

Chemistry 130 – Chemical Principles I Summer 2016

I. General Information

Instructor: **Dr. Brian Lamp** E-Mail: blamp@truman.edu
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Schedule: Lecture MWR 9:00-10:40 AM MG2090
Laboratory T 9:00 AM -11:50 AM MG1025
Laboratory R 1:00 PM -3:50 PM MG1025

Office Hours: Office hours are posted outside Dr. Lamp's office and on Dr. Lamp's Website. If you are unable to meet during these hours when in need of help, please arrange a time with the instructor IN ADVANCE.

II. Course Philosophy and Goals

Important Advice: Your success in this, or any course, is directly related to the effort you put forth as you move through the semester. It is typical for a student to spend 2-3 *quality* hours outside of class per hour in class reading, working problems and developing their understanding of chemistry. Procrastination and inefficient study habits are two of the primary reasons students struggle in their courses. Develop a good study plan and stick with it and you will find yourself a much happier and more successful student!

Philosophy: Chemistry 129, 130 and 131 are courses that provide a foundation for many other courses in chemistry and biology. Throughout these courses you will be introduced to a great deal of information. We will not spend a great deal of time on any one topic. Even though we do our best to maintain continuity, at times it may seem like we are skipping from one subject to the next without covering anything in detail. It will help if you remember that you are learning many concepts and techniques that will be very useful in upper-level courses.

Course Goals: In the framework of gaining a better understanding of how science works and the thought processes needed to tackle complex problems, we intend:

1. To learn some fundamental concepts and facts in the field of chemistry.
2. To prepare for more advanced chemistry courses.
3. To learn fundamental skills and safe lab practices.
4. To learn to approach and solve problems in a logical and efficient manner.
5. To enjoy learning about chemistry!

Outcome statements for CHEM 130 are located at:
<http://chemlab.truman.edu/Assessment/CHEM130Outcomes.asp>

Academic Integrity: Students are expected to abide by the Truman State University Student Conduct Code and complete their coursework, including exams and laboratories using their original words and ideas and properly cite the words and ideas of others. Students caught committing an act of academic misconduct will be subject to the full range of penalties, including failing the course. In every case, the Dean of Student Affairs office and the Vice President for Academic Affairs will be notified.

Special Needs: Any student who has a disability that may prevent him/her from fully participating in the class activities must contact the Student Disability Services Office immediately to ensure that your needs are properly met. If no contact is made, no concessions will be considered.

Mobile Devices: **Unless you are an emergency responder, all cell phones, ipods and pagers must be turned off and stored while in lecture.** Failure to do so will result in dismissal from the class session (this includes exams). This policy includes texting.

*"I'm a great believer in luck, and I find the harder I work the more I have of it."
-Thomas Jefferson*

III. Required Materials

- Textbook: "General Chemistry: Principles & Modern Applications", 10th Ed., Petrucci, Herring, Madura and Bissonnette, 2011. (ISBN 978-0-13-206452-1)
- Laboratory Manual: The laboratory manual for Chemical Principles, as well as other lab information is online at chemlab.truman.edu.
- Laboratory Notebook: A permanently bound laboratory notebook capable of creating duplicate pages is *required*. This book must contain carbonless, duplicate pages that are white in color. You must have this notebook by the first lab.
- Safety Glasses: All students are required to have departmental approved *safety glasses or goggles* for use in the laboratory. These goggles must meet ANSI Z87 or Z87.1 standards. Strict compliance of this rule will be maintained at all times. These will be necessary for the **first scheduled laboratory period** and all labs thereafter.
- Laboratory Attire: Proper lab attire will be required at **ALL** lab sessions. In addition to safety glasses, you must always attend lab wearing long pants, close-toed shoes, and a shirt that covers the upper body (at least equivalent to a tee-shirt). Inappropriately attired people will not be allowed in lab. If you miss a lab due to this issue, you will not receive credit for the experiment.
- Calculator: You must have a *hand-held scientific calculator* capable of scientific notation for use on homework problems, quizzes, and exams. It will be assumed that you have a calculator for all quizzes and exams. The instructor will not loan calculators to students who have none.
- Attendance etc.: It is expected that everyone will attend class and participate. Although attendance is not mandatory, roll will regularly be taken. Attendance records are a factor in determining borderline grades at the end of the semester.

