



GEOS 25600 1, PHSC 11900 1 - Getting Something for Nothing - Instructor(s) - Dorian Abbot

Project Title: **College Course Feedback - Spring 2024**

Number Enrolled: **59**

Number of Responses: **25**

Report Comments

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

Creation Date: **Thursday, July 11, 2024**

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

Comments
We learned to solve Fermi problems – estimate numbers with little to no input data. There were five main topics we covered: Energy and Work, Chemical Energy, Transportation, Astronomy, and Atmosphere. We solved interesting questions with real-world applications, like: what weight would an electric car battery need to be to match the mileage of a car with a gas tank? how much does an airplane with passengers and fuel weigh? what percentage of the US territory would we need to cover with solar cells if we were to power the country exclusively with the sun energy?
This is an excellent prep for market sizing questions during the interviews, and just generally helps you quickly estimate things in any sphere of life. We learned a few neat tricks on how to do estimations when you have no input data, and I really enjoyed the problems which weren't hard, but required you to think creatively.
Estimation strategies, a lot of general facts about the world, and conversion rates. I have actually used some of the facts I learned in my day-to-day life.
Super confusing class, simple lecture-style though. We just go through three questions every class. I've only gotten the entire process correct once and am very nervous I won't be passing this class...
How to estimate really big numbers. Quickly find answers within an order of magnitude. These skill should be useful for interviews and to quickly conceptualize large quantities
Dimensional Analysis, Order of Magnitude Estimation, topics in physics such as mechanics, transportation, astronomy...
Fermi estimation problems
Estimation and fermi problems
I learned how to problem solve and actually apply the equations I know.
Fermi estimations with transportation, chemical energy, work, astronomy, and atmosphere-related quantities.
How to get something from nothing
I gained confidence in the ability to estimate seemingly unknown quantities. I learned various fundamental questions in different domains in physics. Most importantly, I gained a better understanding of our world.
This class was about how to do Fermi estimates for physical sciences
This is by far the best class I have taken so far at UChicago. I not only learned how to estimate different quantities—mostly scientific—to an order of magnitude within the actual answer, but more importantly, this class changed the way I view the world: I now have a better sense of distance, time, mass, etc. of ordinary objects, and I now have the skillset with which to estimate most things comfortably.
The methods of approaching problems that otherwise I would have no clue to. Having a better grasp on physical parts of the world around us.
Structure of estimation (top vs bottom approach, taking geometric mean for unknown values, sanity checking, etc.)
Various broad-scope information about energies and masses associated with transport and the movement of celestial bodies
Estimation of different things such as astronomy, transportation, etc.
Fermi estimations – how to approximate things in science when given a few numbers as a starting point, and how to guesstimate reasonably. Kind of like stoichiometry in terms of balancing equations and canceling out units to get to the unit you want. I'm definitely leaving the class feeling a lot more confident and structured in approximating things (both in & out of these scientific contexts).
Learning how to market size for physics problems
How to approach a question with very little outside resources or knowledge and reason your way to a good estimate.
Fermi problems. Frames of reference for estimating physics concepts

