

**The last day to audit Chem 160 is Friday, Feb. 5 (audits do not count toward full-time status). The last day to drop Chem 160 is Friday, Apr. 2.*

Lecture: TR, 11:00 am -12:15 pm, 1001 Troxel Hall. Note: Chem160 is an in-person class. Lecture attendance is highly encouraged.

Instructor: Dr. David Appy

Office: 3754 Gilman Hall

Email: dvappy@iastate.edu

Office Hours: TR, 12:15 pm – 1:15 pm (after lecture), in the alcove on the ground floor of 1001 Troxel, and I will relocate to 3754 Gilman if nobody shows up.

Head TA: Zhuqing “Jenny” Li

Office: 3155 Gilman Hall

Email: zhuqingl@iastate.edu

Office Hours: MW, 2:00-3:00 pm via Webex or by appointment.

* You are highly encouraged to seek help from the Instructor and/or the Head TA.

Course Materials:

1) Textbook - (Required) “Chemistry in Context”, 10th ed., Middlecamp et al. The e-book is automatically purchased through your U-bill through Immediate Access and can be accessed via the “Redshelf Course Mateiral” tab in Canvas. You may opt out of Immediate Access within the first 10 days of class if, for instance, you would rather purchase a hard copy of the text through an external source.

2) Paper and pen/pencil – (Required) For taking notes, quizzes, in-class exercise, etc.

3) Calculator – (Required) Any cheap scientific ($\ln x$, $\log x$, 10^x , e^x , and y^x functions) calculator. No graphing calculators or calculators with extensive programmable memory. Texas Instruments makes good, cheap calculators (eg. TI-30Xa), which can be found at the campus bookstore, Target, Walmart, Amazon, etc. (~\$10)

Canvas will serve as our official electronic course interface. Please check Canvas often for important announcements, course materials, and grade information. Visit www.canvas.iastate.edu

Lecture Capture:

Lectures will be recorded automatically and posted to Canvas (both screens + audio). However, attending lecture in person is highly encouraged. Students who do not attend lecture typically struggle in the course.

Laptop and cell phone policy:

NO laptops, cell phones, or other electronics may be used in class unless specified by the instructor. Tablets may be used to take notes as long as they are flat on the desk and not used for media purposes.

Grading Structure:

Exams – 3 midterm exams (75 pts each) and 1 semi-cumulative final exam (100 points)

Chapter Worksheets ~ 6 worksheets @ 30 pts each = 180 pts

Total = 505 pts (may vary)

Grading Scale:

*The final grading scale is entirely at the instructor’s discretion, but will look approximately like this:

A ≥ 85% A- ≥ 82% B+ ≥ 79% B ≥ 74% B- ≥ 71% C+ ≥ 68%

C ≥ 63% C- ≥ 59% D+ ≥ 56% D ≥ 53% D- ≥ 50% F < 50%

*If there is an error in the gradebook (i.e. missing or incorrect score), contact the Head TA as soon as possible. Otherwise, **DO NOT CONTACT THE INSTRUCTORS ABOUT GRADES.**

Turning in Assignments:

Worksheets will be turned in electronically in pdf form in Canvas. Any method of converting your worksheet into pdf is acceptable, including the relatively easy Adobe Scan app (available free online).

Late Assignments:

Assignments may be turned in up to 24 hours late for a penalty of 50% (of points earned). After 24 hours, it's a zero. Tip: Do not wait until the last minute to turn in assignments, as technical difficulties are always completely foreseeable. No exceptions.

Missing Lecture:

You do not need to inform the instructor that you will miss lecture. We do not take attendance. You should still attend all lectures, if possible.

Missing Exams:

If you have to miss an exam, please contact the Head TA as far in advance as possible (preferably > 1 week in advance). Exams can be given early, but not late.

If you are quarantined for COVID or have other legitimate excuse (see below), the Head TA can proctor your exam remotely via Webex. Contact the Head TA as soon as possible if that is the case.