IV. Lecture

- Coverage: The lecture portion of the course will explore and elaborate on topics presented in the text. It does not make sense for me to repeat all of the material in the text. I will introduce topics and elaborate on points that are particularly essential or challenging. I expect you to read *all* of the chapters that we cover and to ask questions about what you read.
- Exams: Three in-class exams worth a total of 300 points will be given. Tentative dates for these exams are:
June 22 (W), July 7 (Th), July 26 (T)
A comprehensive final exam will be given **Thursday, July 28**. The final exam will be worth 200 points.
- Homework & Quizzes: Regular homework assignments will be given to be worked individually or in groups, but may not be graded. While working in groups to solve problems is very helpful, the result is usually a "group" assignment that does not adequately reflect whether you learned the material. Instead of graded homework, we will have weekly quizzes of 15-20 minutes. These quizzes will be given the last 20 minutes of class each Thursday (except for weeks we have an exam). The questions for the quizzes will be taken **directly**, or with slight alteration, from the assigned homework. Your reward for doing your homework conscientiously should be good performance on these quizzes.

IV. Laboratory

Laboratory Philosophy:

Experimentation is at the heart of chemistry. The vast majority of the new knowledge in chemistry comes from careful examination and interpretation of experimental results. In order for you to have confidence in your results, it is important that the experiments be executed carefully and properly. The General Chemistry laboratory is designed to teach you lab skills, reinforce concepts from lecture, and show you how to think about scientific problem solving. The importance of lab is reflected in the fact that it counts for about 25% of your final grade.

Lab Notebooks:

The purpose of a research lab notebook is to enable you or any other worker to understand your experiment and duplicate your work. Although we are not operating in a research environment, my goal is to teach you the habits that will make you a better scientist in the future. You are required to maintain a permanently bound and numbered lab notebook, capable of making duplicate pages that will be handed in for grading. Before coming to lab you should familiarize yourself with the theory, techniques, and safety precautions for the experiment. I expect all students to come prepared for lab. If I see instances of students who appear to be reading the lab for the first time during class, I will ban lab manuals from the laboratory.

You must have all the information necessary to do the lab written in your notebook **before lab**. This includes a statement of purpose of the experiment, outline of the procedure that will be followed, and blank data tables if necessary. Failure to come prepared will result in a loss of points. All results and observations must be written **directly** in the notebook, students who make temporary entries on random pieces of paper or paper towels will find them vanishing (the papers, not the students!).

Other guidelines/rules:

- **Record everything directly in your lab notebook, not on other paper!**
- **Always write in your notebook in PEN, not pencil!**
- Mistakes in the lab notebook should be crossed out with a single line. Whiteout, etc is not acceptable.
- All labs should be completed in chronological order. The write-up for one experiment should be completed before the next write-up begins.
- Write your name and a running title for the experiment on the top of each page. *Sign and date the bottom of each page as it is completed.*
- Your notebook must have an up-to-date table of contents on the first page.
- Computer-generated tables and graphs are encouraged where appropriate. Such material must be inserted permanently into the notebook with a copy on both the original and carbon copy page.
- Affix printouts to notebook pages with glue or tape (not staples). Do NOT staple printouts to the notebook pages! Adjust print settings and/or trim printouts so that they fit within the constraints of a single page and allow the pre-printed page number to show.
 - Paper must not hang out over the notebook page!
- If you are working in a group and only one member of the group records data at the time of the experiment, you must indicate in your notebook that the original results were copied from the other person's notebook. Give the page number of the original results.

Lab Grading:

Lab performance has a major bearing on your overall course grade. Lab preparation, participation and adherence to safety rules will be considered in grading. Four experiments will be assigned scored based on a thorough evaluation of the lab notebook, while the remainder will be reviewed and spot-checked.

VI. Grading

Grade point breakdown: Letter grades will be determined based on the percentage derived from the breakdown shown below.

