CHEM 12400 1, PHSC 12400 1 - The Chemistry of Big Problems - Instructor(s): Bozhi Tian

Project Title: **College Course Feedback - Autumn 2023**

Number Enrolled: **48**
Number of Responses: **24**

Report Comments

Opinions expressed in these evaluations are those of students enrolled in the specific course and do not represent the University.

Creation Date: **Friday, February 2, 2024**

What are the most important things that you learned in this course? Please reflect on the knowledge and skills you gained.

Comments
Various innovative applications of chemistry, such is in nanomedicine through mRNA vaccines and organ on a chip systems, in biotechnology such as transistor and memristor devices, and more (we covered many different niches).
I learned the chemistry behind many innovative fields. We didn't go too deep into anything, but we covered a wide variety of topics, which in my opinion would be better reversed.
Mainly chemistry applied to medicine and biotechnology, some things about chemistry applied to electronic and materials.
Lots of intricacies about biochemistry in day–to–day life and other small elements I hadn't considered. Forced me to think in a different way than I usually do and engage with topics I hadn't before.
This course teaches you a little bit about how a lot of things work, and most are quite interesting! But in terms of skills I don't think I gained all that much.
I learned about chemistry in many different areas.
I learned a lot about random cutting–edge applications of chemistry, from biotech to transistors to 3D printing.
I learned about lots of really interesting ways that chemical concepts can be applied to solve real–world problems.
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How chemistry applies
the chemistry behind new molecular technologies
This is a course where you get to learn about the emerging applications of chemistry without having to take years of chemistry classes. You get to jump straight ahead to the exciting part where you learn about how chemistry is used to innovate in many industries including food, healthcare, energy, and more. The topics we covered are interesting and I feel I gained the knowledge and skills required to understand a lot of emerging technologies which utilize chemistry.
I consider every topic we covered in this class to be both fascinating and important. These include tissue engineering, wound healing, nanomedicine, memristive computing, advanced imaging, synthetic biology, sustainability, advanced battery chemistry, 3D printing and bioprinting, etc. All of the fields are relevant, modern, and developing as we speak. An important skill I gained from this class was learning how to search for complex information and break it down into understandable bits. Wikipedia, Nature journal, and other scientific papers will become your best friend if you care about learning more than what's on the lecture slides. Reading abstracts/summaries really helps.
i learned the applications of chemistry in all aspects of life
The most important things I learned are how to apply the concepts of chemistry to technology, engineering, and sustainability.
I learned about a variety of different topics including the chemistry of lithium ion batteries, filtration methods, 3D printing, etc.
tissue engineering, biotechnology, synthetic materials
I learned to read chemistry paper and understand the real–world implication behind a lot of chemistry concepts.
The applications of chemistry and physical science have helped to shape solutions to bigger problems outside the realm of what I have previously thought of.
That I grossly misevaluated this class.

Describe how aspects of this course (lectures, discussions, labs, assignments, etc.) contributed to your learning.

Comments
Lectures were helpful, but also often tangential. Problem sets were only somewhat related to content covered in lectures, but often required additional research. Brian's office hours were very helpful.
The lectures were pretty fast–paced and included a lot of information. If you were able to keep up, you learned a lot of cool stuff.
Lectures were not helpful because of the technical language. Homework was useful to know what was actually part of the course and what I should focus on.
Lectures were really helpful they just are also super super dense, so you need to keep up with notes in class because looking at the slideshows after won't give you as much of the depth of info. Assignments were also helpful, they were pretty hard, but doable with research and making use of class notes/TAs. Also the grading was forgiving enough that you were basically just encouraged to try your best with the homeworks to apply concepts we had talked about in class even if you had to guess a little bit. Professor and TAs really just wanted to see you learn and apply the concepts we learned, so as long as you had reasoning to back up your statements, you did fine.
The lectures are all pretty interesting and Prof. Tian does a really good job of taking complicated topics and synthesizing the surface–level information needed to generally understand the science at play. It's sort of a survey of some of the various ways chemistry is being used in our world today and will be used in the near future.
I found the lectures to be interesting and certainly heightened my interest in some of the fields that we discussed.
The lectures are where I learned all of the information and there were no labs.
The lectures were always pretty engaging and useful to the homework, which was never that bad.
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Lectures, assignments helped clarify things
lectures and assignments were helpful
The lectures were well organized and very beneficial if you took good notes on what Professor Tian was saying. The lecture material covers all of the questions on the homework but a little bit of outside research (articles, videos, etc) is helpful on the assignments given that the lectures are simplified to make the concepts understandable (helpful for me since I didn't have a chemistry background). The office hours for this class were great and I always left with a better understanding of the content. Even if I didn't have questions, I still found office hours to be informative and enjoyable.
Lectures and office hours contributed most to my learning. Professor Tian did an excellent job making the expectations for each lecture clear (we didn't have to learn any of the names of the complicated polymers or the chemical reactions behind the processes). He also had a talent for making complicated things simple. Take the words "gold nanoparticle–based colorimetric assays for the detection of COVID–19." In a rough approximation, what this means is that we can use gold nanoparticles to help detect COVID–19 viruses; the nanoparticles cause the viruses to aggregate, and the nanoparticles change color upon the aggregation. We can then visually see this change to know the virus is present.
lectures were really helpful in understanding the chemistry of different applications
Lectures contributed to all of my learning, while assignments simply reiterated lectures or had us design new applications.
The lectures were great ways to learn the content because the professor is great at explaining concepts.
lectures were great
The lectures were very informative and interesting.
Lectures are mainly the format of this class. The lab portion is no longer attached which was a BIG plus.
Oof.

