Introduction to Chemical Principles – SCIE 3302-007 – Spring 2017

Instructor

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Faculty Profile

https://www.uta.edu/profiles/gregory-hale

Description of Course Content

This physical science course includes atomic structure, chemical bonding, the periodic table, nomenclature, gas laws, chemical equations, and solutions.

Course Materials

Introduction to Chemical Principles, 10th Ed, Stoker **required**
(earlier editions also acceptable; 11th edition not recommended)

WebAssign access*,* https://www.webassign.net **required**

Grading Policy

WebAssign Homework	25%	Due dates listed on Blackboard & WebAssign
Exams (5)	75%	

Points and Grades

A	≥90.00%	B	≥80.00%	C	≥70.00%	D	≥60.00%

Exam Topics and Dates

Exam 1:	Chpts 1-4	February 4
Exam 2:	Chpts 5-7	February 25
Exam 3:	Chpts 8, 9	March 11
Exam 4:	Chpts 10-13	April 8
Exam 5:	Chpts 14-16	April 28

Make-up Policy

No make-up exams will be given.

Chapter Problems

Working through problems is the **BEST** way to learn the material in this course. Work through as many end of chapter questions as you can.

Drop Policy

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Disability Accommodations

UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA),* and *Section 504 of the Rehabilitation Act.* All instructors at UT Arlington are

required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the **Office for Students with Disabilities (OSD).** Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:
The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.
Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX

The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos. For information regarding Title IX, visit www.uta.edu/titleIX

Academic Integrity

Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Support Services

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107,

send a message to resources@uta.edu, or view the information at http://www.uta.edu/universitycollege/resources/index.php

Electronic Communication

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Learning Outcomes

1. Define and understand terms used by chemists
2. Identify the steps in the scientific method.
3. Predict the number of significant figures contained in a number
4. Delineate between the significant figure rules for addition, subtraction, multiplication, and division
5. Demonstrate how to solve dimensional analysis problems using a scientific calculator
6. Demonstrate how to solve metric conversion problems using a scientific calculator
7. Demonstrate how to solve density problems using a scientific calculator
8. Discriminate between physical and chemical change and physical and chemical properties
9. Identify pure substances
10. Identify symbols and names for the assigned elements
11. Identify extensive and intensive properties
12. Define and articulate the difference between the terms "heterogeneous" and "homogeneous."
13. Discriminate between atomic mass and atomic number;
14. Analyze the periodic table and tell the number of protons, neutrons, and electrons in atoms;
15. Identify the number of protons, neutrons, and electrons in ions;
16. Explain how the atomic number was derived for the periodic table using the weighted average concept
17. Identify isotopes
18. Create electron configurations of elements using the periodic table
19. Write orbital diagrams from electron configurations
20. Recall where halogens, representative elements, alkali metals, alkaline earth metals, and transition elements are located on the periodic table
21. Explain how to tell the number and kind of elements contained in a compound
22. Use the periodic table to determine the ending sub-level in an electron configuration
23. Know the trends for atomic radius and metallic character
24. Create Lewis structures
25. Determine molecular shapes
26. Determine oxidation numbers of elements using the periodic table
27. Understand the difference in lone pair and bonded pair of electrons
28. Determine if a molecule has multiple bonds by using Lewis structures
29. Predict the formula for a compound using typical ion behavior

30. Write formulas from the names of a compound
31. Determine if a compound contains ionic or covalent bonds
32. Name compounds from chemical formulas, and
33. Write chemical formulas from names
34. Determine the formula mass of compounds
35. Work all types of mole calculations
36. Determine the empirical formula for a compound
37. Identify the difference in empirical and molecular formula
38. Determine the percent composition of a compound
39. Demonstrate the ability to balance equations using symbols and words
40. Predict the products of a chemical reaction
41. Identify the type of reaction
42. Solve stoichiometric problems
43. Predict the type of intermolecular forces present in a sample of a compound
44. Rank compounds by boiling point
45. Modify the ideal gas law equation and use to solve all gas law problems
46. Determine the percent composition of a compound
47. Explain the Kinetic Molecular Theory
48. Calculate concentrations using various units
49. Determine how to dilute solutions to a given molarity
50. Identify which compounds are acids and which are bases
51. Identify conjugate acids and bases
52. Articulate the definitions of acids and bases
53. Explain the difference in a strong and weak acid and base
54. Explain the pH scale
55. Assign oxidation numbers to elements
56. Identify what is oxidized and reduced
57. Identify oxidizing and reducing agents
58. Define an endothermic reaction
59. Define an exothermic reaction
60. Identify modifications to a reaction that will cause it to produce more or fewer products
61. Identify modifications to a reaction that will cause it to speed up or slow down

Student Feedback Survey

At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or

following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Copyright Statement

© Copyright 2017 Gregory R. Hale and Dick Powell as to this syllabus and all classes. Students are prohibited from selling (or being paid for taking) notes during this course to or by any person or commercial firm without the express written permission of the instructors teaching this course.

Course Schedule

Unit 1

- 1/18/2017 11:59 PM Chapter 1 Homework
- 1/23/2017 11:59 PM Chapter 2 Homework
- 1/28/2017 11:59 PM Chapter 3 Homework
- 2/2/2017 11:59 PM Chapter 4 Homework
- 2/4/2017 Exam 1 - Access to exam begins at 8 am; 90 minute limit; must finish by 11:59 pm; must finish in one sitting; Can use handwritten notes, scratch paper, periodic table, and non-graphing calculator; Respondus browser required: http://www.respondus.com/lockdown/download.php?id=163943837

Unit 2

- 2/9/2017 11:59 PM Chapter 5 Homework
- 2/16/2017 11:59 PM Chapter 6 Homework
- 2/23/2017 11:59 PM Chapter 7 Homework
- 2/25/2017 Exam 2 - Access to exam begins at 8 am; 90 minute limit; must finish by 11:59 pm; must finish in one sitting; Can use handwritten notes, scratch paper, periodic table, and non-graphing calculator; Respondus browser required: http://www.respondus.com/lockdown/download.php?id=163943837

Unit 3

- 3/2/2017 11:59 PM Chapter 8 Homework
- 3/9/2017 11:59 PM Chapter 9 Homework
- 3/11/2017 Exam 3 - Access to exam begins at 8 am; 90 minute limit; must finish by 11:59 pm; must finish in one sitting; Can use handwritten notes, scratch paper, periodic table, and non-graphing calculator; Respondus browser required: http://www.respondus.com/lockdown/download.php?id=163943837

Unit 4

- 3/23/2017 11:59 PM Chapter 10 Homework
- 3/30/2017 11:59 PM Chapter 11 Homework
- 4/6/2017 11:59 PM Chapter 12 Homework
- 4/13/2017 11:59 PM Chapter 13 Homework
- 4/15/2017 Exam 4 - Access to exam begins at 8 am; 90 minute limit; must finish by 11:59 pm; must finish in one sitting; Can use handwritten notes, scratch paper, periodic table, and non-graphing calculator; Respondus browser required: http://www.respondus.com/lockdown/download.php?id=163943837

Unit 5

- 4/20/2017 11:59 PM Chapter 14 Homework
- 4/27/2017 11:59 PM Chapter 15 Homework
- 5/4/2017 11:59 PM Chapter 16 Homework
- 5/6/2017 Exam 5 - Access to exam begins at 8 am; 90 minute limit; must finish by 11:59 pm; must finish in one sitting; Can use handwritten notes, scratch paper, periodic table, and non-graphing calculator; Respondus browser required: http://www.respondus.com/lockdown/download.php?id=163943837