

Fayetteville State University
College of Arts and Sciences
Department of Natural Sciences
CHEM160-03, General Chemistry II
Fall Semester/Year 2009

I. Locator Information:

Instructor: Shubo Han, PhD
Course # and Name: CHEM160-03 Office Location: Lys 326
Semester Credit Hours: 4
Day and Time Class Meets: Lecture: TR 9:30 am-10:45 am
Lab: R 11:00am -01:50 pm
Total Contact Hours for Class: 6

Office hours: MWF 10:00 am-12:00 pm, T 11:00 am-1:00 pm

Office Phone: 910-6721303

Email address: shan@uncfsu.edu

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at
<http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf>

II. Course Description:

General Chemistry II (CHEM 160, 4–3–1) is the second part of a two-semester (one year) course in college-level chemistry. It is a course investigating kinetics, chemical equilibria, acid-base equilibria, solubility equilibria, thermodynamics, and electrochemistry, with laboratory activities examining reaction rates, acid-base and reduction-oxidation titrations, and qualitative and elementary quantitative analysis.

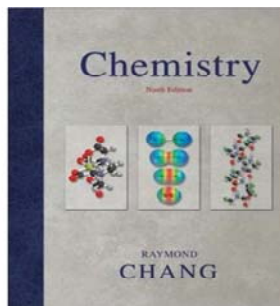
Prerequisites: A grade of "C" in CHEM 140 (General Chemistry I) or the equivalent at another university/college. Also either MATH 124 (College Trigonometry) or MATH 130 (Precalculus Mathematics II) is either a prerequisite or co-requisite for CHEM 160. It is up to each student to make sure that he/she meets the course prerequisites. Note that your chances of successfully completing this course are poor if you do not meet the prerequisites.

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability, please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

IV. Textbook:

- Lecture: Raymond Chang. Chemistry, 9/E Mc Graw Hill, ISBN 978-0-07-298060-8.

- Lab: John H Nelson, Kenneth C Kemp. 2007. Chemistry the Central Science, Laboratory Experiments, 10/E, Prentice Hall, ISBN-10: 0131464795, 2006.
- ARIS for online study and homework: aris.mhhe.com (code: 83C-CE-43E)



V. Student Learning Outcomes:

This course is designed to fulfill the following FSU core student outcomes:¹

FSU outcome #	FSU core student outcome. <i>Students will...</i>	Assessment method in this class
1.05	<i>Communications skills:</i> Revise written communication so that 1) paragraphs have unified topics; 2) transitions between sections and paragraphs are appropriate to format or genre, audience, and purpose; 3) style is appropriate to audience and purpose.	Laboratory Reports written in an appropriate journal format.
FSU outcome #	FSU core student outcome. <i>Students will...</i>	Assessment method in this class
2a.07	<i>Reasoning skills–critical thinking:</i> Develop original conclusions or hypotheses appropriate to their major using various forms of evidence drawn from multiple sources.	Laboratory reports that require the students to draw accurate conclusions within statistical error parameters.
2b.01	<i>Reasoning skills–quantitative literacy:</i> Correctly calculate, interpret, and assess statistical data and concepts, including data presented in graphs, charts, or tables, in various forms of documents and discourse	Laboratory reports that require the students to tabulate findings
2b.02	<i>Reasoning skills–quantitative literacy:</i> Solve problems involving percentages, proportions, and rates of change	Homework, Quizzes, and Examinations
2b.03	<i>Reasoning skills–quantitative literacy:</i> Make calculations of area, perimeter, and volume for basic geometric figures rectangles, cubes, and circles.	Homework, Quizzes, and Examinations
2b.05	<i>Reasoning skills–quantitative literacy:</i> Solve linear equations and problems involving exponents and roots.	Homework, Quizzes, and Examinations
4.01	<i>Scientific literacy:</i> Recognize the role of observation and experimentation in the development of scientific theories	Laboratory reports
4.03	<i>Scientific literacy:</i> Interpret and express the results of observation and experimentation.	Laboratory reports
4.04	<i>Scientific literacy:</i> Understand the fundamental concepts of one natural science.	Homework, Quizzes, and Examinations
4.07	<i>Scientific literacy:</i> Understand the role of science and technology in everyday life.	Homework, Quizzes, and Examinations

This course addresses the following NCATE and DPI standards:

Standards Used in this Course	NCDPI Specialty Area Standards	NCATE Standard(s) (NSTA)	Assessment(s)
1	Science teachers understand the unifying concepts of science.	1 a, b	Homework, Quizzes, and Examinations
2	Science teachers understand the nature of science and the development of scientific thought.	2 c	Homework, Quizzes, and Examinations
3	Science teachers understand the historical development of scientific thought and the application of science in society.	2 b	Homework, Quizzes, and Examinations
4	Science teachers understand the math concepts and processes and the technologies that are used in science.	1 e	Laboratory experiments and formal reports.
14	Science teachers understand safety and liability issues in science and advocate for appropriate safety materials and enforcement practices in the classroom.	9 b, c	Laboratory experiments and formal reports

VI. Course Requirements and Evaluation

- a. Grading Scale: Final grades are calculated on a four-point system and affect a student's grade point average as indicated below.