Please respond to the following:

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
This course challenged me intellectually.	4.48	5.00	0.00%	4.35%	8.70%	21.74%	65.22%
I understood the purpose of this course and what I was expected to gain from it.	3.43	4.00	13.04%	13.04%	21.74%	21.74%	30.43%
I understood the standards for success on assignments.	3.70	4.00	8.70%	8.70%	30.43%	8.70%	43.48%
Class time enhanced my ability to succeed in graded assignments.	4.09	4.00	8.70%	0.00%	8.70%	39.13%	43.48%
I received feedback on my performance that helped me improve my subsequent work.	3.87	4.00	4.35%	8.70%	26.09%	17.39%	43.48%
My work was evaluated fairly.	4.04	4.00	4.35%	4.35%	21.74%	21.74%	47.83%
I felt respected in this class.	4.57	5.00	0.00%	0.00%	8.70%	26.09%	65.22%
Overall, this was an excellent course.	3.87	4.00	4.35%	8.70%	17.39%	34.78%	34.78%

Additional comments about the course:

Comments
The first homework was extremely hard but then the TAs started making them better/easier since they noticed how impossible it felt.
Overall was really interesting again since it was on topics that as a non–STEM major I hadn't really interacted with before.
Sometimes the lectures went too quickly but the professor is super sweet.
.
interesting class, but the standards to earn an A were unclear at times
Don't be discouraged by the first lecture. The class is really meant for people without a background in chemistry. If you attend a few office hour sessions and take good notes during lectures, you will find that you are gaining an understanding of many cool emerging technologies. I never took an actual chemistry class before and was able to do fine.
I don't think work was graded "fairly" in the traditional sense of the word. I actually think that it was graded far too leniently. Granted, I'm not a chemistry major (no one in my section was a STEM major), so grading us easily on complex chemistry topics might be considered "fair." I would like to say that Professor Tian and my two TAs (Brian Wang and Vanessa Tian) were incredible. They all made accommodations to help us learn; for example, Professor Tian moved his office hours from Thursday to Sunday because most of the class couldn't make it on Thursday. They all responded to our feedback as well, and they used it to actually shape how they made the exams and our video project. I would highly recommend this course to anyone because the topics covered were extremely fascinating, and Professor Tian is a great lecturer.
I wish it was revealed earlier that homework answers would be practically given away at office hours as long as you asked.
prof tian is amazing!
An amazing and empathetic STEM professor, WHICH IS RARE to find around here. Prof. Tian cares immensely for his students, to the point that he feels like a fun uncle or dad. Highly recommend this class for non–STEM majors trying to complete the core.

I would recommend this course to:

	No	Yes
Highly-motivated and well-prepared students	13.04%	86.96%
Anyone interested in the topic	13.64%	86.36%

Thinking about your time in the class, what aspect of the instructor's teaching contributed most to your learning?

