



The University of North Carolina at Pembroke
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Course: CHM 2270-001/700/701, "Analytical Chemistry"

Term: Fall Semester 2009

Meetings:

- class (section 001) meets MF 10 – 11:15 am in SCI 3202
- lab section 700 meets M 1:30 – 4:20 pm in SCI 3105
- lab section 701 meets W 1:30 – 4:20 pm in SCI 3105

Professor: Paul A. Flowers

- *office:* Oxendine 3221, phone 521-6424 (office hours [as posted](#) and by appointment)
- *home:* phone 910-944-9248 (no calls after 9 pm please)
- *email:* paul.flowers@uncp.edu
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Literature and Other Resources:

- *class text* - Harris, "[Quantitative Chemical Analysis](#)", 7th ed., W.H.Freeman & Company, New York: 2007
- *lab manual and other materials*– available at the course [Blackboard](#) site

Description: The principles and techniques of classical methods of chemical analysis and some of the most common instrumental methods will be examined with an emphasis on quality assurance and method validation concepts. Laboratories will involve the use of these analytical techniques in the determination of substances in a variety of sample matrices. Credit, 4 semester hours. PREREQ: CHM 1310, 1110

Format: A combination of lecture and small group work formats will be the primary teaching methods employed in the classroom component of this course. Because of the importance of quantitative data manipulation, students must bring calculators to class to allow for participation in group problem solving sessions. *Cell phones should be turned off and put away during class and laboratory periods unless an exception is approved in advance by the professor.* The laboratory portion of the course will typically involve brief prelab lectures, individual or group experimental work on the part of the student, and postlab discussion sessions. Safe laboratory practices must be followed at all times while working in the lab; violators may suffer substantial grade penalties and/or dismissal from the lab. More details concerning issues related to the lab portion of this course are provided in the course lab manual. The [Blackboard](#) course delivery platform will be used throughout the term for electronic dissemination of course materials and related information.

NOTE: Any student with a documented disability needing academic adjustments is requested to speak directly to Disability Support Services and the instructor, as early in the semester (preferably within the first week) as possible. All discussions will remain confidential. Please contact Disability Support Services, DF Lowry Building, Room 107, or call 910-521-6695 for an appointment.

Requirements and Grading: Course grades will be computed on a 100-point scale based on graded assignments scores as follows:

homework	20%
three pre-term exams	30%
final exam	10%
lab reports	20%
lab notebook	10%
lab practical exam	10%

Course grades will be assigned according to the traditional scale: 100-93=A, 92-90=A-, 89-87=B+, 86-83=B, 82-80=B-, 79-77=C+, 76-73=C, 72-70=C-, 69-67=D+, 66-63=D, 62-60=D-, 59 and below=F. Letter grades will be converted to the 4-point QPA scale prior to being recorded on student transcripts (see p. 57 of the [UNCP catalog](#)).

Attendance: Attendance of all class and lab meetings is an expectation and will likely be necessary to learn the material and perform well on the graded assignments. Students are responsible for signing an attendance roster at each class and lab meeting. Though attendance isn't factored directly into the course grade, please note that missed lab work and tests may be made-up *only for a compelling reason and if a written request is submitted to the professor within 24 hours of the absence.*

Honor Code: Students are expected to follow the UNCP Honor Code (pp. 65-69 of the [UNCP catalog](#)).

Schedule:

Week of	Classroom Topics & Activities (Text Chapter)	Laboratory Activities
Aug 16	<i>Classes begin Wednesday</i> Organizational meeting; introductory concepts (00)	<i>Lab will not meet</i>
Aug 23	Measurement, error, and statistics (01,03,04)	Project #1: Calibration of Volumetric Ware
Aug 30	Measurements...(continued)	Workshop on spreadsheet data analysis (location TBA)
Sep 6	<i>No class on Monday, Labor Day</i> Calibration (05)	<i>Lab will not meet</i>
Sep 13	Test #1; Gravimetry (27)	Project #2: Densities of Aqueous Salt Solutions
Sep 20	Titrimetry (6 - 12)	Project #3: Gravimetric Determination of TDS (begin)
Sep 27	Titrimetry (continued)	Project #3: Gravimetric Determination of TDS (complete)
Oct 4	Titrimetry (continued)	Project #4: Back Titration of CO ₃ ²⁻ (begin)
Oct 11	Titrimetry (continued) <i>no class on Friday, fall break</i>	Project #4: Back Titration of CO ₃ ²⁻ (complete)
Oct 18	Test #2 Potentiometry (14, 15)	Project #5: Potentiometry with a Glass Membrane Electrode (begin)
Oct 25	Potentiometry (continued)	Project #5: Potentiometry with a Glass Membrane Electrode (complete)
Nov 1	Spectrometry (18, 19)	Project #6: Spectrometric Determination of Ni in an Alloy
Nov 8	Spectrometry (continued)	Project #7: Spectrometric Determination of Ethanol
Nov 15	Test #3; Separations (23)	Project #8: GC Determination of Blood Alcohol
Nov 22	Separations (cont.); <i>no class on Friday, Thanksgiving break</i>	<i>Lab will not meet</i>
Nov 29	Separations (continued); Final exam review session	Project #9: Ion Chromatographic Analysis of Tap Water
Dec 6	FINAL EXAM on Mon, Dec 7, 10:45 am– 1:15 pm	LAB PRACTICAL EXAM on Wed, Dec 9, 1:30-4 pm

This publication is available in alternative formats upon request. Please contact Disability Support Services, DF Lowry Building, Room 197, or call 910-521-66958