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

Comments
The classes were the only component of the class, and they were immensely helpful. During each class, we would quickly go over relevant numbers or formulas, and then solve three sample problems (first in groups, then as a class). The problems were really interesting and class participation is not graded, so one can engage as much as they want. However, just solving these class problems basically fully prepares you to do well on the quizzes with no extra studying.
There are no labs and no homework. We were only assessed based on four biweekly in-class quizzes and a final exam. During assessments, you get 90% of the credit even if the order of magnitude in the answer was not met, but the approach was logical.
The in-class collaboration is really nice! I enjoy being able to combine knowledge with others. I know that I would be stuck if it was just me.
Work explanations feel more like info dumps— the professor is smart but forgets that what is basic information for him is something completely novel to some of us. It's difficult to keep up with assumed equations, conversion factors, and even simple variables.
No homework. Class greatly contributed to my learning. Everyday we did 3 questions in class (with time to figure them out on our own and then a detailed explanation of the answer with plenty of time for questions). Low time commitment and lots of value
Each class we did three order of magnitude estimation questions. Sometimes there was some theoretical background/equations given but sometimes it was just the problems.
In-class lectures were very helpful. Attending every lecture was sufficient to prepare for the quiz.
Lectures and prof office hours are helpful
The lectures were the most important thing (if not the only one).
Examples were great and entertaining
Each class was a lecture where we went through 3 problems and every other Monday there would be a quiz (for a total of 4). There was no homework.
Each day, we did 3 problems and went over the process for arriving at an answer for each one
Lectures were especially helpful to my learning, especially because there was no homework. Professor Abbot is an amazing professor who will explain a topic as many times as necessary in as many different ways as necessary in order for the class to understand. I really liked how he set up the lectures in terms of three problems that we tried on our own before going over the answer; the questions he asked were difficult but fun to answer—for example, how many molecules of Julius Caesar's last breath do you intake with each breath? Office hours with Professor Abbot were also very helpful because Professor Abbot went over extra problems with us and re-explained any topics from previous classes if we didn't understand them the first time.
Lectures were super helpful and interesting.
Lectures introduced topics, provided necessary formulae and values, and provided a space to practice the concepts that exams tested.
Lectures were the most important part. Just show up and pay attention and take good notes, and you'll be solid. Each class we're given 3 problems to solve, with time after each where Abbot goes over the solution and answers questions. Class is pretty interesting, especially if you get a few friends together to take the class. Felt kinda like high school in that we all got to joke around a bit and work together. Abbot's kind of a character and it's always a good time.
The class is broken up into topics and there were four biweekly quizzes, one covering each topic, with three questions on each (similar to typical class structure). I definitely had to study a bit for just by memorizing necessary units and equations and going over problems we did in class. Final exam was cumulative but felt easier than some of the quizzes to me, to be honest.
Lectures were just problem solving sessions – each class we'd focus on three distinct problems and walk our way through each of them over the course of 50min. Really unique way of formatting it and overall incredibly rewarding in my opinion
The class was very simple, every lecture we would work through 3 problems independently and then the professor would explain to us how to solve the problem and what the correct order-of-magnitude answer was, giving us important reference numbers to know for future problems. The grade was 100% determined by quizzes every two weeks and the final exam.
Class time was awesome — so interactive and interesting. Office hours were helpful too

Please respond to the following:

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
This course challenged me intellectually.	4.46	5.00	0.00%	0.00%	8.33%	37.50%	54.17%
I understood the purpose of this course and what I was expected to gain from it.	4.38	5.00	0.00%	8.33%	8.33%	20.83%	62.50%
I understood the standards for success on assignments.	4.48	5.00	0.00%	8.70%	0.00%	26.09%	65.22%
Class time enhanced my ability to succeed in graded assignments.	4.61	5.00	0.00%	4.35%	8.70%	8.70%	78.26%
I received feedback on my performance that helped me improve my subsequent work.	4.04	4.00	0.00%	16.67%	8.33%	29.17%	45.83%
My work was evaluated fairly.	4.74	5.00	0.00%	0.00%	0.00%	26.09%	73.91%
I felt respected in this class.	4.63	5.00	0.00%	0.00%	8.33%	20.83%	70.83%
Overall, this was an excellent course.	4.46	5.00	4.17%	4.17%	8.33%	8.33%	75.00%

Additional comments about the course:

Comments
I'd recommend going to weekly office hours because they give you a nice recap of what you need to know for the quizzes. They are very helpful and fully prepare you for assessments!
I really enjoyed this course and the content. It was fun and interactive and challenged me!
Trying to take this as my second class in the PHSC sequence, after barely passing Earth as a Planet. This has further solidified my fear in approaching any science courses, especially at UChicago.
Must-take physical sciences core class. Prof Abbott is great!
Engaging and educational instructor, fun subject material, little external workload, fair grading scheme. Only requirement to do well is show up to lectures (like actually)
The course is so challenging. We go over questions in the lecture but we are asked different questions on the quizzes. It doesn't teach how to think about these problems in general, it is more like how to think of an answer for the specific question we are given in class. Which does not help to answer the questions on the quizzes
Great and amusing teacher
Take this class!
This course was really fun
Take this course!
Physical note only course – you must bring a notebook.
Great physci class. Take it if you're willing to show up to class and maybe put in an hour or two of review every two weeks for the quiz. Super light workload (basically did not have any assignments outside of class other than reviewing for quiz), and I really do feel like I learned a lot. If you can, try to sign up for the class with friends (I did not intentionally, but found out I had a few friends in the class after showing up). It's much more fun that way and definitely helps to have people who can send you the notes if you missed a class, as everything you need to know really comes from class — Abbot doesn't post anything on Canvas so you really do just have to show up to class.
Extremely unique class – would highly recommend as a way not just of fulfilling the physics core, but of taking a fun class that helps you build a skill that can be used in the real world
The way to succeed in this class is basically sheer memorization of formulas and important numbers to reference, which can feel completely random. For me it was a giant flashcard deck with numbers ranging from the radius of Jupiter to the energy density of gas and various physics formulas. The TAs graded the problems very generously, which I was grateful for, because if the grading was stricter, the class would have felt very unfair. In the end, it wasn't a super difficult class to do well in, but it was certainly a confusing class that felt difficult to prepare for.

I would recommend this course to:

	No	Yes
Highly-motivated and well-prepared students	16.67%	83.33%
Anyone interested in the topic	16.67%	83.33%

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

Comments
The classes and the office hours were very helpful. Professor Abbot is extremely open to questions and willing to help with anything. He is also flexible and willing to modify some aspects of the course (which was great since this was the first time the class was taught).
Going over the content on the board after collaborating on it really helped clarify any loose ends.
I appreciate that the professor gives partial credit and cares more about the process than the answer.
Explaining his thought process when going through the answers and always answering questions
Lectures
The lectures and office hours.
Charismatic and funny professor who had great stories
Professor Abbot clearly explained every problem and was very approachable if there were any remaining questions.
Dr. Abbot explained all of the problems we did in class very well
Professor Abbot's explanations of all of the problems we did—in office hours and in class—were most helpful. I really liked how he would explain each step of the method he used to solve a problem rather than just jumping to the answer. I also liked how Professor Abbot sometimes gave us scientific background—such as about Carnot efficiency—so that we had a better understanding of where our formulas/estimated quantities came from.
The willingness to engage with student lines of reasoning and walk through the strengths and weaknesses of how we were choosing to go about estimation, rather than only ever showing the "correct" optimal way through.
He's obviously really smart and it's cool to see his thought process when he explains the solutions. If anything, I like his hands-off approach in that after we're given a problem we get ~10 minutes to just work through it ourselves and with friends before he then goes through it on the blackboard.
Definitely walking us through problems in class after he had given time for us to try them ourselves.
Prof Abbot is amazing — so interesting and fun in class.

What could the instructor modify to help you learn more?

Comments
All was great!
Post notes on Canvas if I missed a class instead of having to ask a friend for them. Even though I attend class every day, the notes are hard to see and a little messy, so sometimes I miss crucial information.
I need so much help keeping up with anything he says. It would be useful if he could offer to explain one problem more thoroughly, even if it takes up a lot of time, until we are able to replicate the process, or have questions that use similar equations (rather than ones that build off on each other, as seems to be the case).
Give us optional practice problems
Try to teach us how to think about these questions in general rather than just give a question and ask us to answer it. Giving a road map for steps or ideas of how to think about questions at the beg of the lecture will be helpful for students who feel lost when they are given the questions. I think this will be more helpful than only giving equations and numbers at the beg of the lec. I felt so lost for most of this course.
More review sessions.
A
I often would not ask for more homework, but having some practice problems similar to those we could expect on quizzes/the final would be nice. Otherwise, I (as would Prof. Abbot) would recommend reviewing your notes after class and trying the questions again blindly.
Professor Abbot could schedule more frequent office hours so that we could go over more problems—not just to learn more, but also because they're really fun to solve.
I think there could've been better study materials for the final because if you miss a class if you're sick then you might miss something important for the test and have really no way of getting it.
I don't know if this is solveable per se, but towards the back half of the class it increasingly felt like the focus on estimation was giving way to physics—light, where there was often a single relevant formula and you either knew the values to plug into it or didn't.
Sometimes he can skip a step or two in explaining a solution, but if you just ask, he'll explain it decently. Sometimes the questions are also worded kinda wacky.
Not much.
Nothing