Grade	Credit Hours	Quality Points	Meaning
A	Hours attempted and earned	4 per credit hour;	Exceptionally high
B	Hours attempted and earned	3 per credit hour	Good
C	Hours attempted and earned	2 per credit hour	Satisfactory
D	Hours attempted and earned	1 per credit hour	Marginally passing
F	Hours attempted – Not earned	0 per credit hour	Failing
FN	Hours attempted – Not earned	0 per credit hour	Failing due to non-attendance. (Student registered, but <u>never</u> attended.)
W	Hours attempted – Not earned	No impact on GPA	Class withdrawal prior to deadline (see Academic Calendar)
P	Hours attempted and earned	No impact on GPA	Satisfactory - Assigned only in classes specified as Pass/Fail
WU	Hours attempted – Not earned	No impact on GPA	Withdrawal from all classes for semester or term
AU	Hours attempted – Not earned	No impact on GPA	Auditing

The final grade assigned to the student will be based upon the following numerical equivalencies as stated in the University Catalog:

- A = 90%-100%
- B = 80%-89.9%
- C = 70%-79.9%
- D = 60%-69.9%

F = 59.9% or less (Failure)

b. Attendance Requirements – Students are expected to attend all lecture and laboratory sessions, except in cases of illness and other unforeseen emergencies. Attendance will be taken promptly at the beginning of each session. Any student coming in after the roll has been called will have been marked absence. It is the student's responsibility to see that all tardies have been duly noted. Students will also be charged with a tardy for departure from the class before the specified end of class. The accumulation of three (3) tardies will result in the student being charged with one (1) absence. It is the student's responsibility to contact the instructor about the steps that must be taken for making up any and all missed work. It is recommended that contact with the instructor take place within twenty-four (24) hours of having missed class. The university policy concerning absences from class will be strictly enforced.

➤ INTERIM GRADE X = NO SHOW – Assigned to students who are on a class roster, but never attend class. For warning purposes only; NOT a final grade.

STUDENTS: Check interim grades early in the semester. If you have an X grade, either begin attending the class or withdraw from it. If you do not take action in response to an X grade, you will receive a final grade of FN.

➤ INTERIM GRADE EA = EXCESSIVE ABSENCES - Assigned to students whose class absences exceed 10% of the total contact hours. For warning purposes only, NOT a final grade.

STUDENTS: Check your interim grades often. If you have an "EA" grade for a class, you are in jeopardy of failure if you do not take immediate actions. Either resume attending the class or withdraw from it.

➤ FN = FAILURE DUE TO NON-ATTENDANCE – Assigned to students who are on class roster, but never attend the class. An FN grades is equivalent to an F grade in the calculation of the GPA.

STUDENTS: You must attend (or withdraw from) all the classes for which you are enrolled.

c. Graded Assignments

The progress of each student will be evaluated by means of three one-hour examinations given during the semester, laboratory reports, homework in each chapter, quizzes, and a final examination.

Value of Each Assignment

Grade distribution	Percentage represented in the Final Grade
Three hour exams	25%
Laboratory reports	20%
Homework and quizzes	30%
Final examination	25%
Total	100%

d. Policy on Missed or Late Assignments

You are expected to take all examinations at the scheduled times. No student will be allowed to take an exam before or following the scheduled exam time. Should an illness, family emergency, official university-sanctioned event or other unavoidable problem necessitate your missing a

scheduled exam, you may take a make-up exam provided that (1) the instructor is notified prior to the exam, and (2) you show verifiable evidence for the condition/situation/event that resulted in your missing the regularly scheduled exam. The latter may be in the form of a note from a doctor or the university's student health clinic in the event of serious illness, a note from another Fayetteville State faculty or the athletic department indicating your involvement in an official university-sanctioned event, a bulletin from a funeral service, a note from an employer, etc. In all cases, contact information, i.e., a phone number, must be included. The make-up exam will be administered at a time agreed upon by both the student and the instructor. Note that makeup exams may be longer, more difficult, and have a different format than the exam given to the class as a whole.

Late submissions of homework and lab reports are penalized 30% of whole points. Missed submissions of homework and lab reports are received 0 points for that assignment.

VII. Academic Support Resources

Blackboard: <http://blackboard.uncfsu.edu/>

Aris: aris.mhhe.com (code: 3BB-73-C7B) for homework and quizzes.

