

**Physical Chemistry II**  
**CHEM 372-001**  
**Spring 2009**  
**TR Rybolt**

**CHEMISTRY 372      Dr. Tom Rybolt      (MWF 1:00-1:50pm, Holt 101)**  
**COURSE INFORMATION/STUDY SUGGESTIONS**

**Text** *Physical Chemistry 8<sup>th</sup> edition*

**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 5<sup>th</sup> 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.

#### **Tentative Exam Schedule**

Exam 1	chapters 8, 9, 10, 11	Feb
Exam 2	chapters 12, 13, 14, 15	Mar
Exam 3	chapters 21, 22, 23, 24, 25	Apr
Final	Comprehensive	at assigned final time

**Grades** Final grades are based on A 90-100, B 80-89, C 70-79, and D 60-69, F 0-59  
Your course grade is based on the formula:

$$\text{Grade} = (0.25 \text{ Lab} + 0.22 \text{ Exam} + 0.22 \text{ Exam} + 0.24 \text{ Final} + 0.07 \text{Talk/Participation/Extra})$$

**Homework** Homework assignments will be made on a regular basis throughout the semester. In addition to reading the textbook and studying your class notes, you are expected to work the assigned homework problems as we discuss the chapter. Selected problems may be collected as part of your exams. You must bring all your worked problems with you to exam periods. In addition, your exams will include similar types of problems and you need to do the homework to do well on the exams. You must try to work all problems by yourself with help only to guide you and not to replace working or thinking about the problem. 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. Work problems on one side of paper and spread them out showing all steps. Don't put more than 2 problems per page.

**Talk** Select an experimental article from the *Journal of Physical Chemistry* to discuss in a 8 minute well focused and delivered talk (with visuals) (1) Background and (2) Research Article (a-objective, b-method, and c-result) with equations, graphs, numbers as appropriate. Details will be provided later.

**Participation** Class will include lecture and discussion with assumption that you have read and studied text and packet notes ahead of where we are in class and can discuss topic, ask relevant questions, respond to questions. All learning should be an engaged learning process and this could effect the talk/participation grade.

**Expected Lecture topics** based on *Physical Chemistry* 8th edition by Atkins and de Paula  
Additional topics may be added if time permits. I may also refer you to or have you find additional information from on-line sites.

#### QUANTUM CHEMISTRY

- 8 Quantum Theory
- 9 Applications: Translation, Rotation, and Vibration
- 10 Atomic Structure
- 11 Molecular Structure

#### SPECTROSCOPY

- 12 Symmetry
- 13 Rotational and Vibrational Spectra
- 14 Electronic Spectra
- 15 Magnetic Resonance Spectra

#### TRANSPORT PHENOMENA, CHEMICAL KINETICS, AND SURFACE CHEMISTRY

- 21 Motion of Molecules and Ions
- 22 Rates of Reactions
- 23 Kinetics of Complex Reactions
- 24 Molecular Dynamics
- 25 Surface Chemistry

**Physical Chemistry 372 Online Information** at <http://www.utc.edu/Tom-Rybolt> contains:

- (1) Class Notes on selected topics (bring copy to class with you as we discuss the topic)
- (2) Homework Problem Sets (do with each chapter)
- (3) Sample Exams (do as a practice test and then grade yourself)

Also review of basics in General Chemistry textbook or online notes can be quite useful

**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)**

**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.

**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.

**STUDY SUGGESTIONS** To do well in this class you should:

COME PREPARED TO EVERY CLASS AND CONCENTRATE ON CHEMISTRY DURING CLASS.

READ AND STUDY TEXTBOOK PRIOR TO AND DURING DISCUSSION IN CLASS OF THAT MATERIAL.

READ AND 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 – ASSIGNED PROBLEM SETS AND PRACTICE YOU SELECT IN CHAPTER.

WRITE DOWN QUESTIONS AS YOU STUDY TEXTBOOK AND CLASS NOTES, AND GET ANSWERS TO YOUR QUESTIONS.

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 HOMEWORK, READING, STUDYING CLASS NOTES, AND PREPARING FOR CLASS.