GENERAL CHEMISTRY II

Welcome to General Chemistry II

Introduction

General Chemistry II is a continuation of General Chemistry I. The course will cover many topics first introduced in Gen Chem I in more detail (e.g. acids/bases, redox, and solubility). New topics will include intermolecular forces, phase changes, liquids and solutions, colligative properties, solid-state chemistry, kinetics and mechanisms, equilibrium, entropy, voltaic cells, and nuclear chemistry. The material spans Chapters 10–17 and 19–21 in the textbook. Good study habits will be essential to your success. You will have to employ logic and critical thinking in order to solve a wide variety of problems. Resources are available such as Supplemental Instruction (SI), PASS and departmental tutors, and my pre-exam review sessions. Of course, I am happy to help you outside of class in my office.

Student Learning Outcomes (Core Curriculum)

1) Apply the scientific method to analyze items or problems found on homework, quizzes, and tests (Critical Thinking).
2) Manipulate and analyze data embedded in word problems found on homework, quizzes, and tests (Empirical and Quantitative Skills).
3) Demonstrate teamwork by researching and presenting (both orally and via PowerPoint) on a molecule (Communication and Teamwork)

Additional Learning Outcomes

1) predict trends in physical properties based on the strengths of intermolecular interactions
2) calculate rates of reactions and their dependence on concentration, time, and temperature
3) propose reaction mechanisms consistent with rate data
4) calculate equilibrium constants or equilibrium amounts of products or reactants (ICE method)
5) apply Le Chatelier’s Principle to determine if changes to the system will impact the equilibrium amounts of reactants and products
6) apply equilibrium principles to aqueous and electrochemical systems
7) calculate and/or convert between thermodynamic quantities (e.g. entropy, free energy and equilibrium constants, electrochemical potentials)
8) identify the parts of an electrochemical cell and where specific processes take place
9) calculate cell potentials
10) balance nuclear chemical equations

Important Dates

The course meets in Ratliff Building North (RBN) 3035 on TR from 11:00 am — 12:20 pm.

Midterm exams: February 13 (Thurs), March 19 (Thurs), April 16 (Thurs); dates may change
January 27 (Monday) – Census date; last day to file for grade replacement
March 2 (Monday) – FINAL deadline to file for Spring graduation
March 9–13 (Monday–Friday), Spring Break—no classes held
March 30 (Monday) – Last day to drop or withdraw from courses with a W
April 27 (Monday) – Study Day, no class (final exam for M only & MW classes meeting at/after 7 pm)
April 28 (Tuesday) Final Exam from 11:00 am – 1:00 pm (in the regular classroom)
Auguste Comte (1798 – 1857)

Every attempt to employ mathematical methods in the study of chemical questions must be considered profoundly irrational and contrary to the spirit of chemistry ... if mathematical analysis should ever hold a prominent place in chemistry – an aberration, which is happily almost impossible – it would occasion a rapid and widespread degeneration of that science.

OOPS!

Sometimes even the really smart folks aren’t as clever as they think they are!

### Required Materials

*Chemistry: The Central Science, 14th Ed* by Brown, Lemay, and Bursten

**Textbook options**
- hardcover ISBN: 9780134414232
- 3-ring binder ISBN: 9780134555638

(Note: The 13th edition of the textbook is fine. The only significant changes were in the Gen Chem 1 material.)

Sapling Learning Online Homework is **REQUIRED** to complete homework assignments (see page 4 for more info)

**Access Code Options**
- Bookstore, ISBN: 978-0-9833859-5-0
- Purchase online (easier/cheaper) [www.saplinglearning.com](http://www.saplinglearning.com)

Scientific calculator capable of exponents and logarithms
- Only NON-programmable calculators are permitted, but you must know how to use them.

### Recommended Materials

**Student Guide**

ISBN: 9780134554075

**Solutions to Red Exercises**

ISBN: 9780134552231

Some kind of periodic table; these can be purchased or printed off the web.
Course Requirements

- CHEM 1311 (General Chemistry I) is required. If it’s been a while since General Chemistry I, you should budget extra study time to avoid falling behind. You can also send me an email to get access to the CHEM 1311 Toolkit page for review.
- General Chemistry II Lab (CHEM 1112) is a separate course. If CHEM 1312 is a degree requirement for you then you must take both lecture and lab. Students taking CHEM 1312 to just satisfy the Core do NOT have to take the lab. However the lab does satisfy 1 hour of the STEM Core requirement.
- The course meets every Tuesday and Thursday from January 14 to April 23 except as noted on page 1 of this syllabus. We will meet for the Final Exam on April 28.
- To receive a passing grade for the course, you must take the comprehensive final exam; otherwise, you will fail the course regardless of your other exam and homework scores! (Final exam: Tuesday, April 28 from 11:00 am—1:00 pm in the regular classroom.)
- The last day to withdraw from the course with a “W” is Monday, March 30. It is your responsibility to withdraw from the course; otherwise, if you stop coming to class, you will fail the course! If you are withdrawing from this course, you are encouraged, but not required to, withdraw from the laboratory course (CHEM 1112) and vice versa. Your lab instructor is not responsible for catching you up on lecture material you missed. If you are unsure about dropping the lab then please speak with your laboratory instructor. If you drop the lecture, please let me know.