Valid reasons for rescheduling an exam or taking it virtually include COVID-related quarantine, general medical emergencies, family emergencies (eg. funeral), and military deployment (in which case contact the Instructor for full range of options). **Work-related or vacation-related reasons are NOT VALID. DO NOT buy plane tickets which conflict with Final Exams.**

Seating Chart:

Related to the above, we will keep a seating chart for contact tracing purposes.

Goal: This course is designed to give you a feel for the role that chemistry plays in society. The incorporation of economic, social, and political issues are an integral part of this course; these disciplines affect chemistry and chemistry affects them. A basic level of understanding of chemical concepts and manipulations will arise from completion of this course. The course emphasizes conceptual understanding of chemical ideas, but will include some mathematics as well, because quantitative reasoning is an important part of how chemistry explains the world around us.

Tips for success: Sleep at night and eat breakfast in the morning. Do the assigned reading and come to class ready to absorb and participate. Pay attention in class and strive to learn as much as you can. Address any points of confusion as soon as possible (for instance, by asking questions, referring back to the textbook, coming to office hours, etc.). Schedule study time in manageable chunks throughout the week, and DO NOT CRAM.

Academic Dishonesty

The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office. The penalty for being found responsible for academic misconduct will be a zero on the assignment, at least, and may result in an F in the course for egregious instances of cheating, at the instructor's discretion.

Note: For remote test-takers, consulting any outside source, eg. Google, during the exam is considered Academic Misconduct. Assume that any use of Chegg is Academic Misconduct.

Free Expression:

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Accessibility Statement

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

****Present accommodation requests to the instructor at least one week before the exam for which you are requesting accommodations.**

Prep Week (formerly Dead Week)

This class follows the Iowa State University Prep Week policy as noted in section 10.6.4 of the Faculty Handbook.

COVID-19 health and safety requirements

Students are responsible for abiding by the university's [COVID-19 health and safety expectations](#). All students attending this class in-person are required to follow university [policy](#) regarding health, safety, and face coverings:

- wear a cloth face covering in all university classrooms, laboratories, studios, and other in-person instructional settings and learning spaces. Cloth face coverings are additionally required to be worn indoors in all university buildings, and outdoors when other people are or may be present where physical distancing of at least 6 feet from others is not possible. Students with a documented health or medical condition that prevents them from wearing a cloth face covering should consult with [Student Accessibility Services](#) in the Dean of Students Office.
- ensure that the cloth face covering completely covers the nose and mouth and fits snugly against the side of the face.
- practice physical distancing to the extent possible.
- assist in maintaining a clean and sanitary environment.
- not attend class if you are sick or experiencing symptoms of COVID-19.
- not attend class if you have been told to self-isolate or quarantine by a health official.
- follow the instructor's guidance with respect to these requirements. Failure to comply constitutes disruptive classroom conduct. Faculty and teaching assistants have the authority to deny a non-compliant student entry into a classroom, laboratory, studio, conference room, office, or other learning space.

These requirements extend outside of scheduled class time, including coursework in laboratories, studios, and other learning spaces, and to field trips. These requirements may be revised by the university at any time during the semester.

In accordance with university policy, instructors may use a face shield while they are teaching as long as they are able to maintain 8 feet of physical distance between themselves and students during the entire instructional period. Some form of face covering must be worn at all times in learning spaces regardless of the amount of physical distancing.

Faculty may refer matters of non-compliance to the Dean of Students Office for disciplinary action, which can include restrictions on access to, or use of, university facilities; removal from university housing; required transition to remote-only instruction; involuntary disenrollment from one or more in-person courses; and other such measures as necessary to promote the health and safety of campus.

It is important for students to recognize their responsibility in promoting the health and safety of the Iowa State University community, through actions both on- and off-campus. The university's faculty asks that you personally demonstrate a commitment to our Cyclones Care campaign. Iowa State University's faculty support the Cyclones Care campaign and ask you personally to demonstrate a commitment to our campaign. Your dedication and contribution to the campaign will also protect your family, classmates, and friends, as well as their friends and families. Our best opportunity for a successful fall semester with in-person learning and extramural activities requires all of us to collaborate and fully participate in the Cyclones Care campaign.

