The University of Texas at Tyler

CHEM 1312.401/D401
General Chemistry 2—Dr. Smee
RBN 3035 from 9 am—10:40 am

Syllabus for Summer II 2023

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Contact Information

Instructor:
Dr. Jason Smee

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- Office: RBS 3030
- Office hour help times:
  - M-F, 11 am to noon and by appointment

"Chemistry has not been tried and found lacking. It has been found difficult and left untried."

~Dr. Jason Smee

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 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).

Additional Learning Outcomes

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

Important Dates

The course meets M—F from 9-10:40 am from July 3rd until August 4th in RBN 3035.
Weekly mastery checks (due on Fridays before midnight): **July 7, July 14, July 21, and July 28**
Midterm Exams: **July 12, July 19, July 26, August 2;** dates subject to change
July 4th (Tuesday) – no classes held
July 7th (Friday) – Census date; last day to file for grade replacement
July 26th (Wednesday) – Last day to drop or withdraw from courses with a W
August 4th – Final Exam from 9:00 – 11:00 am in RBN 3035.

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!

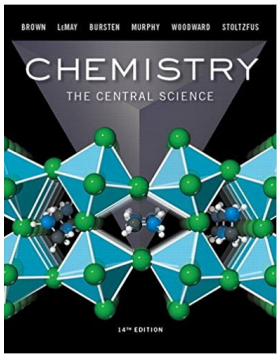
Sometimes even the really smart folks aren't as clever as they think they are!

Required Materials

Scientific calculator capable of exponents and logarithms. Also, I do not know how every single type of calculator works, so please don't ask me. Ask the PASS Tutor! ☺

You CAN use smart/graphing calculators on Midterm Exams! I will bring a LIMITED supply to each exam (5—10 or so). Once they run out you will have to wait for a calculator to become available.

Recommended Materials

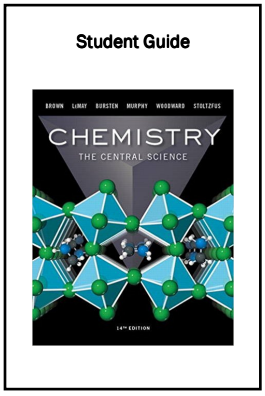


Chemistry: The Central Science, 14th Ed
by Brown, Lemay, and Bursten

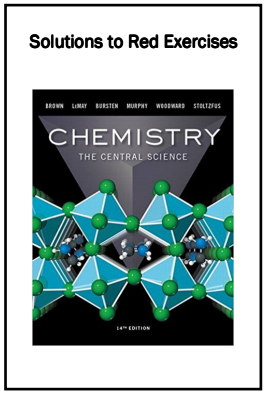
Textbook options

- hardcover ISBN: 9780134414232
- 3-ring binder ISBN: 9780134555638
- e-book ISBN: 9780134554570

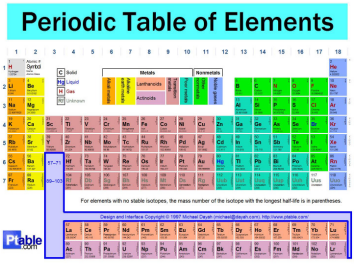
(Note: The 13th edition of the textbook is fine. The only significant changes were in the Gen Chem 1 material.)



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 M—F each week beginning July 3rd and concluding on August 5th. (July 4th is a holiday, we will not have class that day.)

Course Requirements (Cont.)

- 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 25 from 11:00 am—1:00 pm).
- The **last day to withdraw from the course with a "W" is Wednesday, July 26th.** 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 the midterm exams***, 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) available on CHEM 1312 Toolkit site (links to enroll in the toolkits are at the bottom of the main Canvas page).
- If you get behind, ***do not be afraid to get help***! Take advantage of PASS tutoring, UpSwing's tutoring services, my office hours/help sessions, and/or tutors.