Study Tips

- Study, study, study! Chemistry requires you to read, review and practice (1—2 hours per hour of lecture is typical).
- Don’t “brain-dump” after an exam, you will continue to build upon and use information throughout the semester.
- Form study groups, there are some smart students at UT Tyler, get to know them. Also, teaching a topic to someone is a great way to reinforce that topic.
- Do the online homework; it is a big part of your grade and prepares you for exams.
- Watch video tutorials on various topics (10—20 min) I will post during the semester.
- If you get behind, do not be afraid to get help! Take advantage of SI, PASS tutoring, CrAm sessions, my office hours and review sessions, and/or tutors.

Online Content: Canvas

The SI leader and myself will communicate with you through Canvas (www.uttyler.edu/canvas). I will post

- Lecture notes (having a printed copy may be useful in class), and audio recordings of lecture (however they are a poor substitute for attending lecture.)
- Review sessions and exam and homework due dates,
- SI sessions times/rooms and changes
- Tutorial videos for selected topics

Please make sure you are set to receive notifications to your email and/or your phone/tablet/etc. from Canvas at least daily.

“Do not worry about your difficulties in mathematics. I assure you mine are greater.”
~Albert Einstein

“Hard work spotlights the character of people: some turn up their sleeves, some turn up their noses, and some don’t turn up at all.”
~Sam Ewing

“I feel there is so much more we can do in improving education, making it accessible and understanding how technology can be a part of the solution.”
~Jim Breyer
ONLINE HOMEWORK

Homework will be assigned for you to complete outside of lecture. Assignments are due 5 days after the chapter is finished in class. Notice of an assignment will be posted on Canvas. **All Sapling homework assignments count as 20% of your total course grade.**

To access the online homework complete the following steps:

1. Go to Canvas ([www.uttyler.edu/canvas](http://www.uttyler.edu/canvas)) and navigate to the Sapling Homework Sign-Up and Troubleshooting. Click on the top link to get to signed up for Sapling. For the initial registration, the Sapling Learning homework must be accessed through this link. After logging in once using this link, you can log in to subsequent sessions from Canvas or from the Sapling home page ([www.saplinglearning.com](http://www.saplinglearning.com)).
2. If you already have a Sapling account, enter your username and password in the login box. If the login box is disabled, scroll down to the Create an Account portion of the page, fill in the missing info and click Create My Account.
3. You’ve been automatically enrolled into the appropriate homework course on Sapling Learning, so the link will appear near the top of the landing page in Sapling Learning.
4. During the grace period (first two weeks of class), you can choose to access and complete assignments without paying. At any point during that time, you can pay by clicking the link in the alert at the top of the course page and following the payment instructions. Once the grace period ends, you will be required to pay before you can access the assignments. When payment is made, you can again access assignments and you can resume where you left off as work done during the grace period is saved. If you have dropped the course during the grace period, you simply do nothing and do not need to pay.

• During sign up and throughout the semester if you have any technical problems with Sapling, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than Dr. Smee, although he will be happy to help resolve grading issues.
• Sapling now uses HTML 5 so it is not necessary to use an Adobe Flash-enabled device to complete the homework.

IN-CLASS (MIDTERM) EXAMS

- The regular exam dates February 13, March 19, and April 16 are tentative; the final exam on April 28th at 11 am is fixed.
- At least one week’s notice will be given prior to the exam. The exams will be 28 multiple-choice and 2 short-answer questions. They cover material discussed in lecture **AND** any assigned readings.
- You are required to bring a pencil and a non-programmable scientific calculator. **One** handwritten 3½” x 5” note card, both sides is permitted (no photocopies or printed materials!).
- I will provide scantrons and scratch paper for calculations.
- Midterm Exams start at 11:00 am and end by 11:50 am. When finished please turn in your exam, scantron, note card, and scratch paper.
- I do my best to return everything by the next class. I sometimes make mistakes. In this case, please see me within 1 week after the exam, otherwise the score is final.
- **Cell phones, smart watches, and any similar electronic devices must be turned off and put away during exams. If they observed out in a visually accessible place (i.e. between legs, on the floor, etc.), it will be assumed that they are being used to cheat; your exam will taken away, you will receive a zero score (0 points) for the test, and you will be referred to the Office of Judicial Affairs.**
**Exam Grade Replacement**

- I will replace your lowest exam score with your final exam score if your final exam score is higher. (If the final exam score is the lowest score, then no grade will be replaced.)
- Only one score can be replaced and homework grades will not be replaced.
- As an example, if your exam scores are 60, 75, and 85 with a 70 on the final, your final grade would be calculated based on your overall homework score and the scores 70, 75, 85 and 70 in which the first exam score of 60 was replaced with the 70.

