

General Chemistry II CHEM 122-007/008 Spring 2009 TR Rybolt

CHEMISTRY 122 Dr. Tom Rybolt (1:40-2:55 TuTh Holt 124)
COURSE INFORMATION/ STUDY SUGGESTIONS/WEBSITE/HOMEWORK

This course fulfills a general education requirement as a Natural Science Lab Course.

Text *Chemistry* 5th edition by Brady & Senese, and accompanying *Student Solutions Manual*

Office Hours My schedule is posted outside my office, **Room 105** in the Chemistry Collins Street Annex (**CANX**). It is a yellow/red modular building near the Challenger Center across 5th street. Office hours (best time for questions) will be announced in class and placed on my website. These scheduled student question hours are **MWF 2:00-2:50 and TT 3:00-3:50**. You are encouraged to ask chemistry questions during class or see me during my office hours or if you cannot come during office hours then you can schedule an appointment with me. My office phone is 425-4499 and e-mail is Tom-Rybolt@utc.edu

Exams Three exams will be given during the semester. The lowest exam grade will be dropped. A grade of 0 will be assigned for any exam that is not taken. This grade of 0 may count as the one grade that is dropped. **NO MAKE-UP EXAMS will be given.** Exams are based on textbook, class lectures, and homework. You should bring a working calculator and two pencils to exams. You may not share a calculator during exams. No other paper, notes, books or stored information is to be used except what I provide you. After the first person leaves an exam, no one else can come late and start the exam. No other paper, notes, books, or stored information is to be used except what I provide you. No cell phone use, texting, or checking phone in class at any time. The FINAL EXAM is always harder because it covers all the material.

Grades Course grades are determined from the formula

$$\text{Grade} = (\text{top exam} + \text{next top exam} + \text{final exam})/3$$

Grades in my lecture section are based on the following scale: 90-100 A, 80-89 B, 70-79 C, 65-69 D, and 0-64 F. In addition, successful completion of other required activities that are presented in class may be required.

Lab You must be registered (or already have credit) for a Chemistry 124 Laboratory course to take the Chemistry 122 lecture course. Chemistry 124 is a co-requisite to Chem 122 but it is a separate course.

Background Required This class assumes an A, B, or C level knowledge of Chemistry 121 and understanding of basic pre-calculus mathematics such as logarithm, exponential, and algebra. Before taking Chemistry 122 you are required to have a UTC math placement of level 30 or higher, or credit for Math 131, Math 144, or calculus. You must have earned at least a C in Chemistry 121/123 or have an equivalent AP score, to take Chem 122.

Homework In addition to reading the textbook and studying your class notes, you must **do the assigned homework problems** as we cover each chapter. Homework problems are listed on separate page. Your exams will include similar types of problems and you must do the homework to do well on the exams. You should obtain and use the *Student Solutions Manual* to check your work on problems. Only refer to the Solutions Manual after you have worked or tried to work the problem by yourself. You can also use the worked examples in the textbook to test yourself. Remember, learning chemistry requires thinking and doing, and not just listening and reading. Learning is an active process!

Special Needs If you are a student with a disability call the Office for Students with Disabilities/College Access Program at 425-2288. If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the

Counseling and Career Planning Center at 425-4438 or stop by the office in room 338 of the University Center.

Attendance and Respect You are expected to arrive on time for all class meetings and you are responsible for everything covered in lecture. Do not come late to class. Essential information, such as test times will be given one time at start of class and not mentioned again by me. If you miss a class, check with a fellow student who is able to share notes and go over items you missed. Classroom behavior such as: talking to your neighbor during lecture, reading, sleeping, or checking cell phone, interferes with my ability to teach effectively and others ability to learn. I may require you to meet with me before you are allowed to take the next exam so I can explain more clearly why your activities are a problem. I also may ask you to leave the classroom. Laptop computers can be a big distraction in class so no laptops may be used at any time during class. No cell phone use of any kind during class.

"If the teacher is not respected and the student not cared for, confusion will arise, however clever one is." Lao Tsu (from the *Tao Te Ching* written about 600BC)

STUDY SUGGESTIONS To do well in this class you must:

COME PREPARED TO EVERY CLASS AND CONCENTRATE ON CHEMISTRY DURING CLASS

READ TEXTBOOK PRIOR TO DISCUSSION IN CLASS OF THE MATERIAL

READ AND WRITE NOTES TO LEARN NOTES FROM PREVIOUS CLASS PRIOR TO NEXT CLASS — you learn notes by writing and testing yourself, reworking problems, writing out facts, etc. and not by just reading. Learning notes is an active process of writing and thinking.

SCHEDULE SPECIFIC STUDY TIMES AND PLACES - FOR A TOTAL OF (at least) 9 HOURS A WEEK
(for example: **1.5 hours a day for 6 days a week**)

WORK PROBLEMS – HOMEWORK AT END OF CHAPTER AND PRACTICE IN CHAPTER

ASK QUESTIONS AND WRITE DOWN AS YOU STUDY TEXTBOOK AND CLASS NOTES – THEN GET ANSWERS

TEST YOURSELF WITH PRACTICE EXAMS

YOU CAN LEARN AND UNDERSTAND CHEMISTRY, BUT TO REACH YOUR TRUE POTENTIAL YOU MUST PLAN TO ROUTINELY WORK AT LEAST 9 HOURS EACH WEEK ON reading textbook, learning notes, working problems, and asking questions.

HOMEWORK PROBLEMS are listed on separate page. You must **do the assigned homework problems** as we cover each chapter. You cannot effectively learn general chemistry unless you work problems. You need to **check your work** by comparing your work to the detailed solutions **in the *Student Solutions Manual***. It is essential that you have the textbook and the solutions manual and use both. Homework problems are essential to prepare you for exams.