Discrimination and Harassment

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. Veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email eooffice@iastate.edu

Religious Accommodation

Iowa State University welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. In all cases, you must put your request in writing. The instructor will review the situation in an effort to provide a reasonable accommodation when possible to do so without fundamentally altering a course. For students, you should first discuss the conflict and your requested accommodation with your professor at the earliest possible time. You or your instructor may also seek assistance from the Dean of Students Office at 515-294-1020 or the Office of Equal Opportunity at 515-294-7612.

Contact Information for Academic Issues

If you are experiencing, or have experienced, a problem with any of the above statements, email academicissues@iastate.edu

(Important note to faculty: The email address for contact information is monitored and answered through the Office of the Senior Vice President and Provost)

Tentative Schedule for Chem 160 (Spring 2021) – **WORKING DOCUMENT**

Week	Dates	Topics/Events	Preparatory Reading
1	T 1/26	Introductions/syllabus.	Syllabus

		Discussion – Intro to Cost/Benefit Analysis - Comparing Apples and Oranges - Speed Limits	
	R 1/28	Cont. Discussion – Cost/Benefit Analysis and Week 1 Article (right) Video – Andrew Cuomo on COVID – Cost/Benefit analysis https://www.youtube.com/watch?v=WAcGDcswb6A Begin Discussion – Quantification (with crowd size) Quantification Activity	Week 1 Article - The cost of a human life, statistically speaking: http://www.theglobalist.com/the-cost-of-a-human-life-statistically-speaking/ Just for fun (optional): Value of various body parts: http://projects.propublica.org/graphics/workers-compensation-benefits-by-limb
2	T 2/2	<i>Demo: Oscillating Clock Reaction</i> Media Bias (briefly): https://mediabiasfactcheck.com/ http://www.adfontesmedia.com/wp-content/uploads/2018/01/Media-Bias-Chart_Version-3.1_Watermark-min.jpg Mention Week 2 article (please note, anything in the reading is fair game on exams) The importance of Units in quantification – <u>Unit Conversions</u> (big topic), including review of common metric prefixes and significant figures Distribute Ch. 0 Worksheet	Week 2 Article: https://www.simscale.com/blog/2017/12/nasa-mars-climate-orbiter-metric/
	R 2/4	Ch. 1 Lecture: Elements and the periodic table. Classification of matter.	Text 1.1 – 1.5 *Skim the math stuff. I will let you know which math topics are important (eg. Unit Conversions, Metric prefixes)
3	T 2/9	Ch. 0 Worksheet Due in Canvas by 5:00 pm CDT Ch. 1 cont. Lecture: Continue elements and the periodic table. Classification of matter. Silicon purification for electronics.	Text 1.6 – 1.8

		<i>Demo: Combustion of Hydrogen</i>	
	R 2/11	Ch. 1 cont. Lecture – Lifecycle of electronic devices. Discuss Week 3 Article Distribute Ch. 1 Worksheet	Week 3 Article – <u>TBD</u> Text 1.9-1.10
4	T 2/16	Ch. 1 Worksheet Due in Canvas (5:00 pm CDT) Flex Day (cleaning up loose ends)	Week 4 Article – TBD (consider Rare Earth article)
	R 2/18	Exam 1 in class	
5	T 2/23	Ch. 2 – The air we breathe Lecture: Atmospheric pressure and composition <i>Demo: Crushing a can with the atmosphere</i>	Text: 2.1-2.5
	R 2/25	Ch. 2 cont. Lecture: Naming compounds (briefly) and intro to Air Pollution	Text: 2.6-2.10 Week 5 Article – How Big Oil Misled the Public Into Believing Plastic Would Be Recycled https://www.npr.org/2020/09/11/897692090/how-big-oil-misled-the-public-into-believing-plastic-would-be-recycled
6	T 3/2	Ch. 2 cont. Lecture: Air pollution, cont.	Text: 2.11-2.16
	R 3/4	Flex Day <i>Demo: Alkali metals in water</i> Ch. 2 Worksheet available.	Week 6 Article – 5.5 Million Deaths Annually Due to Air Pollution http://www.bbc.com/news/science-environment-35568249
7	T 3/9	Ch. 3 – Radiation from the Sun Lecture: Light and the electromagnetic spectrum. <i>Demo: atomic spectra</i>	Text: 3.1-3.5

