

Murray State University
Undergraduate Course Syllabus
CHE-202: General Chemistry and Qualitative Analysis
Fall 2015

Instructor: Dr. Judy Ratliff
E-mail: jratliff@murraystate.edu
Lecture: 12:30-1:20 pm, MWF; CB1213
Lab: 11:30-1:20 Tues/Thurs

Office: CB 1232
Phone: (270) 809-6597
Office Hrs. 7:00-9:20 MTW,
10:30-11:20 MW

DEPARTMENT: Chemistry

COURSE PREFIX: CHE

COURSE NUMBER: 202-01 and 02

CREDIT HOURS: 5

I. TITLE: General Chemistry and Qualitative Analysis

II. COURSE DESCRIPTION AND PREREQUISITE(S): A continuation of CHE 201 emphasizing thermochemistry, solution chemistry, oxidation-reduction reactions, chemical kinetics, chemical equilibrium, acid-base chemistry, thermodynamics, electrochemistry, and other selected topics. Three lectures, two hours of laboratory, and two hours of recitation per week. **Prerequisite:** CHE 201.

III. COURSE OBJECTIVES: The student will be able to:

- A. Utilize problem solving and scientific reasoning abilities to solve problems focusing on:
- intermolecular interactions and the resulting properties of liquids and solids
 - colligative properties in solutions
 - chemical kinetics and equilibria, with emphasis on aqueous solution chemistry
 - acid-base chemistry including solubility equilibria and selective precipitation
 - free energy, entropy, and their relation to equilibria
 - electrochemistry (again, relating to equilibria and free energy)
 - basic coordination chemistry
- B. Perform basic laboratory procedures for synthesis of compounds and analysis of unknowns

IV. CONTENT OUTLINE:

Ch. 11. Liquids, Solids, & Intermolecular Forces
Ch. 12. Solutions
Exam 1 September 3, 2015

Ch. 17. Free Energy and Thermodynamics
Ch. 18. Electrochemistry
Exam 4 November 5, 2015

Ch. 13. Chemical Kinetics
Ch. 14. Chemical Equilibrium
Exam 2 September 24, 2015

Ch. 19. Radioactivity and Nuclear Chemistry
Ch. 23. Metals and Metallurgy
Exam 5 November 24, 2015

Ch. 15. Acids and Bases
Ch. 16. Aqueous Ionic Equilibrium
Exam 3 October 15, 2015

Ch. 24. Transition Metals & Coordination Cmpds

Comprehensive Final Exam: American Chemical Society (Timed, Comprehensive of CHE 201, 202 and laboratory activities, and Standardized)

Wednesday, December 9, 10:30 am in CB 1213.

V. INSTRUCTIONAL ACTIVITIES:

Lectures: 12:30 - 1:20 MWF, **Recitation:** 11:30 - 1:20 Thursday, **Laboratory:** 11:30-1:20 Tuesday

Reading and homework will be assigned for each chapter and assigned problems must be completed by the deadlines announced in class. Recitation may be used for lecture, prelab lecture, problem solving, exams, etc.

Laboratory is an integral part of the course. Completed laboratory reports will be due one week after the lab is completed (beginning of class the next Monday). Laboratory grades are determined based on the lab reports. Pre-laboratory exercise will be due at the beginning of class the Monday prior to the lab period. These will be included in the lab report grade for that lab. If a student fails to complete the pre lab they may be prevented from completing the lab exercise, and will therefore receive a zero for the lab.

VI. FIELD, CLINICAL, AND LABORATORY EXPERIENCES: Laboratory: Laboratory is an essential part of this course and students are required to attend promptly and regularly **at the scheduled time only**. Before going to the laboratories, the pre-lab lecture must be viewed on Canvas and the prelab assignment submitted and successfully passed. When a lecture occurs during the class or lab time, we will use the lecture room. On days when we have lab go directly to the laboratory room you have been assigned to.

Students who arrive late (by 15 minutes or more) to lab, will not be allowed to participate and will receive a **zero grade**. Laboratory reports are due at the beginning of class on the Monday following the completed lab exercise. Late assignments will be penalized 10% per day late, i.e. if your lab report is turned in 15 minutes after class starts on Wednesday 10 points out of 100 will be deducted from it.

If students have not cleaned up and exited their assigned lab by 1:20 they will lose 20 points off that week's lab grade. The lab rooms are shared by other students and your TAs also have classes they have to get to; therefore, ill prepared students or those who cannot finish on time will be penalized. **Not cleaning up areas you have used in the lab will result in a 20% deduction of your lab grade**. Students who receive zeros on more than 3 labs fail the course. **(This means that if you have 4 or more zeros in lab you will receive an E in this course.) THERE ARE NO MAKE-UP LABS**. If you have need of an accommodation regarding time constraint in lab or other assistance please make sure to get the paperwork submitted and circulated prior to the first day of lab. We need this paperwork so that funds can be allocated to allow adequate supervision.

Students who fail to check out of the laboratory at the scheduled time will be assessed a fee of \$25. Students who drop or withdraw must make arrangements with the stockroom personnel to checkout of the laboratory before the scheduled time. Failure to do so will result in the \$25 assessment.

VII. TEXT(S) AND RESOURCES:

- A. Text Book: *Chemistry: A Molecular Approach*, 3rd edition, Nivaldo Tro (Pearson 2014).
- B. Web Access to Canvas for prelab assignments, homework and quizzes. Computer must have an operational camera with an unobstructed view of the person completing the assignment.
- C. Laboratory Manual: A NEW lab manual for CHE 202 (Allenbaugh & McCreary)
- D. A scientific calculator
- E. Approved eye protection (chemical splash goggles)
- F. Appropriate attire for laboratory meetings.
- G. Separate lab notebook as described in class for submitting lab reports.

You must bring your textbook and calculator to each lecture and recitation. You must bring your lab book and eye protection to each lab session. You must dress appropriately for each lab session. NO food or drink containers may be brought into the laboratory even if they are in a

backpack.

VIII. EVALUATIONS AND GRADING PROCEDURES:

A. Lecture

1. There will be five (5) regular exams. **NO MAKE-UP EXAMS will be given.** If the instructor approves an absence the final exam grade can substitute for one missed exam. If you have a scheduled event that will occur on the date of a scheduled exam contact the instructor for permission to take the exam early.
2. The final exam is the American Chemical Society standardized, comprehensive exam. The exam is comprehensive of material from CHE 201 as well as this course. This exam also includes questions regarding laboratory experiences. This is a timed exam.

B. Laboratory

1. Weekly laboratory reports. You must see the professor before the end of August if you have had this lab before and want to use any of your old lab grades. Do not assume that the professor will automatically credit them to you. As the professor is NOT supposed to do this, please don't expect the same consideration from any other professor as I am breaking the rules.
2. The lowest (2) laboratory report grades will be dropped. There are no make-up laboratories. Missing a laboratory session will result in a grade of zero for that session making that one of your dropped lab grades. **Zeros on more than 3 labs will result in failure of this course; i.e. the 4th zero will result in an E in this course.**

C. Homework: There will be one homework assignment due per chapter covered in this course.

D. Quizzes: There will be 1 quiz per chapter in this course. Quizzes will be timed and on Canvas. You will be given only one attempt at the quizzes so you must be prepared for them when you begin. Quizzes must be taken on a computer that has an operational camera with an unobstructed view of you as you take the quizzes.

E. Final Exam: The final exam in this course is comprehensive of the material covered in CHE 201 as well as this course. It is weighted such that it can lower your class average by 1 letter grade if you do not do well on it.