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**Final Exam & Exam Make-up Policy**

- The final examination will be given on (and only on) **Tuesday, April 28, from 11:00 AM – 1:00 PM in our regular classroom**. You are required to take the final examination in order to receive a passing grade in the course. There will be no make-up of the final exam, no exceptions!
- The comprehensive final examination is a nationally standardized exam written by the American Chemical Society (ACS) and is comprehensive over both semesters of general chemistry (70 multiple-choice questions). The questions are not particularly hard, but there are A LOT of them.
- A study guide to help you prepare for the final exam can be purchased from the ACS student chapter later this semester.
- Missed exams will be handled according to one of the two following methods:
  - If you know that you will miss an exam due to an excused absence, then you can take the exam early. To do so you must give me at least one-week notice. **You will not be allowed to take the exam after the scheduled exam date, so, plan ahead if you know you will be absent.** For any unplanned absence, such as illness, car-trouble, funeral, etc. the final exam will replace the exam you missed. **No exams will be given after the scheduled dates.**
  - Missing a second exam will require a special meeting between with me to determine the appropriate action. Such an action may include, but is not limited to withdrawing from the course.
- If you have questions about these policies, please ask.

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**In-Class Quizzes**

- In an effort to boost attendance and to help you focus better during class, a short quiz (1-2 questions over that day’s material) will be given periodically during the last 10-15 minutes of class.
- There will be 12 quizzes (roughly 1 per week) and the lowest 2 quiz scores will be dropped.
- These quizzes represent 10% of the overall course grade.
- You will be able to use your textbook, notes, and a calculator.

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> “The only place success comes before work is in the dictionary.”

~Vince Lombardi
“In the natural sciences, and particularly in chemistry, generalities must come after the detailed knowledge of each fact and not before it.”

~Joseph-Louis Gay-Lussac

Grading Scale
Grades will tentatively be assigned on a 90/80/70/60 scale, but may be adjusted based upon my evaluation of the overall class performance. Attendance, class participation, and initiative will be considered for borderline grades. Grades will be posted on Blackboard and weighted as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 midterm exams</td>
<td>50% (16 2/3% per exam)</td>
</tr>
<tr>
<td>In-class quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>20%*</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%**</td>
</tr>
</tbody>
</table>

*Only your cumulative homework score will be posted on Canvas.
**The OFFICIAL grade book is on my computer (in case of mistakes on Canvas).

Course Topics
- Chapter 10 – Gases
- Chapter 11 – Liquids and Intermolecular Forces
- Chapter 12 – Solids and Modern Materials (including Chapter 9.7-9.8: Molecular Orbital Theory)
- Chapter 13 – Properties of Solutions
- Chapter 14 – Chemical Kinetics
- Chapter 15 – Chemical Equilibrium
- Chapter 16 – Acid-Base Equilibria
- Chapter 17 – Additional Aspects of Aqueous Equilibria
- Chapter 19 – Chemical Thermodynamics
- Chapter 20 – Electrochemistry
- Chapter 21 – Nuclear Chemistry

University Policies and Information That Must Appear in Each Course Syllabus

UT Tyler Honor Code
Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Students Rights and Responsibilities
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: [http://www.uttler.edu/wellness/rightsresponsibilities.php](http://www.uttler.edu/wellness/rightsresponsibilities.php)

Campus Carry
We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at [http://www.uttler.edu/about/campus-carry/index.php](http://www.uttler.edu/about/campus-carry/index.php)

UT Tyler a Tobacco-Free University
All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.
There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit [http://www.uttler.edu/tobacco-free](http://www.uttler.edu/tobacco-free).

UT Tyler Resources for Students
- [UT Tyler Writing Center](903.565.5995), writingcenter@uttler.edu
- [UT Tyler Tutoring Center](903.565.5964), tutoring@uttler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- [UT Tyler Counseling Center](903.566.7254)
Grade Replacement/Forgiveness and Census Date Policies
Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttler.edu/registrar. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:
- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for those after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W”grade)
- Being reinstated or re-enrolled in classes after having dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy
Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date [See Academic Calendar for the specific date].

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services
In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the new Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.uttler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Student Standards of Academic Conduct
Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. “Cheating” includes, but is not limited to:
- copying from another student’s test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes”. The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or in part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, homework solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.

iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.