The Instructor . . .

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Organized the course clearly.	4.43	5.00	0.00%	4.76%	14.29%	14.29%	66.67%	0.00%
Presented lectures that enhanced your understanding.	4.38	5.00	0.00%	14.29%	0.00%	19.05%	66.67%	0.00%
Facilitated discussions that were engaging and useful.	4.56	5.00	0.00%	9.52%	0.00%	9.52%	66.67%	14.29%
Stimulated your interest in the core ideas of the course.	4.38	5.00	0.00%	14.29%	0.00%	19.05%	66.67%	0.00%
Challenged you to learn.	4.48	5.00	4.76%	0.00%	4.76%	23.81%	66.67%	0.00%
Helped you gain significant learning from the course content.	4.29	5.00	4.76%	14.29%	0.00%	9.52%	71.43%	0.00%
Was available and helpful outside of class.	4.14	4.00	4.76%	4.76%	9.52%	33.33%	47.62%	0.00%
Motivated you to think independently.	4.67	5.00	0.00%	0.00%	9.52%	14.29%	76.19%	0.00%
Worked to create an inclusive and welcoming learning environment.	4.52	5.00	0.00%	4.76%	9.52%	14.29%	71.43%	0.00%
Overall, this instructor made a significant contribution to your learning.	4.29	5.00	4.76%	9.52%	4.76%	14.29%	66.67%	0.00%

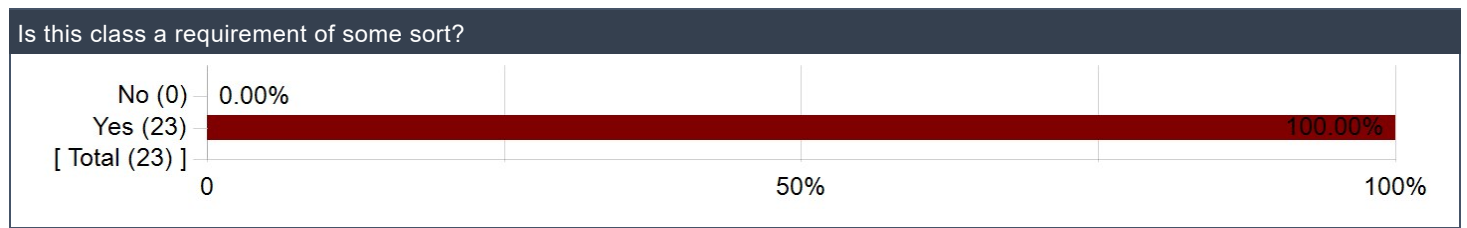
Please include the name of the TA/CA/Intern you are evaluating. What aspects of the TA's teaching contributed most to your learning? What could the TA modify to help you learn more? Please include any additional feedback for the TA/CA/Intern.

Comments
Logan/Xuan were really nice and helpful.
Logan was great
Logan Cabral–Pelletier, Xuan Ji
Xuan Ji was more helpful because she held office hours where we could discuss questions about the exam/the topics in general with her.
Logan and Xuan. Xuan was super sweet and helped me go over a quiz I did poorly on in office hours. Logan was nice but kind of dry, no real complaints though. They were both really responsive over email.