Online Content: Canvas

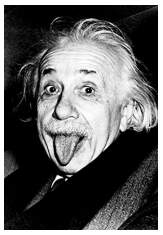
Outside of class. I will communicate with you through primarily through Canvas. I will post

- lecture notes
- mastery checks
- homework
- dates for exams and review sessions as well as homework due dates
- links to toolkit 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.

canvas
BY INSTRUCTURE

You are automatically enrolled in all classes you are registered in. Not all instructors use the Canvas, but the course will still appear on your home page.



"Do not worry about your difficulties in mathematics. I assure you mine are greater."

~Albert Einstein (1879-1955)

Upswing is a **FREE** 24/7 online tutoring service!

"Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do."

~ Pele (1940-2022)

- Homework counts for 25% of the course. It can make or break your grade.
- Don't put off homework until the due date. The class moves too quickly during the summer to put things off and then try and catch up.
- Homework will generally be due before the exam, however, exceptions may be made depending on the circumstances.
- I have posted practice questions for each chapter on Canvas.
- Study **every** day. The day of/night before the exam is a bad time to start. ☹

Online Homework (25% of Total Grade)

- **Homework will be assigned through Canvas. We do not use online homework in the summer.**
- Each Chapter homework assignment will have 10 questions which will be some combination of multiple choice and short answer/calculation questions.
- You will have 5 attempts at each assignment. Canvas will keep your highest score. You will not be able to see the correct answers until after your last attempt.
- The problems you have on each attempt may or may not be the same.
- I am relying on the honor code to not share answers to the homework. If you cannot do well on the homework by yourself, then you will probably struggle on the exams.

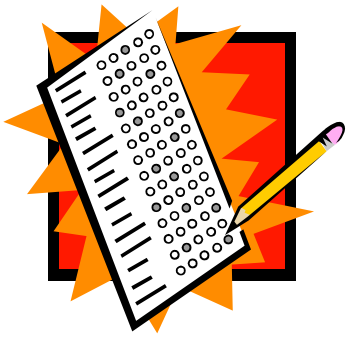
Mastery Checks (10% of Total Grade)

- Each Friday of the first 4 weeks I will post a mastery check over the week's material on Canvas.
- Each mastery check will be due by midnight on the same day.
- These mastery checks are given to encourage you to look back at all the week's material. Studies show that the more you have to recall something, the easier it is to recall.

Mastery Check ☑

Midterm Exams (40% of Total Grade)

- **Tentative midterm exam dates: July 12, July 19, July 26, August 2 (all on Wednesdays)**
- 2-3 day's notice will be given prior to the exam. The exams will be 26 multiple-choice and 2 short-answer questions. They cover material from the lecture and homework assignments.
- Each multiple choice question is worth 3.5 points and the two partial credit for a total of 105 points. Your score will be taken out of 100 so it is possible to get over 100 on the midterm exams.
- You are required to bring a pencil and a 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.
- The exams will start at 9:00 am and end by 10:10 am. When finished please turn in your exam, scantron, note card, and scratch paper. I will do my best to return everything by the next class.
- I will then lecture for the remainder of the scheduled class time (hopefully with some demos).
- **No late exams will be given after exams are handed back**. If you know you will miss you need to take the exam early, otherwise the final exam can replace the 0 for the missed exam.
- I do sometimes make mistakes (as does the scantron reader). ***If you find a mistake, please see me within 1 week after the exam is returned, otherwise that exam score will be considered 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.***



Midterm Exam Grade Replacement

- I will ***replace*** your lowest midterm 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 grades will be replaced.)
- Homework grades will not be replaced!
- Canvas does not have a good way to do this exam replacement so this will be determined using the Excel spreadsheet file on my desktop computer.
- If you have questions about this policy, please ask.

