

## ANALYTICAL CHEMISTRY COURSE SYLLABUS – FALL 2006

**Course Description:** An introduction to the theory and practice of quantitative analysis. Lecture, two hours; laboratory, three or four hours. Prereq: CHE 107 and 115.

### Course Information:

**Lectures:** Tuesday and Thursday, 9:30-10:20 a.m., CP-222

**Credits:** 3 cr (Secs. 1 & 2) or 4 cr (Secs. 3 & 4)

**Textbook:** D. A. Skoog, D. M. West, F. J. Holler, and S. R. Crouch: *Analytical Chemistry: An Introduction*, 7<sup>th</sup> Edition, Saunders College Publishing, 1999.

**Laboratory:** Monday and Tuesday, 1:00-5:00 pm, CP-208 and CP-236. Go to CP 208 first. The first lab meetings will be on Monday, August 28, or Tuesday, August 29, for the Monday (Secs. 1 & 3) or Tuesday (Secs. 2 & 4) Labs, respectively.

**Laboratory Experiments:** Complete copies of the laboratory handouts are available on the course Web site or on a CD (on request). Occasional paper handouts. Go to <http://www.chem.uky.edu/courses/che226/welcome.html>

**Instructor:** Dr. James E. O'Reilly

- Office: 110 Chemistry-Physics Building
- Office Hours: Tuesday & Thursday 10:30 am – 12:00 noon. Also available most times the laboratory is open (1:00-5:00 pm Mondays and Tuesdays) or by appointment.
- E-mail: [oreilly@uky.edu](mailto:oreilly@uky.edu) (All emails sent to the instructor must have 226 in the Subject header line)
- Phone: 257-7077

### Tentative Lecture Coverage:

<u>Topics</u>	<u>Chapters</u>
Introduction	1
Units, Concentration and Stoichiometry	3
Experimental Error	5, 6
Statistical Analysis: Evaluating the Data	7
Gravimetric Analysis	8
Chemical Equilibrium Basics	4
Electrolyte Effects	9
Equilibria in Complex Systems	10
Acid-Base Titrations	11, 12, 13, 14
Complexation and Precipitation Titrations	15
Spectrochemical Analysis	21, 22, 23
Separation Methods	24, 25, 26
Electrochemistry Introduction	16
Electrode Potentials	17
Oxidation/Reduction Titrations	18
Potentiometry	19

**Exams:**

<b>Exam</b>	<b>Date</b>	<b>Time</b>
<b>Exam I</b>	Thursday, September 21	9:30 am
<b>Exam II</b>	Thursday, October 26	9:30 am
<b>Exam III</b>	Thursday, November 30	9:30 am
<b>Final Exam</b>	Thursday, December 14	8:00 am

The Final Exam is comprehensive.

**Grading Procedure and Scale:**

<b>Component</b>	<b>3 Credits</b>	<b>4 Credits</b>
<b>Best 2 of 3 hour Exams*</b>	33%	28%
<b>Final Exam</b>	30%	23%
<b>Laboratory</b>	33%	45%
<b>Excel Assignments</b>	4%	4%
<b>Total</b>	100%	100%

*\* Exception: Exam III will not simply be dropped if its score is more than 15% below both Exam I and Exam II. In that case, 15% will be added to the score and all three will be averaged.*

<b>Grade</b>	<b>Final Average</b>
<b>A</b>	89.50 – 100.0
<b>B</b>	79.50 – 89.49
<b>C</b>	69.50 – 79.49
<b>D</b>	59.50 – 69.49
<b>E</b>	59.49 and Below

*A student who scores 90.00% or better on each of the three mid-term exams will be exempted from the Final Exam. The average of the three mid-term Exams will then be used for the total percentage for all examinations in the course.*

**Suggested Homework:** Suggested homework problems will be assigned as the material is covered. The homework will not be collected and graded, but the bulk of the Exams will reflect the material in the assigned problems.

**Email:** The instructor will send you important information, files, reminders, nags, etc., during the course of the semester. You should check your email at least daily. We will send emails to the “preferred address” that you provided at the beginning of the semester. We will put the course number, 226, in the Subject header of all emails sent to you. This will help you filter our email into a separate mailbox, if your software has such a feature. In turn, you **must include 226 someplace in the Subject header of all email you send to the instructors.** I probably get 40 spam emails a day that get through my spam filter system. Putting 226 in the subject header will filter your important email to my course mailbox, so that I can tend to it as soon as possible.

**Previous 226 Exams:** Several semesters of past CHE 226 exams are available on the course Website for you to peruse and self-test. Answers are not provided on the old exams. There are many, many problems in the textbook that do have answers. Use these to “get up to speed”. If you have any questions or are confused about any of the problems on the old exams, feel free to ask one of the instructors.

**Important Dates:**

Tuesday, August 29 – Last day to ADD a class.  
Monday, September 4 – Labor Day, Academic Holiday  
Wednesday, September 13 – Last day to DROP a course without it appearing on your transcript. Last day to change grading option (P/F, Credit/Audit).  
Friday, October 6 – Fall Break, Academic Holiday. Don't ask me why.  
Monday, October 16 – Midterm  
Friday, October 20 – Last day to WITHDRAW from a course with a W. After this date, can withdraw only for “urgent non-academic reasons” via your College Dean.  
Thursday, November 23 – Thanksgiving, start of Academic Holidays  
Tuesday, December 5 – Last day the CHE 226 Laboratory will be open. **All students must formally check out of the Laboratory on or before this date.**  
Friday, December 8 – Last day of classes. **All CHE 226 laboratory reports must be submitted by 5:00 pm.**

**Make-up Exams:** No make-up examinations will be given regardless of the reason for missing an exam. Dropping the lowest examination grade is designed to compensate for this, among other reasons.