Grading scale:

Exams: 45%	Quizzes: 5%	Labs: 20%	Homework: 20%	Final Exam: 10%
A 100-90%		C 79-70%		E Below 60%
B 89-80%		D 69-60%		

To calculate your class average:

$$\begin{aligned} & (\text{Exam Average} * 0.45) \\ & (\text{Quiz Average} * 0.05) \\ & (\text{Lab Average} * 0.20) \\ & (\text{Homework Average} * 0.20) \\ & + (\text{Final Exam Average} * 0.10) \\ & \text{Your Average} \end{aligned}$$

IX. ATTENDANCE POLICY:

Lecture attendance will be taken during the semester and reported. Examinations will cover materials presented in lectures and text. Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU *Undergraduate Bulletin*.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of

their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Institutional Diversity, Equity and Access. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

XI. NON-DISCRIMINATION POLICY STATEMENT:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.

For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

Homework Due Dates

Chapter 11 Homework	08/23
Chapter 12 Homework	09/1
Chapter 13 Homework	09/13
Chapter 14 Homework	09/22
Chapter 15 Homework	09/27
Chapter 16 Homework	10/4

Chapter 17 Homework	10/13
Chapter 18 Homework	10/25
Chapter 19 Homework	11/3
Chapter 23 Homework	11/15
Chapter 24 Homework	12/4

LABORATORY SCHEDULE - Fall 2015 - CHE 202

Date	
8/18	Lecture only + Safety Lecture
8/25	Lab Check-in and Lab Practical
9/1	Crystal Structures (in classroom)
9/8	Molar Mass by Freezing Point Depression
9/15	Synthesis of a Cobalt Complex
9/22	Kinetic Study of Ligand Exchange Reaction (KSLER)
9/29	KSLER Continued
10/6	Spectrophotometric Determination of the Formation Constant of a Complex Ion: FeSCN^{2+}
10/13	Acid-Base Titrations and Standardization
10/20	Acid-Base Properties of an Unknown Acid
10/27	Determination of Iron by Redox Titration
11/3	Qualitative Analysis Part I Group I
11/10	Qualitative Analysis Part II Group II
11/17	Qualitative Analysis Part III Group III
11/24	No Lab - Exam #5
12/1	Check-out

- **You may only attend the lab you are scheduled for - you may not “make-up” missed labs.**
- Students must view prelab lectures on Canvas and complete pre-lab exercises PRIOR to lab. **If this is not completed you will not be allowed to attend lab.**

Any student not prepared for lab will be asked to leave and will receive a zero on the lab. TAs will report lack of preparation to the instructor who will ask the student to tell them what is going on in the lab and what they are supposed to be doing. If the student cannot answer adequately they will receive a zero and be asked to leave.

Any student who appears to be seeking excessive help from their neighbors in lab or not sharing the lab work with their lab partner will likely be questioned. **Any student who does all the work and does not allow their prepared partner to help will receive a reduced grade on the lab of 10%. Choose your lab partner carefully for each lab.**

- Absence from a lab period (**this includes being more than 5 minutes late OR not having viewed the prelab lecture**) results in a grade of zero for that experiment. There are **no make-up labs**. For purposes of final grade calculation, TWO (the lowest) lab grades are dropped. If you miss a day and receive zero, this will be the lowest score and will be dropped.
- An experiment report must be turned in at the end of each lab period. Late reports shall automatically be assigned a grade of zero.

Safety: Students must wear APPROVED eye protection at all times (**including the days you check-in and check-out**) in the laboratory and must obey safety rules as described on a sheet of paper signed before the first experiment. **Shorts and Sandals are NOT permitted. LONG PANTS and CLOSED TOED SHOES are required. Wear cloth shoes at your own peril.**

Checking Out: A student who is absent during laboratory check-out at the end of the semester, without a valid excuse, will be assessed a check-out/breakage fee of **\$25.00**. Students who drop the course at any time must arrange with the instructor to check-out of laboratory, or must attend the regular check-out, or the student will be assessed this fee. For lab check-out contact beth.brubaker@murraystate.edu.