

CHE 340-001: Analytical Chemistry Fall 2007

Instructor: Dr. Heather Bullen

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Text: Quantitative Chemical Analysis, 7th ed. Daniel C. Harris

Class Times: 1:00-1:50 pm MW, SC 402

Prerequisite: CHE121L

Co requisite: CHE 340 L

Office Hours: I have an open door policy. Please stop by if you ever have questions, or contact me if you want to set up an appointment. My formal office hours are: M, W: 9:30-10:30 am; W: 2-3 pm; R: 10-11 am

Learning Outcomes: This course's student learning outcomes fulfill the following programmatic goals of the Department of Chemistry.

At the end of this course students will be able to:

- *Assess the statistic and error associated with analytical measurements*
- *Explain major concepts in analytical chemistry including: chemical equilibria (acid-base, complexation, and activities) and various methods of analysis (gravimetric, volumetric, electroanalytical, spectrophotometry, atomic spectroscopy, and chromatography)*
- *Interpret experiment findings in analytical chemistry*
- *Apply effective strategies to solve analytical chemical problems*
- *Evaluate relationships between analytical chemistry and other disciplines*

Attendance: Regular attendance is expected and tardiness is not tolerated.

Exams: There will be **three exams: Friday 9/21, Friday 10/26, and Friday 11/30 (1-2 pm)** and a **final exam: Wednesday 12/12 (1-3 pm)** during the semester. The final exam will be cumulative. **No** make up exams will be given. A student missing an exam must notify the instructor in advance. On the instructor's discretion, the student may use the final exam score to count for one exam. This policy only applies to one exam.

Homework: Homework problems will be made available on Blackboard. These problem sets are designed to help ensure your understanding of the material presented in the lecture and prepare you from the exams.

Quizzes: Short in-class quizzes will be given throughout the semester. These quizzes may be announced or unannounced to address student's preparedness for lecture and the understanding of the course material. Make up quizzes will not be given and the lowest quiz score will be dropped.

Seminars: During the semester students will have the opportunity to attend seminars related to the course. A short, one page, report on the topic presented must be turned in. Each report is worth up to 1 point on a quiz grade.

Grading Scheme:

Exam 1	= 18%
Exam 2	= 18%
Exam 3	= 18%
Final Exam	= 26%
Homework	= 15%
Quizzes	= 5%

Grading Scale: The letter grade for the course will be based on the final percentage scale

<u>Course Grade</u>	<u>Percentage</u>
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

Honor Code: The NKU Honor Code is in effect for this course. Failure to comply will result in a zero grade. <http://www.nku.edu/~deanstudents/HonorCode.htm>

Note: The syllabus is subject to change. Students are responsible for understanding all items on this syllabus. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.

TENTATIVE COURSE OUTLINE

Topic	Chapter
Experimental Error, Statistics, Quality of Insurance	0-5
Let the Titrations Begin/Chemical Equilibria and Activities	6-8
Acid Base Equilibria (Monoprotic/ Polyprotic)	9-11
Complexometric Titrations	12
Fundamentals of Electrochemistry	14
Electrodes and Potentiometry	15
Redox Titrations	16
Electroanalytical Techniques	17
Fundamentals of Spectrophotometry	18
Atomic Spectroscopy	21
Introduction to Analytical Separations	23
Gas Chromatography	24
High-Performance Liquid Chromatography	25

Policies of the Department of Chemistry at Northern Kentucky University

- All items on syllabi are subject to change by the instructor.
- Students are responsible for reading and understanding all items on the syllabi. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.
- The work you will do in any course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements.
- Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- Students with disabilities who require accommodations (Academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859/572/6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations.

Department of Chemistry Student Learning Outcomes

1. Explain the major concepts and experimental findings in the chemical sciences.
2. Demonstrate the ability to carry out experimental protocols using modern instrumentation and methods.
3. Utilize critical thinking skills to apply concept knowledge and adapt experimental techniques to: a) form and test hypotheses and b) solve scientific problems
4. Compile, critically evaluate, and interpret scientific information and data.
5. Effectively communicate scientific information through written and oral means.
6. Apply effective group strategies to solve scientific problems.
7. Evaluate the relationships between chemistry and mathematics, physics, biology, and other disciplines and between chemistry and society.
8. Apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences.