Chemistry 1451 Chemistry for Health Sciences
Section 001 MWF 09:00 AM – 09:50 PM (SH 121)

Instructor: Dr. Seiichiro Tanizaki (Profile URL: https://www.uta.edu/mentis/public/#profile/profile/view/id/1876/)
Office Hours are Monday and Tuesday from 11:00 AM to noon or by appointment.
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Course Description: Survey of general, organic, and biochemistry with emphasis on applications to the human body. Measurement, atomic theory and structure, bonding, quantitative relationships in chemical reactions, gases, solutions, electrolytes, organic functional groups and nomenclature, organic reactions, carbohydrates, lipids, proteins, enzymes, metabolism, and nucleic acids.

Required Textbooks and Other Course Materials:
1) The textbook is "Chemistry: An Introduction to General, Organic and Biological Chemistry (11th edition)" by Karen C. Timberlake, Prentice Hall (2012). **Recommendation:** Buy the E-Book option when you purchase the online homework access (Most cost effective). **No other textbook is supported in this course. The textbook is reserved in the Central Library.** Keep in mind that rental/used textbook does not come with an access code to the online homework system.
2) Access to the online homework system: **MasteringChemistry** (www.masteringchemistry.com). You can purchase the access directly online at their website. Read the instructions for Online Homework Registration and Log in in the UTA Blackboard course site (https://elearn.uta.edu). (IMPORTANT: The online homework website is NOT the same as the UTA Blackboard course site. If you are re-taking this course and previously purchased the code, the access code is valid for two years.)
3) The lab manual is "General, Organic and Biological Chemistry CHEM 1451". This lab manual is UTA-customized to minimize the cost. It is available only at the UTA bookstore (www.uta.edu/bookstore). The photocopy of the manual will NOT be accepted.
4) A scientific calculator (**non-programmable and non-graphing**; Texas Instrument 30 XIIS is recommended.) You are NOT allowed to use a programmable and/or graphing calculator during exams (No exceptions). **Note that TI-36X Pro is NOT allowed.** You should become familiar with a required scientific calculator by using it while you work on homework assignments.

Course Prerequisites: This course is intended for students pursuing a career in nursing, and all students should have completed MATH 1301, 1302 (College Algebra) or equivalent. To receive credit for CHEM 1451, you must also be enrolled in CHEM 1451 lab. CHEM 1451 cannot be counted for major credit toward a degree in science or engineering.

Student Learning Outcomes: Upon completing the course, the student should be able to understand major concepts in general, organic and biochemistry. (More detailed learning objectives are given in separate handout available in Blackboard course sites.)
1) (**General Chemistry**) To understand scientific measurement, atomic theory and structure, chemical bonding, quantitative relationship in chemical reactions, and acid-base chemistry.
2) (**Organic Chemistry**) To understand nomenclature, chemical reactions and properties of organic compounds.
3) (**Biochemistry**) To understand molecular structures, chemical reactions and properties of carbohydrates, lipids, and proteins. If time permits, chemistry of nucleic acids will be included.

Attendance Policy: Attend **every** lecture. A very strong correlation exists between attendance and success in Chemistry 1451. Because the topics covered in this course build on each other, missing even one class can mean the difference between success and failure in the course. You must sign on the attendance sheet in class if you attend a class. **FALSIFYING YOUR ATTENDANCE, THAT INCLUDES LEAVING A CLASS BEFORE CLASS ENDS, IS CONSIDERED ACADEMIC DISHONESTY AND PROSECTUED AS SUCH.**

Expectations for Out-of-Class Study: Spend the necessary amount of time studying chemistry. The rule of thumb for succeeding in Chemistry is three hours of study for every hour of lecture. Since you have **3 hours** of lecture per week, this means that at a minimum you should plan to study Chemistry **9 hours** each week independently.

Other Requirements:
1) A student must familiarize herself/himself with all requirements and policies **in this course of the current semester.**
2) Prior to class, read the chapter which will be covered in lecture.
3) Review your lecture notes after each class. Correct obvious errors and note topics which require further study or clarification.
4) Work **all** of the homework problems. Do **not** look in the solutions manual until you have given your **best** effort to solve the problem on your own. **Practice the problems that you could not solve until you could solve them without solutions. This is the one of the most effective strategies that you could do to prepare for exams.**
5) Don't procrastinate. These concepts take time to sink in, and you may have to practice these exercises over a period of many days in order master the necessary skills.

Grading: The grade in this course will be determined in the following manner.

5 Exams	65%
Laboratory Average	25%
Homework	10%

1) **You must receive at least a 60 % average in lab to be eligible to pass the course.** In other words, if your final lab average is below 60 %, then you will automatically receive F in this course.
2) (**Make-up Exam Policy**) No make-up exams will be given, and any missed exams will result in a grade of zero. However, the final exam score will replace the lowest score among Exam 1, Exam 2, Exam 3, and Exam 4 if it is to the student's benefit. For example, if you miss one of midterm exams (Exam 1 through Exam 4), then the score of the missed exam will be replaced by the final exam score. Final exam score will neither be replaced nor dropped.
3) There will be no curving on exams or no extra credit assignments in this course to a specific student.
4) **If you drop or fail Chemistry 1451, grades earned in the lab and the homework cannot be carried over when you re-take Chemistry 1451.**
5) All grades are calculated by rounding them off to two decimal places: If the digit to be removed is less than five, then it is rounded down. If the digit to be removed is equal to or larger than five, then it is rounded up. For example, if your calculated final grade is 89.564…, then your final grade is 89.56. Grades will be assigned according to the following scale.

Total Numerical Grade	90 and above	80 – less than 90	70 – less than 80	60 – less than 70	Below 60
Letter Grade	A	B	C	D	F

Major Assignments and Examinations
Five exams will be given. These exams will cover the reading, lecture material, homework, and assigned problems. Four mid-term exams (Exam 1 through Exam 4) will be administered in **50 minutes**. Final exam will be administered in **one and a half hours**. Web-based homework problems will be assigned and graded. More information (Registration, Login and Grading Policy) about the online homework system will be given in the Blackboard course site. None of homework assignments will be dropped. All due dates for homework assignments are directly available on the online homework site. You will be responsible for checking them and completing them by the due dates.

Examination Needs
You must bring the following to each examination.
1) Scientific Calculator (You may **not** use a graphing calculator or a calculator capable of storing alpha-numeric/textual material).
2) No. 2 pencils with eraser.
3) NCS Answer Sheet 4521, available at the UTA Bookstore (or, an answer form specified by your instructor).
4) UTA Student ID Card.
5) Students are NOT allowed to have access to digital pagers or cell phones during any exam.

Blackboard
Students are regularly responsible for checking the blackboard course website (**https://elearn.uta.edu/**) as well as their UTA email (the one ending in "mavs.uta.edu") for correspondence and announcements related to the course. Instructional materials (videos, activity sheets, study guides, etc.) will be posted on the course website.

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 www.uta.edu/resources.

Resources
1) **The Chemistry Clinic** is located in Room 318 Science Hall and will be staffed with tutors available to answer your questions related to lecture and homework. Hours of the Chemistry Clinic will be announced on the front door of Room 318 SH. This service is free for students enrolled in Chemistry 1451.
2) **University College** is located in 205 Ransom Hall and offers free academic support for qualifying students and low-cost services for all students, including Cost Share Tutoring.

Tentative Lecture Schedule: The following represents a *tentative* schedule of lectures and examination material for this semester. Tentative exam dates are specified in **bold**. The exact dates of the four midterm exams will be announced in class and the Blackboard course site. All due date of homework assignments are available directly on its website. You will be responsible for checking them and completing them by the due dates. **As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. Note that the Final Exam is scheduled for Wednesday, May 13 from 9:00 AM to10:30 AM. Make sure to save this date because no make-up final exam will be given. Exam 4 is tentatively scheduled on April 17, but the date might be changed to April 15.**

Date		Lecture Material (Reading Assignments)
January	**19**, 21, 23	Course Orientation and begin Chapter 1 "Chemistry and Measurements".
	26, 28, 30	Chapter 2 "Matter and Energy". Chapter 3 "Atoms and Elements".
February	2, **4**, 6	**Exam 1** on Chapters 1, 2 and 3. Begin Chapter 4.
	9, 11, 13	Chapter 4 "Compounds and Their Bonds".
	16, 18, 20	Chapter 5 "Chemical Quantities and Reactions".
	23, 25, **27**	**Exam 2** on Chapters 4 and 5. Chapter 7 "Solutions".
March	2, 4, 6	Chapter 8 "Acids and Bases".
	9, 11, 13	**Spring Vacation.**
	16, **18**, 20	Chapter 10 "Introduction to Organic Chemistry: Alkanes". **Exam 3** on Chapters 7 and 8.
	23, 25, 27	Finish Chapter 10 and begin Chapter 11 "Unsaturated Hydrocarbons".
Mar/Apr	30, 1, 3	Chapter 12 "Organic Compounds with Oxygen and Sulfur".
April	6, 8, 10	Chapter 14 "Carboxylic Acids, Esters, Amines, and Amides". Begin Chapter 13.
	13, 15, **17**	**Exam 4** on Chapters 10, 11, 12 and 14. Begin Chapter 13 "Carbohydrates".
	20, 22, 24	Continue Chapter 13.
Apr/May	27, 29, 1	Chapter 15 "Lipids".
May	4, 6, 8	Chapter 16 "Amino Acids, Proteins, and Enzymes".
	13	**Final Exam (Exam 5)** on Chapters 13, 15, and 16.

Important Dates

January 19	Martin Luther King Jr. Day holiday: Classes do not meet.
February 04	Census Date.
March 9 – 13	Spring Vacation: Classes do not meet.
April 03	Last Day to Drop Classes: Please review UTA's Drop Policy in Undergraduate Catalog.
May 08	Last Day of Classes.
May 13	Final Exam from 9:00 AM to 10:30 AM.

Other Course Policies

Cell Phones and Pagers (or any un-necessary electronic gadgets): Please silence all cell phones and pagers prior to class.

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/).

Americans with Disabilities Act: The University of Texas at 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)*. 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. 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 is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses 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.

Lab Safety Training: Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned. Instructions for completing lab safety training are given separately in the lab syllabus of this course.

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 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.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located **at the front/back of the room**. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.

This course satisfies the University of Texas at Arlington core curriculum requirement in life and physical sciences. The italicized student learning outcomes required of core courses below will be assessed for each student in the laboratory portion of the course. The lab report will be assessed to determine how a student has mastered critical thinking, communication, and empirical and quantitative skills. A teamwork assessment (peer evaluation) will be completed by each student in lab to determine how students work together in lab groups to achieve the student learning outcomes described below.

Student Learning Outcomes:

- Upon completing the course, the student should be able to understand major concepts in general, organic and biochemistry. (More detailed learning objectives are given in separate handout available in Blackboard course sites.) (**General Chemistry**) To understand scientific measurement, atomic theory and structure, chemical bonding, quantitative relationship in chemical reactions, and acid-base chemistry. (**Organic Chemistry**) To understand nomenclature, chemical reactions and properties of organic compounds. (**Biochemistry**) To understand molecular structures, chemical reactions and properties of carbohydrates, lipids, and proteins. If time permits, chemistry of nucleic acids will be included.
- The student collects data for the change in the mass during a chemical reaction. They calculate the theoretical yield and percent yield for different combinations in amounts of reactants. They discuss the concept of equivalent amount, limiting reagent, and excess reagent for each run of reactions. (*Empirical and Quantitative Skills*)
- The student learns the scientific process by designing and conducting experiments, collecting and analyzing data, and presenting results, in both written formats (*Critical thinking, Communication*)
- The student learns essential laboratory procedures and protocols (*Teamwork*)
- *Critical Thinking Skills*: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information;
- *Communication Skills*: to include effective development, interpretation and expression of ideas through written, oral and visual communication
- *Empirical and Quantitative Skills***:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- *Teamwork***:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

The Signature Assignment for satisfying the Core Curriculum Requirement in CHEM 1451 will be UTA Experiment 5: Chemical Reaction.