<u>Grade Point Distribution</u>	
<u>Source</u>	<u>Total Points</u>
3 Exams	300 pts. maximum
5 Quizzes	100 pts. maximum (drop lowest)
Final Exam	200 pts. maximum
Lab Reports ¹ (4 x 30 pts.)	120 pts. maximum
Lab Reports ² (6 x 10 pts.)	60 pts. maximum
Homework/Pre-lab Quizzes/Misc	120 pts. maximum
Total points	900 pts. maximum

¹Grade derived from complete evaluation of lab report

²Grade derived from spot grading lab report

Grading Scale: Awarding of final class grades will be based on a 90-80-70-60 scale. Percentages will be based on the total possible points for the semester.
I reserve the right to lower the grading scale, but it will never be raised.

Late Hand-ins: **No late work will be accepted.** All assignments will be given a specific deadline, anything turned in after the deadline will earn a score of zero.

Make-ups: No make-up exams, quizzes, or labs will be given without prior approval. If you cannot attend a scheduled exam for a ***valid, instructor-approved reason***, notify Dr. Lamp IN ADVANCE and an arrangement will be made. No credit will be given for missed labs, exams or quizzes without prior instructor approval. Valid reasons include traveling with a University-sponsored organization, illness, or death in the family. If a sudden, unexpected event occurs that causes your absence, contact the Student Affairs Office and they will contact me. Also, please leave a voice or e-mail message for me and contact me immediately upon your return.

VII. Other Information

- All assignments in lab and lecture *must be written legibly and in a well-organized fashion*. If an answer or work cannot easily be interpreted, no credit will be given.
- All mathematical work and assumptions used when solving a problem, whether on homework, quizzes or exams, *must be shown in order to receive credit for the problem*. Please mark your answers clearly.
- Trim edges of spiral notebook paper and **staple multiple sheets** prior to submission.
- Do not procrastinate!!! Your understanding of lecture material, and grades on homework and exams will be adversely affected by this approach. *It is strongly recommended that you work ahead on reading and homework and participate fully in classroom discussions and problem solving sessions*. The instructor reserves the right to not answer "panic" questions on the day of an exam and will certainly be stingy with time other than his office hours on the day prior to an exam.

VIII. Anticipated Class Calendar: This is only a guide, our schedule may vary.

Topic	Chapter
A Quantitative Data/Problem Solving	1
Atomic Structure and Periodic Table	2
B Atoms, Molecules and Compounds	2, 3
Atoms and the Mole	2
C Chem. Equations and Stoichiometry	4
Reactions in Aqueous Solution	4, 5
D Gases	6

Topic	Chapter
E Energy and Chemical Reactions	7
F Entropy and Free Energy	19
G Chemical Kinetics	14
H Chemical Equilibria	15
I Introductory Bonding Models	10

June

	Monday	Tuesday	Wednesday	Thursday
Date	6	7	8	9
Lecture Topic:	A	--	B	B/Quiz
Lab:	--	Lab Safety	Check In/Density	--
Date	13	14	15	16
Lecture Topic:	B/C	--	C	C/Quiz
Lab:	--	Alum I	Alum II	--
Date	20	21	22	23
Lecture Topic:	C	--	Exam 1	D
Lab:	--	Alum III	No Lab	--
Date	27	28	29	30
Lecture Topic:	D/E	--	E	E/F/Quiz
Lab:	--	Wintergreen I	Wintergreen II	--

July

	Monday	Tuesday	Wednesday	Thursday
Date	4	5	6	7
Lecture Topic:	No Class	--	F	Exam 2
Lab:	--	No Lab	Vitamin C I	--
Date	11	12	13	14
Lecture Topic:	G	--	G	H/Quiz
Lab:	--	Vitamin C II	Enthalpy of Sol'n	--
Date	18	19	20	21
Lecture Topic:	H	--	I	I/Quiz
Lab:	--	Kinetics	Equilib. Constant	--
Date	25	26	27	28
Lecture Topic:	I	Exam 3	Review	Final Exam
Lab:	--	No Lab	No Lab	--

"One important key to success is self-confidence. An important key to self-confidence is preparation." -Arthur Ashe