Inclement weather policy During the spring semester it is not uncommon for the university to be closed or to open late due to bad weather. If the university does not open by 8:00am, we will not have lecture. If an exam is scheduled on a day when the university is closed or opens late, the exam will be scheduled for the next regular class meeting.

SCHEDULED COURSE TOPICS AND EXAMS

<u>EXAM</u>	<u>Chapter</u>	<u>Topic Sequence</u>
ONE		Chemistry 121 review Types of Solids (Table on p.466)
	12	SOLUTIONS
	6	THERMOCHEMISTRY
	18	THERMODYNAMICS
	13	KINETICS
TWO	14	EQUILIBRIUM
	15	ACID-BASE EQUILIBRIUM
	16	REACTIONS IN AQUEOUS SOLUTION
	17	SOLUBILITY OF IONIC SOLIDS
THREE	5	REDUCTION-OXIDATION (REDOX)
	19	ELECTROCHEMISTRY
	20	NUCLEAR CHEMISTRY and RADIOACTIVITY
	21	CHEMICAL PROPERTIES OF ELEMENTS (selected topics covered)
	22	PROPERTIES OF MATERIALS (few selected topics covered)
FINAL		EVERYTHING ABOVE

RYBOLT LECTURE NOTES have been placed on-line and Internet available visuals attached for many topics. These notes may be accessed at <http://www.utc.edu/Faculty/Tom-Rybolt/> Thanks to UTC Chemistry students Eric Cohen and Eva Prince and Leah Rybolt for their work to create and revise the on-line version of my notes. At the website above you will find listing of textbook chapters and corresponding Rybolt note files with links to access.

TO LEARN CHEMISTRY you should do the following: **read, write, work, and question**

- 1) read and study all the relevant textbook material as covered in class
- 2) attend lectures, collect, and study your class notes (writing the notes and testing yourself on them again and again is one of best ways to learn), read on-line notes for additional or clarifying information
- 3) work practice exercises in chapter and check your answers in appendix and work all assigned end of chapter problems and check your work in solution manual.
- 4) For items that are not clear to you, write down your questions as you study textbook, notes, and homework and get answers to these questions by further study or seeking help from another student or from your instructor.

PRACTICE EXAMS AND WEB-BASED STUDY HELP

Prior to each exam, you should study (notes, book, homework) until you feel prepared to take the exam. There are practice exams on-line but the order of topic coverage changes from year to year so an older Exam One may not cover exactly the same topics as a current Exam One. However, they make useful practice and illustrate types of questions that have been asked in the past. You can work practice exam questions and grade yourself with on-line answer keys.

To obtain my e-class notes and old exams and keys go to: <http://www.utc.edu/Faculty/Tom-Rybolt/>

For some Internet browser software you may need to save the exam and answer key on your computer and then open or print and may have to specify Microsoft Word to open exam. If weird text comes up when you first click on item just click Back on your browser software and then try again.

For other browser software, the text and the answer key should both open as Microsoft Word documents when you double click on the item.

On my webpage there is link to a website <http://www.utc.edu/Faculty/Gretchen-Potts/> which has Extra Help and Chemistry Links for additional help and tutorials. You may be able to select OLD TESTS for more practice questions and answers. Her tests will not match exactly with the topics on my tests. I would like to thank Dr. Potts for making this information available. Other useful links are also provided. You should be able to find links to other sites that have chemistry helps and tutorials.

You must **do the assigned homework questions/problems** from your textbook – *Chemistry: Matter and Its Changes* 5th edition by Brady and Senese as we cover each chapter. You will not do well on class exams without this work. You cannot effectively learn general chemistry unless you work problems. Learning Chemistry is an active process and not a passive one.

You should buy and use the *Student Solutions Manual* that is designed to go with your textbook. The questions at the end of the chapter that are numbered in color are worked out in detail in the *Student Solutions Manual*. Answers to these are also in your textbook Appendix. We will not have time in class to go through these problems and that is why you must buy and check your work in the Solutions Manual. You should do as much work as you can on each question and only after you are done then compare your work or answer to the provided solution. The purpose is to allow you to get feedback on your work not to give you an answer without doing the work.

All of these questions below are from Review Questions and Review Problems at the end of each chapter. In your text these are written as 1.7, 1.10, etc. I have simplified below by writing as chapter 1. 7 10 etc. The Review Problems marked in color in your text have worked out solutions in *Student Solutions Manual* and answers are also in textbook Appendix.

Chapter Review Questions and Review Problems (Homework at end of chapter)

12. 18 21 31 35 42 44 48 50 52 60 62 66 68 70 74 78

6. 12 13 26 41 45 47 49 51 53 55 57 63 71ab 73 75

18. 18 27 28 32 38 46 48 50 58 60ace 68 74 78 80 96

13. 20 23 38 43 49 53 57 59 61 63 67 71 77 83

14. 19abd 21abd 25 29 37 29ac 41 43 45 49 51 53 55 67

15. 1 8 20 22 38 41 43 45 51 59 61 63 67 69 75

16. 1 7 32 34 36 42 44 46 56 58 60 88

17. 16 20 24 28 36 38 48 50

- 5. 1 8 10 25 27 31 35dg 37ac 47 53 57 63 65
- 19. 8 15 50ab 56ab 58 66 68 72 78 80 84 94
- 20. 4 7 35 51 53 59 69 77 81 85 87 89 100
- 21. selected topics will be covered - no homework problems
- 11. and 22. a few selected topics on solids, polymers, and properties of materials as time allows - no homework problems