**Calculators:** Use of a calculator during examinations is permitted as long as they are not shared between students. The latter will be considered as cheating. Programmable calculators must have their memories cleared prior to use in an exam. In any event, test problems are usually designed so as to minimize arithmetic. Ordinary arithmetic errors will be penalized very little. Points will be deducted if an improper number of significant figures is used in the final arithmetic answer.

**Dropping the Course:** A student can DROP the course up to September 14 without it appearing on the transcript, and to WITHDRAW from the course up to October 21 with a W. After October 21, a student cannot WITHDRAW from a course except for urgent reasons related to extended illness or equivalent *non-academic* reasons, and then only with the approval of the Dean of his or her College. The course instructor does not make this decision. **You MUST formally check out of the laboratory as soon as possible in the process of dropping or withdrawing from the course or simply abandoning it** in order to ensure that (a) all laboratory equipment issued to you is accounted for and not damaged, (b) you are not charged penalty fees by the Department. If you have not checked out of the Laboratory by the time final grades for the course are due at the Registrar, you have not completed the course and you will be assigned an I grade if that is possible, which will automatically convert to an E after a year unless a regular letter grade replaces it. In addition, if you do not check out in a timely manner and the Department personnel have to go through your locker, you will incur a \$50 fee, in

addition to the cost of any damaged, broken, or missing equipment. If necessary, the Department can ask that a Registration Stop be placed on your official record, which will prevent any further academic actions until this financial matter is cleared.

**Classroom Manners:** In addition to scholarly demeanor, common old fashioned manners are expected of everyone involved in CHE 226, including the instructors. **Arrive on time for all CHE 226 lectures and labs.** It is disruptive to and disrespectful of your fellow students who are trying to follow the lecture and learn the material, as well as to the Instructor, when people arrive late. If you don't wish to attend one or more lectures or lab sessions, that may not be wise, but it is your choice. If you do attend, be on time. If tardiness becomes a problem, the instructor will simply lock the doors at 9:30. Finally, unless your mother cleans up after you here at UK, please clean up after yourself in the lecture room so that the physical surroundings remain appropriate for scholarly activities. In the laboratory, cleaning up properly will be part of your grade.

**Cell Phones:** If you carry a cell phone or beeper, double-check **before the class starts** to ensure that it is completely off or in silent mode. ***If a cell phone or beeper goes off during a lecture or lab, it shall be turned over to the instructor immediately.*** It will be returned at the end of the period... the *first* time this happens. If you actually answer the phone, it will be confiscated and turned over to the Dean of Students for disposition.

**Academic Dishonesty:** A number of major changes in the Senate rules about and penalties for proven academic dishonesty (cheating) were changed effective in the 2006 Fall semester. For that reason, this section is much longer and more detailed this semester than is normally the case. You are hereby notified that the Department of Chemistry considers any type of academic dishonesty – cheating, plagiarism, representing the work of others as your own, “dry labbing”, etc – a very serious offense and we will respond appropriately in the event of any apparent academic dishonesty.

The minimum (*and required*) penalty for proven academic dishonesty (cheating) in any form or manner will result in an automatic assignment of a zero for that assignment – for a student's first offense at the University. Instructors are not permitted the option of “letting it go” or making some informal agreement because the minimum penalty is now much less serious. Additional penalties may be imposed for a first offense depending on the degree of severity of the transgression and other factors. These can include extra work, reduced letter grade, or a failure of the course. For a penalty less severe than a failure of the course, a “letter of warning” for a “minor offense” is placed in the student's official record (which is destroyed on graduation if there are no subsequent offenses).

The minimum penalty for another offense subsequent to a “minor” offense is failure of the course (which is subject to the Repeat Option). The minimum penalty for an offense subsequent to a “major” offense is suspension. A penalty more severe than failure of the course may be imposed for a first or second offense, subject to approval of the Department Chair and the Dean.

These new rules and the rights of appeal are rather detailed and complicated. Additional information about academic dishonesty and other student-related matters is available from several sources:

The current version of the Student Rights and Responsibilities manual.

<http://www.uky.edu/StudentAffairs/Code/>  
<http://www.uky.edu/USC/New/SenateRulesMain.htm> The Senate Rules most pertinent to academic dishonesty are in Sections 6.3 – 6.5.

<http://www.uky.edu/ombud>

Dr. Grossman has also provided a summary of the new rules on his Web site at <http://www.uky.edu/research/grossman/acadoffenses/index.htm>  
<http://www.chem.uky.edu/courses/common/plagiarism.html>

Chemistry instructors and the Department of Chemistry will carefully follow the procedures required of us. Dry Labbing” or “Pencil Titrating” – that is, making up or falsifying laboratory data – is cheating. Although students will often work in pairs and share data, ***each student must prepare and write his or her own lab report completely independently.*** You must compose your lab reports in your own words, not simply copy the text directly from the laboratory handout. ***If you have any questions at all about what may constitute academic dishonesty in the course, please ask the Instructor or the Teaching Assistants BEFORE you proceed.***

Revised August 20, 2006

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