Final Exam (25% of Total Grade)

- The final examination will be given on (and only on) **Friday, August 4th, from 9:00 – 11:00 am in RBN 3035**. 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! This will be an ONLINE exam.
- The final examination is a nationally standardized exam written by the American Chemical Society and is comprehensive over **both Gen Chem 1 and Gen Chem 2** (70 multiple-choice questions). The questions are not especially hard, but there are A LOT of them.
- Before you totally freak out, understand that 1) we will be covering much of Gen Chem 1 material again in more detail; and 2) there will be a significant curve on the exam because standardized tests do not fit neatly into the 90-80-70 scale. Don't panic!!!
- A study guide to help you prepare for the final exam can be purchased from your friendly neighborhood instructor. :)

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 are weighted as follows:

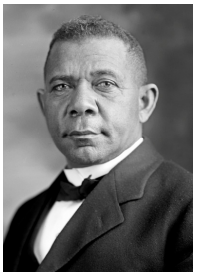
Online Homework	25%
Mastery Checks	10%
Midterm Exams	40% (10% per exam)
Final Exam	25%
Total	**100%***

*The OFFICIAL grade book is on my computer (in case of mistakes on Canvas).

Attendance

- Attendance will be taken each class with a sign-in sheet that will be passed around towards the middle/end of class.
- While not a part of the formal course grade, attendance will be taken into consideration for borderline cases when final grades are determined.

- Don't brain dump after each exam. The material builds on itself and gets used over and over again.
- If you will miss an exam, please let me know as soon as possible!
- You must take the final exam to pass the class!
- Unless it's truly necessary, it's not a good idea to an exam and rely on the final to help you out.



"Success is to be measured not so much by the position that one has reached in life as by the obstacles which he has overcome."

~Booker T. Washington

"Science, for me, gives a partial explanation for life. In so far as it goes, it is based on fact, experience and experiment."

~Rosalind Franklin (chemist who helped determine the helical structure of DNA)

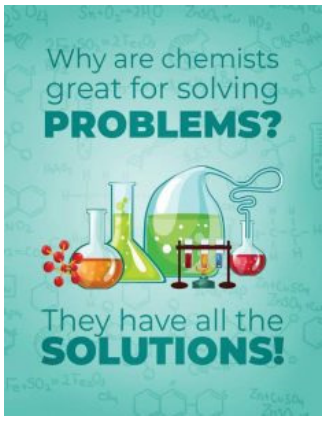
"Ask for help. Not because you are weak, but because you want to remain strong"

~Les Brown

(American motivational speaker)

Course Topics

- Chapter 10 – Gases
- Chapter 11 – Liquids and Intermolecular Forces
- Chapter 12 – Solids and Modern Materials
- 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 (time permitting)



Email Policy

Contrary to popular thought, we instructors don't live in our offices, we ***do*** have lives outside of school, and we don't stare at our computers or phones waiting for student emails (most of the time).

- I will try to respond to email regularly throughout normal business hours.
- After hours and on week-ends I will respond as my life activities allow.
- Please don't expect responses to email sent after 10 pm until class the next day.

Student Resources

- Enrollment Services Center (ADM 230) is where you add/change majors, add or drop classes or get financial aid help. (They are very busy during the first couple of weeks of the semester and around the "drop date" so please cut them some slack during those times. We get stressed too!)
- Student Counseling Center (www.uttyler.edu/counseling)
  Dealing with stress/anxiety, improving study skills, time management, etc. (all confidential)
- UT Tyler Student Health and Wellness (www.uttyler.edu/wellness)
  Substance abuse, household violence, good eating habits, etc.
- Academic Success (www.uttyler.edu/success)
  Student Learning Communities (SLC), PASS Tutoring Center, and Upswing 24/7 online tutoring.
- Mathematics Learning Center (RBN 4021)
  Open access computer lab with tutors on duty to assist students enrolled in early-career courses
- The Writing Center (www.uttyler.edu/writingcenter)
  They will help you learn how to ~~right~~ ~~rite~~ write ~~gooder~~ better.
- Student Life (www.uttyler.edu/admissions/studentlife)
  Clubs, Greek system, recreational sports, service opportunities, etc.