can help you to improve your grade. Additionally, if I have made a mistake in grading an assignment (it happens – I am not perfect!), I want to know right away so that I can correct the error. However, unless a mistake has been made in calculating your final grade, course grades posted after the final exam are final and not subject to change. I always take a look at your grade and will round in your favor if you are in-between grades; however, I do not “bump” students up to a higher grade, provide extra credit or work opportunities, or change the grading scale after the final exam has been completed.

Course Outline (Tentative)

Week	Dates	Chapter(s)	Events	Topics Covered
1	9/5 – 9/8	1		The Nature of Matter and Atomism
2 [†]	9/11 – 9/15	1,2		Making Measurements/ Atomic Models
3	9/18 – 9/22	2,3		Periodic Table/ Mole Concept/ Light
4	9/25 – 9/29	3		Bohr Model/ Quantum Theory
5	10/2 – 10/6	3,4		Periodic Trends/ Bonds/ Nomenclature
6	10/9 – 10/13	4	Unit Test 1	Lewis Symbols and Structures
7	10/16 – 10/20	4,5		Bonding/ VSEPR Theory/ Polarity
8	10/23 – 10/27	5,6		Valence Bond Theory/ MO Theory/ IMFs
9	10/30 – 11/3	6,7		Phase Diagrams/ Reactions/ Stoichiometry
10 [‡]	11/6 – 11/10	7	Unit Test 2	Stoichiometry/ Composition/ Empirical Formulas
11	11/13 – 11/17	7,8		Limiting Reactants/ Units of Concentrations
12	11/20 – 11/24	8	Thanksgiving	Concentrations/ Solution Stoichiometry
13	11/27 – 12/1	8,9		Acid-Base/Solubility/ Titrations/ Heat
14	12/4 – 12/8	9	Units Test 3	Heat Capacity/ Enthalpy/ Calorimetry
15	12/11 – 12/15	9		Hess's Law/ Bond Enthalpy
16	12/20	1 - 9	Final Exam	Cumulative Final (2:45 – 4:45 PM, A-121)

Other Important Dates:

[†]Sept 14: Last day to add a course or drop a course without a grade (course will not appear on transcript)

[‡]Nov 10: Last day to drop a course (a grade of "W" will appear on transcript)

Laboratory Schedule

Week 1	Dates	Experiment
1	September 5 – 8	Check-In
2	September 11 – 15	Precision vs. Accuracy in Scientific Measurements and Calculations
3	September 18 – 22	Water Content of a Hydrated Salt
4	September 25 – 29	Introduction to Absorption Spectrophotometry
5	October 2 – 6	Colorimetric Determination of Iron
6	October 9 – 13	Periodic Properties
7	October 16 – 20	Lewis Formulas & Molecular Models
8	October 23 – 27	Lab Practical
9	October 30 – November 3	Intermolecular Forces
10	November 6 - 10	Separation of a Mixture
11	November 13 - 17	Limiting Reactant
12	November 20 - 24	No Lab – Thanksgiving Break
13	November 27 – December 1	Introduction to Titrations: KHP Titration
14	December 4 - 8	Vinegar – Is the Label Truthful?
15	December 11 - 15	Lab Exam + Check-Out

CHEM 105 Lab Notebook Grading Rubric Name: _____

Experiment: _____ Section: _____

Item	√
<i>To be Completed by the Lab Instructor (pre-lab):</i>	
Updated table of contents	
Experiment title	
Experiment purpose	
Brief procedure or flow chart	
Data tables prepared in advance	
All entries made in ink	
<i>Lab Instructor Signature/initials:</i>	
<i>To be Completed by the Lab Grader (post-lab):</i>	
Date and signature present at the bottom of each page with data	
All data present in tables with titles, headings, and units	
Data errors appropriately labeled and corrected	
Results summary and/or conclusion	
Total Number of missing/incorrect Items	

Score on post lab questions	
Lab notebook deductions	
Overall Lab Score	

Notes: √ means item is present and correct.

0.25 pts will be deducted for each missing/incorrect item