Comments
He went into a lot of detail about each topic, and I appreciated his genuine enthusiasm.
Class is basically just a lecture, so lecture was what contributed most to my learning.
Lectures and the homeworks.
Prof. Tian really worked to make sure we understood the concepts he was describing, and took as much time as we needed to get there. He clearly loves teaching people about chemistry, and he is good at finding ways to explain hard concepts in a way people can understand. However, since this is a core class he was never able to get into the specifics of the topics he described, just very surface–level stuff. If he were teaching people who actually understood chemistry, I'm sure he would be a truly fantastic professor.
This professor is very engaging and so kind and helpful when answering questions. He always asked for feedback and listened to the students' requests.
I would say the lectures contributed most to my learning.
He cared a lot about the subject and his passion was evident.
I think the lectures were very consistent and well organized, and I was never too bored in class. The office hours were always useful, and the professor was genuinely concerned with making the course do able and enjoyable. I really liked Professor Tian, and this was genuinely one of my favorite classes this quarter, and I don't even really like chemistry. He was an amazing instructor, and I would 100% take a course with him again.
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Assignments
lecture—you effectively have a UChicago researcher tell you what he thinks are going to be the most impactful molecular technologies of the 21st century
Professor Tian's willingness to answer questions and draw concepts out on the board contributed most to my learning.
Professor Tian's willingness to accommodate his students really helped. He was excellent at breaking down the complex material presented in lectures. He moved office hours to a day that worked better for most of us (or at least the people who cared enough to show up). And he also responded to emails at odd hours, even one that I sent during the start of Thanksgiving Break.
the instructor was really enthusiastic about the class, which made me want to pay attention and learn more
Professor Tian did a good job of explaining concepts in more detail or drawing diagrams when students did not understand.
The lectures
his enthusiasm and knowledge
Professor Tian is so caring in ensuring everyone understands the concepts. He'd update the PPT based on our demands.
His ability to be flexible with the various levels of science in the classroom. he'd give diagrams, draw examples, and conduct several ways to relay a message to the class.

What could the instructor modify to help you learn more?

Comments
He would constantly say that certain concepts were not required for this course since we are supposedly only expected to understand the big picture of each niche innovation. However, the problem sets and exams would then ask very specific questions, so the overall expectations of what level of detail we needed to know were unclear. Often the level of detail seemed to be a bit much given this is a core class for NON–STEM majors.
Remove all the slides he includes but says are not important/necessary and spend more time explaining the things that are necessary.
Honestly not much. There was some intense jargon, but if you work and listen enough it's pretty easy to figure out. Again, he just really wants to see you succeed, so isn't super stringent and he is also very clear on what is required to know and what isn't. Key topic breakdown at end of lecture slideshows also really helpful.
Whenever there are problems with the class, he always finds a way to modify things. He consistently asks for feedback and asks for it when it is reasonable, so I can't complain :)
There was so much information condensed into each lecture. Also, there was extra information on the slides in class that we were not expected to learn but caused confusion when it came to study.
Oftentimes the lectures would go over content that wouldn't be required knowledge. These extra pieces of information were interesting, however they sometimes made it difficult to follow exactly what we need to know. Because the class is largely based on scientific literature, it's hard to get around this problem, expect by possibly introducing concepts completely from scratch and going over experiments/applications outside of the concept's literature.
Being clearer and going slower in lectures, because many people including myself were often confused in the class.
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Reduce amount of content covered
focus more on the application rather than technicalities, and lighten the curve
Not much
I don't think anything needs to be changed or should be changed.
I wish Professor Tian focused on a few concepts and went into the details instead of highlighting the vague background of a variety of topics.
Nothing
nothing
Not much!
I wish that we could make points but up for even 0.5 the points.

The Instructor . . .

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Organized the course clearly.	3.83	4.00	4.35%	8.70%	17.39%	39.13%	30.43%	0.00%
Presented lectures that enhanced your understanding.	4.13	4.00	0.00%	8.70%	8.70%	43.48%	39.13%	0.00%
Facilitated discussions that were engaging and useful.	3.80	4.00	0.00%	13.04%	17.39%	30.43%	26.09%	13.04%
Stimulated your interest in the core ideas of the course.	3.96	4.00	4.35%	8.70%	8.70%	43.48%	34.78%	0.00%
Challenged you to learn.	4.30	4.00	0.00%	4.35%	8.70%	39.13%	47.83%	0.00%
Helped you gain significant learning from the course content.	4.30	4.00	0.00%	4.35%	4.35%	47.83%	43.48%	0.00%
Was available and helpful outside of class.	4.50	5.00	0.00%	0.00%	14.29%	19.05%	61.90%	4.76%
Motivated you to think independently.	4.38	5.00	0.00%	4.35%	8.70%	26.09%	52.17%	8.70%
Worked to create an inclusive and welcoming learning environment.	4.48	5.00	0.00%	0.00%	13.04%	21.74%	56.52%	8.70%
Overall, this instructor made a significant contribution to your learning.	4.17	4.00	0.00%	8.70%	13.04%	30.43%	47.83%	0.00%

Please include the name of the TA/CA/Intern you are evaluating. What aspects of the TA's teaching contributed most to your learning? What could the TA modify to help you learn more? Please include any additional feedback for the TA/CA/Intern.

Comments
Brian and Vanessa
Brian Wang. He would help us with understanding the homework and concepts from class during his office hours. He would draw on the chalkboard and try his best to explain things. I think he did the best he could do.
Vanessa Tian and Brian Yang. Really liked them both, they were really helpful and contributed a lot.
Vanessa Tian and Brian Wang – I didn't interact much with them, but the two of them were helpful when it counted – they both responded quickly and clearly to emails.
Brian and Vanessa were great. Their office hours were a lifesaver and they were open about their grading and writing of the homework.
Vanessa Tian and Brian I attended all their office hours. They were super easy to reach and clarified everything well.
Brian Wang + Vanessa Tian, and both had helpful office hours, but wish they graded assignments faster
Brian and Vanessa were the TAs for the course. I mostly went to Brian's office hours due to my schedule and he was always willing to answer questions while turning office hours into a fun learning environment. I attended Vanessa's office hours a few times and found them to be equally helpful. Both TAs made me feel welcome in the class and helped me to understand that I can succeed even without a background in chemistry.
Brian Wang, Vanessa Tian. The TAs did not actually teach during the lectures, but their office hours were always useful. Both showed a strong propensity to answer questions, even specific ones about the homework, and they helped advance my knowledge beyond the requirements of the lecture. They also moved office hours and held extra sessions to accommodate students. They also frequently posted announcements on Canvas to keep us up to date, posted answer keys to the homeworks we turned in, and generally went above and beyond. I don't have any suggestions for improvement.
Vanessa and brian were helpful in teaching topics i couldnt understand
Brian Wang and Vanessa Tian were both readily available outside of class to help with homework and exam preparation. The only complaint is that I wish Vanessa's office hours were not in between the due date for the previous homework and the release of the next homework.
Vanessa and Brian
Brian Wang. very helpful during office hours.
Vanessa Tian, Brian Wang
Vanessa and Jonathan are amazing!
Brian and Vanessa

The TA/CA or Intern. . .

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Facilitated discussions that supported your learning.	4.20	5.00	5.88%	0.00%	11.76%	23.53%	47.06%	11.76%
Gave you useful feedback on your work.	4.19	4.00	5.88%	0.00%	5.88%	41.18%	41.18%	5.88%
Stimulated your interest in the core ideas of the class.	4.19	4.50	5.88%	0.00%	11.76%	29.41%	47.06%	5.88%
Challenged you to learn.	4.25	4.50	5.88%	0.00%	5.88%	35.29%	47.06%	5.88%
Helped you succeed in the class.	4.41	5.00	5.56%	0.00%	0.00%	33.33%	55.56%	5.56%
Was available and helpful outside of class.	4.47	5.00	5.56%	0.00%	0.00%	27.78%	61.11%	5.56%
Overall, this individual made a significant contribution to your learning.	4.41	5.00	5.56%	0.00%	0.00%	33.33%	55.56%	5.56%

Other course elements not mentioned above:

Comments
Presentation (3 Minutes)

Is this class a requirement of some sort?

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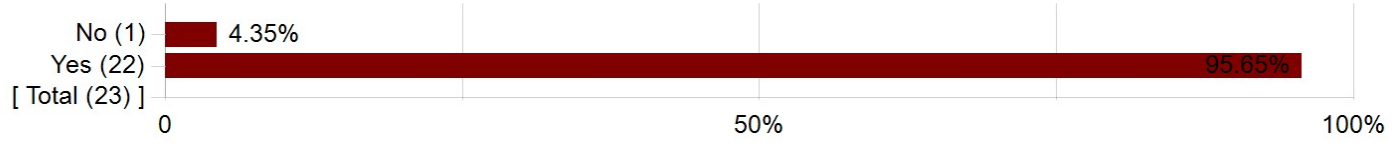

Prior to starting this class, your interest level was?

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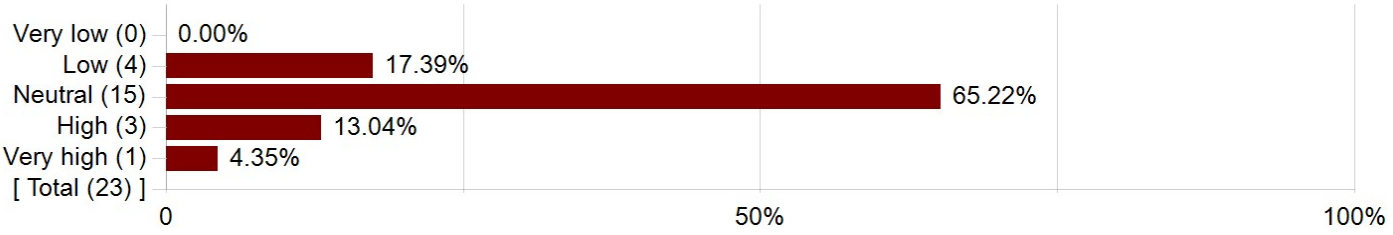
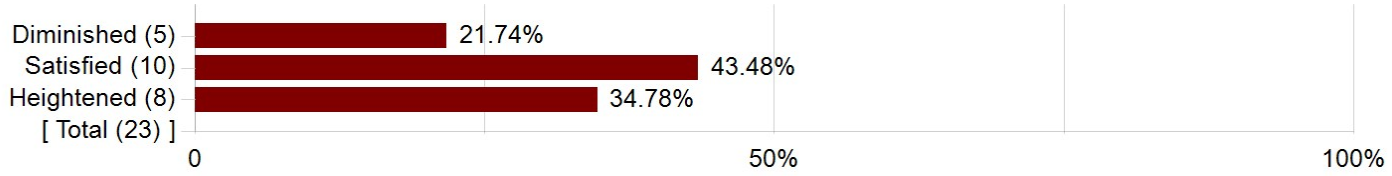
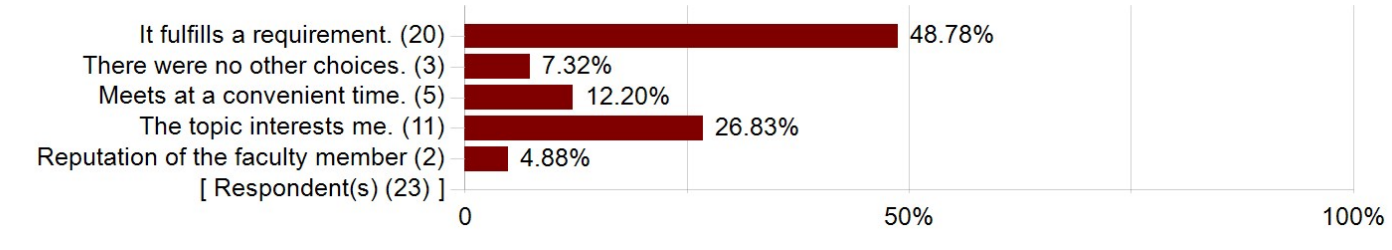


Now that this class is over, your interest is?

Now that this class is over, your interest is?



Why did you choose to take this course? (Select all that apply)



How many hours per week outside of attending required sessions did you spend on this course?

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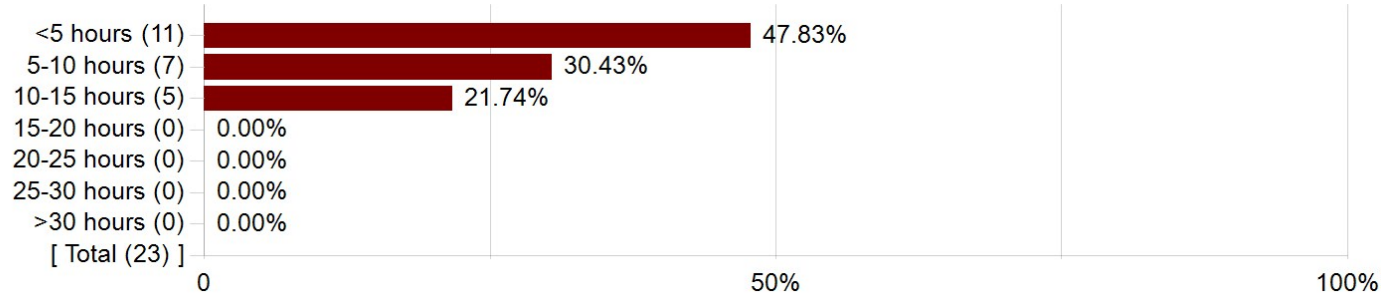
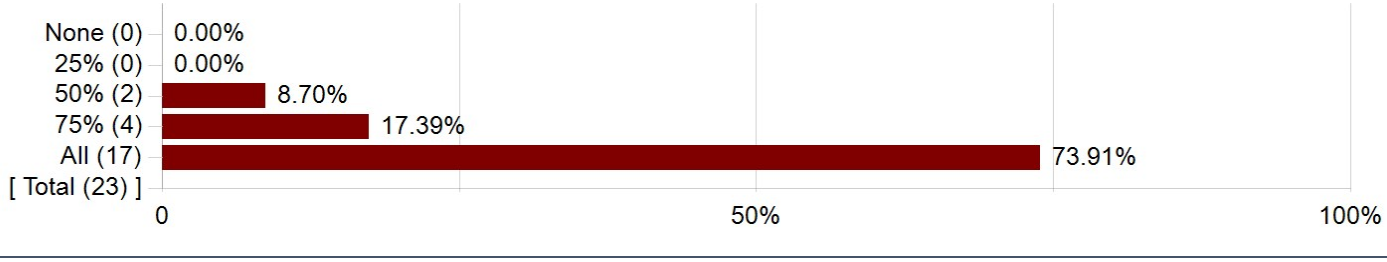


What proportion of classes did you attend?

What proportion of classes did you attend?



Please comment on the level of difficulty of the course relative to your background and experience.

Comments
I took AP Chemistry in high school, but this course was nothing like that. It was more about being able to understand complex ideas and current innovations in chemistry, which was challenging especially when expectations for the level of detail expected from us was unclear.
Homework became pretty doable, the tests require decent studying. I haven't done the final project yet, but it involves reading and understanding a real chemistry paper.
Very challenging without any experience on Chemistry or Biology. Homework is manageable but lectures are not helpful at all.
I took AP Chemistry but that was three years ago now, so I barely remember it. With that very baseline remaining knowledge, I could understand everything. Definitely didn't reach 100% clarity on most topics because there were a lot of intricacies, but had a good enough understanding to get through and be able to connect everything/understand the purpose of everything we learned about. Doable as non–stem major, I really enjoyed this class and would take it again.
The course itself was not very difficult for me personally, although I can imagine that if I spaced out for ten minutes I would have no idea what was going on. If you pay close attention in the lectures and ask people in the class and the TAs for help (or just ask questions to Prof. Tian during the lecture) you should be able to understand everything you need to know.
Even though I had very little chemistry background, I didn't find the concepts very hard to grasp. My main challenges were with the sheer number of things we went over and somewhat inconsistent grading.
Confusing at many times but ok overall
I think it was the proper difficultly for those not majoring in STEM, and the TA's and professor were ready and available to explain things you don't understand.
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fairly challenging, and more challenging than other core courses like global warming or physics for future presidents, but still doable
If you attend the lectures, take notes, and attend a few office hours, the course should be a medium level of difficulty overall. This is coming from someone who had no background in chemistry.
I found the course to be challenging. My highest–level chemistry for this was AP Chemistry, and most of the information I learned from that class was useless. Chemistry of Big Problems doesn't care about stoichiometry, balancing chemical equations, or any of the other monotonous stuff that made me dislike chemistry. Instead, it's about learning advances that have been made in very recent years (even just a year ago!), the materials scientists are experimenting with, and their methods. Because all of this stuff was new to me, I struggled to grasp some of the complex topics, but Professor Tian, Brian, and Vanessa all helped me greatly. Also, the course was easy grade–wise, so even if the topics were challenging, there was never any danger of students getting less than an A– so long as they read the essential question answers and provided at least some reasoning on the assignments/exams. It was really a great class to discover new things without having the pressure of grades. Students who care deeply about learning (not just their easy As) will really enjoy this class.
the course was extremely easy as someone who has never taken chemistry or any science class in high school
This course was not very difficult for someone who has taken AP Chem or any introductory chemistry class.
not too difficult
It is still a bit challenging for people with no chemistry background.
Way harder than listed. Not tailored for non–stem majors. Expected prior bio/chem background.