	R 3/11	Ch.2 Worksheet due in Canvas by 5:00 pm. Ch. 3 – Radiation from the Sun Lecture: UV radiation, drawing <u>Lewis Structures</u> <i>Demo: Flame test</i>	Text: 3.6-3.10 (no article this week)
8	T 3/16	Ch. 3 cont. Lecture: Stratospheric ozone layer, chlorofluorocarbons Ch.3 Worksheet Available	Text: 3.11-3.12
	R 3/18	Ch.3 Worksheet Due in Canvas by 5:00 pm Flex Day	Articles: Two Biographies: Thomas Midgley Jr. https://en.wikipedia.org/wiki/Thomas_Midgley_Jr. Clair Cameron Patterson https://en.wikipedia.org/wiki/Clair_Cameron_Patterson
9	T 3/23	Exam 2	
	R 3/25	Ch. 4 – Climate Change (IMPORTANT!) Lecture: intro to climate change and the carbon cycle	Text: 4.1-4.5 *note – We may treat the nomenclature section of 4.1 very lightly, and skip the math in 4.2-4.4 *You don't need to read the following, but we will mention them in class: Global warming prediction from 1896: http://www.rsc.org/images/Arrhenius1896_tcm18-173546.pdf Global warming prediction from 1912: http://www.snopes.com/1912-article-global-warming/
10	T 3/30	Ch. 4 cont. The greenhouse effect and intro to molecular geometry <i>Demo: CO2 bubbler</i>	4.6-4.7 Cool visual: https://www.nytimes.com/2016/12/16/science/carbon-dioxide-satellite.html?smid=fb-share&r=0

	R 4/1	Ch. 4 cont. Molecular geometry and the greenhouse effect, cont.	4.8
11	T 4/6	Ch. 4 cont. Molecular geometry and the greenhouse effect, cont.	4.9
	R 4/8	Ch. 4 cont. Measuring the past and predicting the future. Radiative forcings and climate models. Ch.4 Worksheet available	4.10-4.12 Just Browse: IPCC Report on Climate Change 2014: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf
12	T 4/13	Flex Day Big discussion: Article (right) Ch.4 Worksheet Due in Canvas, 5:00 pm	Article: How Exxon shaped the climate debate: http://www.pbs.org/wgbh/frontline/article/st-eve-coll-how-exxon-shaped-the-climate-debate/?utm_medium=N/A&utm_campaign=N/A&linkId=33325476 Optional: Exxon knowing about climate change early: https://www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/
	R 4/15	Exam 3	
13	T 4/20	Ch. 7 – Energy From Alternative Sources Overview of Energy Resources	Text: 7.1-7.2
	R 4/22	Ch. 7 cont. Introduction to nuclear power <i>Demo – ethanol cannon</i>	Text: 7.3-7.5

14	T 4/27	Ch. 7 cont. Nuclear power cont. Nuclear disasters, death toll, and cost/benefit of nuclear versus fossil fuels Ch. 7 Worksheet available	Text: 7.6-7.8
	R 4/29	Ch. 7 Worksheet Due (5 pm in Canvas) Flex Day Ch. 7 cont. <i>Demo – Radioactive Minerals (bring any items from home you think might be radioactive)</i>	Text 7.9-7.10
FINAL EXAM – Tuesday, May 4 at 9:45 am in 1001 Troxel			

*ISU Final examinations policy will be followed absolutely (<http://www.registrar.iastate.edu/exams/>).