Analytical Chemistry – CHEM 2103
Spring 2011

Lecturer: Dr. Nick Thomas **Office:** Room: 310-I, Goodwyn Hall

Phone: (334) 244-3327 **E-mail:** nthomas@aum.edu

Website: www.getnickt.com
Here you will find study questions from the text, instructions for using burets and pipets, and other important information about the course.

Course Description
Analytical Chemistry (4). Pr., CHEM 1200 and CHEM 1201. Theory and application of volumetric and gravimetric analysis. Most industrial employment opportunities require CHEM 2103 and a knowledge of instrumental analysis

Text
To be announced. The Analytical Chemistry lab manual is available at the bookstore. ***Safety goggles*** must be obtained by each student and worn for every lab and **at all times**. A list of experiments to be performed can be found on the accompanying course timetable.

Course Objective
The course is designed to illustrate the theoretical principles and practical techniques of quantitative analysis. Laboratory work is an essential component of this course and will consist of set experiments which illustrate a variety of techniques. The first lab will be check in and check out will be during the last lab. There will be TEN experiments for students to perform. Students will work in groups of TWO, but each student will record his or her own data, and write up reports individually.

Attendance
Students have an obligation to attend ON TIME all lectures and laboratory sessions. Class will begin promptly at 8:00 am each Monday/Wednesday (period 1) in room 319 Goodwyn Hall - see timetable. Please be on time as late arrivals can be disturbing. Lecture and lab are both requirements for CHEM 2103 for which you will receive one letter grade. Students are required to sign an attendance roll each day for the first few weeks of class.

Note: 1. Unless you have a pending emergency (e.g., on the waiting list for a liver transplant) please switch off cellphone ringers whilst in class as they are very distracting to all.
2. No cell phone/Blackberries/etc. may be used during exams; only non-programable

calculators

Course Outline

- ☆ Introduction. Review of fundamental concepts. Practical applications of analytical chemistry (e.g. quality control, pollution monitoring, forensic chemistry). Apparatus used.
- ☆ Steps in a chemical analysis. Plan of analysis. Sampling, sample preparation and problems encountered during analysis. Evaluation of results. Modern analytical techniques.
- ☆ Gravimetric analysis. Basic techniques. Problems encountered during analysis.
- ☆ Treatment of data. Statistical analysis of results. Significant figures and error calculations.
- ☆ Volumetric analysis. Introduction and general procedure.
- ☆ Spectrophotometric analysis. Techniques of instrument operation. Atomic absorption spectrometry.

Grading

There will be 3 exams during the term, the third one being the final. One exam may be dropped. The two exams will each count a maximum of 100 points towards the final grade. The laboratory grade will be based on the average grade of the NINE highest written laboratory reports (one lab may be dropped), and will also be graded out of 100 points.

If a lab is missed FOR ANY REASON, it will automatically be the dropped lab. A grade of zero will be given for all other missed labs. **All lab reports for a given week will be due at the beginning of the following lab.** Late labs will lose 2 points per day, no exceptions. Overall course grades will be based of the following scale:

A = 90-100 % B = 80-89 % C = 65-79 % D = 50-64 % F < 50 %

Make-up exams

Please note - Individual make-up exams will NOT be given. If one exam is missed FOR ANY REASON, it will automatically become the dropped exam. If two exams are missed, a comprehensive make-up exam will be given along with the last exam.

Make-up labs

Individual make-up labs will NOT be given. You can drop one lab; any other missed lab will be given a zero grade.

Registration

All students must be officially registered. Contact the registrar's office if you have any doubts concerning your registration status.

Lab reports
Labs will be held in Room 307G. A short pre-lab discussion will be given in the classroom at the beginning of each Monday class. ***Be sure to be on time*** - if you miss this information, you're on your own!

Each lab report should contain the data sheet and answers to questions. Remember, you collect and share the data with your lab partner, but **each person must write and submit his or her own report**. Stable pages together and place report in folders provided on the front desk of the lab. Each lab is graded out of 10. After your graded labs are returned, keep them until the end of the term.

Check-in sheets and safety regulation sheets are to be signed, removed from the lab manual and given to the instructor on the first day of lab.

Special Needs
Students with disabilities who require special attention should contact the instructor during an office hour in the first week of the quarter. *AUM attempts to make reasonable accommodations to meet the special needs of its disabled students.*

Assistance
Office hours will be posted on the instructor's office door. Additional appointments may be made with the instructor. The Instructional Support Lab (203G) can provide tutoring.

Learning Outcomes
After completion of this course, students will be able to analyze:
1. Methods of gravimetric, volumetric and spectrophotometric analysis
2. Error and data calculations
3. Methods of quantitative analysis

Please note the following
University regulations prohibit grades being given out over the telephone or by email.
Knowledge of material covered in CHEM 1100 and CHEM 1200 is assumed.
A large exam book (blue book) will be required for each exam; **graph paper** will be needed for the final exam.
Chemistry is a 'cumulative' subject. Knowledge learned in the first chapters will be used in later work and therefore cannot simply be forgotten.
This course is identical to the CHEM 2103 course offered in the regular 15-week spring and fall semesters. However, you only have about six weeks to learn this material during the summer half term. Significant home study **each day** is therefore essential for this course