Websites of Instructor: <http://faculty.uncfsu.edu/shan/>

Smarthinking Student Site: <http://www.smarthinking.com/>

American Chemical Society Site:

<http://www.chemistry.org/portal/a/c/s/1/educatorsandstudents.html>

FSU Policy on Disruptive Behavior in the Classroom

The Code of the University of North Carolina (of which FSU is a constituent institution) and the FSU Code of Student Conduct affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will "prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations." Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights all members of the class.

The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive:

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints.
3. Use of cell phones and other electronic devices
4. Overt inattentiveness (sleeping, reading newspapers)
5. Eating in class (except as permitted by the faculty member)
6. Threats or statements that jeopardize the safety of the student and others
7. Failure to follow reasonable requests of faculty members
8. Entering class late or leaving class early on regular basis
9. Others as specified by the instructor.

The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence

of disruptive behavior.

1. Direct student to cease disruptive behavior.
2. Direct student to change seating locations.
3. Require student to have individual conference with faculty member. At his meeting the faculty member will explain the consequences of continued disruptive behavior.
4. Dismiss class for the remainder of the period. (Must be reported to department chair.)
5. Lower the student's final exam by a maximum of one-letter grade.
6. File a complaint with the Dean of Students for more severe disciplinary action.

Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member's department chair.

VIII. Course Outline and Assignment Schedule:

The following is a brief list of topics to be covered in CHEM 160 this semester. Note that due to time constraints, we will not be able to cover each topic fully in lecture. However, you are responsible for reading the text to fill in the details that are not covered specifically during class meetings.

Week	Chapter	Lecture Topic	Tentative Lab schedule (subject to change)
Aug. 20	11	Intermolecular Forces and Liquids and Solids	No Lab
Aug. 25	11	Intermolecular Forces and Liquids and Solids	Check in and Laboratory Safety instructions
Sept. 1	12	Physical Properties of Solutions	Exp. 28 – Heat of Neutralization
Sept. 8	13	Chemical Kinetics	Exp. 20 – Titrations of Acids and Bases
Sept. 15	13	Exam 1, Chemical Kinetics	Exp. 19 - Colligative Properties: Freezing-Point Depression and Molar Mass
Sept. 22	14	Chemical Equilibrium	Exp. 30 – Rates of Chemical Reactions II: Rate and the Order of H ₂ O ₂ Decomposition.
Sept. 29	14	Chemical Equilibrium	Problem Solving Session
Oct. 6	15	Acids and Bases, Midterm Exam	Exp. 22 – Colorimetric Determination of an Equilibrium Constant 2/26 th – 3/4 th
Oct. 13		Acid-Base Equilibria	No labs
Oct. 20		Midterm Break	Exp. 25 – Determination of the Dissociation Constant of a Weak Acid
Oct. 27	16	Acid-Base Equilibria and Solubility Equilibria	Exp. 27 – Determination of the Solubility-Product for a Sparingly Soluble Salt
Nov. 3	16	Acid-Base Equilibria and Solubility Equilibria	Exp. 32 – Abbreviated Qualitative Analysis Scheme: Part I, Chemistry of Group 1 Cations
Nov. 10	18	Thermodynamics and Equilibrium	Exp. 32 – Abbreviated Qualitative Analysis Scheme: Part IV, Chemistry of Group 4 Cations Good Friday
Nov. 17	18	Thermodynamics and Equilibrium, Exam 3	Problem Solving Session
Nov. 24	19	Electrochemistry	Exp. 32 – Abbreviated Qualitative Analysis Scheme: Part V, Chemistry of Anions
Dec. 1	20	Electrochemistry	Check out

TBA	Final Exam		
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IX. Teaching Strategies

The primary means of instruction for CHEM 160 will be through instructor-led discussions and formal lectures. To accommodate different student learning styles, the instructor will utilize both auditory and visual aids, such as Powerpoint© presentations, conventional blackboard recitations, and practical demonstrations that illustrate the application of theoretical concepts. To assist in presenting abstract material, the instructor will utilize computer visualization to increase the students' understanding and problem-solving skills. The students are encouraged to participate in in-class, group problem-solving discussions to challenge their creativity, analytical, and logical reasoning skills.

X. Bibliography

- Darrell D. Ebbing and Steven D. Gammon, *General Chemistry*, 8th Edition, Houghton Mifflin Company, 2008.
- T. L. Brown, H. E. LeMay, B. E. Bursten, and J. R. Burdge, *Chemistry, The Central Science*, 11th Ed., Pearson Prentice Hall, 2008.

XI. Disclaimer

To accommodate emergent circumstances, the professor reserves the right to make reasonable changes in the syllabus while the course is in progress. Any understandings between a student and the professor including, but not limited to, changes, expectations, or modifications to course requirements or procedures must be in writing and must be signed by both parties. Any question of interpretation of course requirements or of understandings between a student and the professor will be at the discretion of the professor.