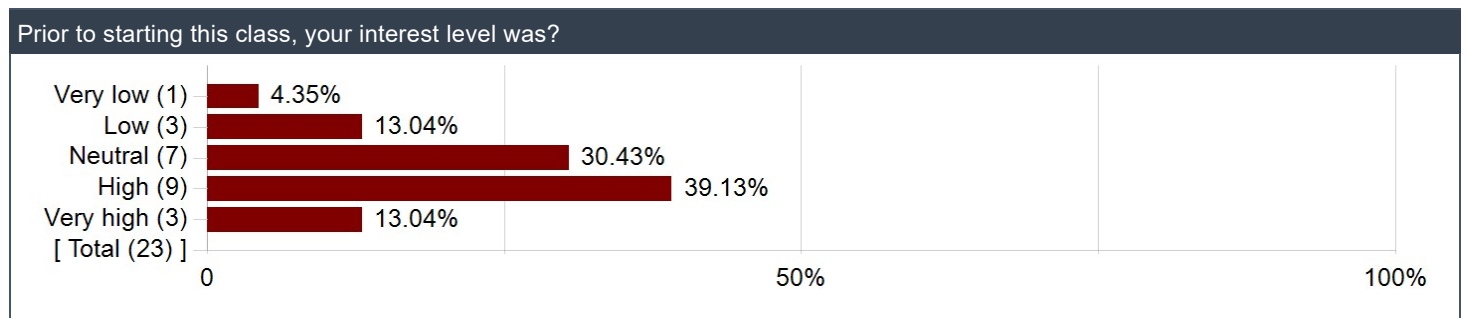
The TA/CA or Intern. . .

	Mean	Median	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Facilitated discussions that supported your learning.	3.67	3.00	0.00%	0.00%	50.00%	0.00%	25.00%	25.00%
Gave you useful feedback on your work.	4.00	4.00	0.00%	0.00%	25.00%	25.00%	25.00%	25.00%
Stimulated your interest in the core ideas of the class.	4.00	4.00	0.00%	0.00%	25.00%	25.00%	25.00%	25.00%
Challenged you to learn.	4.67	5.00	0.00%	0.00%	0.00%	25.00%	50.00%	25.00%
Helped you succeed in the class.	4.67	5.00	0.00%	0.00%	0.00%	25.00%	50.00%	25.00%
Was available and helpful outside of class.	5.00	5.00	0.00%	0.00%	0.00%	0.00%	75.00%	25.00%
Overall, this individual made a significant contribution to your learning.	4.00	4.00	0.00%	0.00%	25.00%	25.00%	25.00%	25.00%

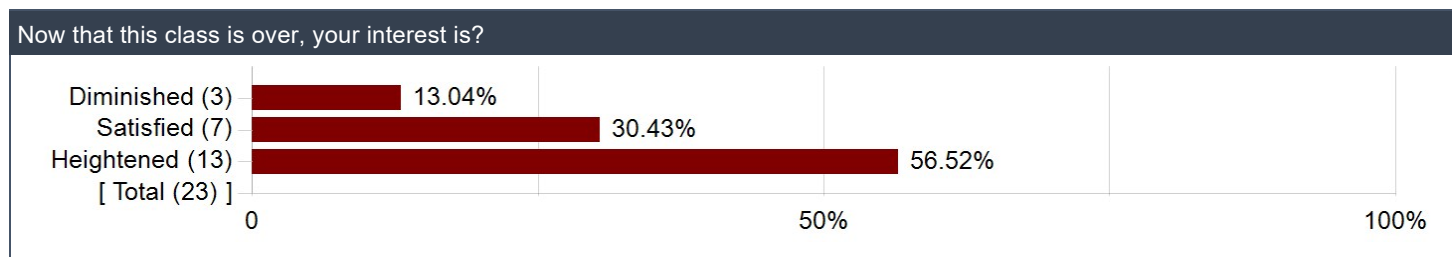
Is this class a requirement of some sort?



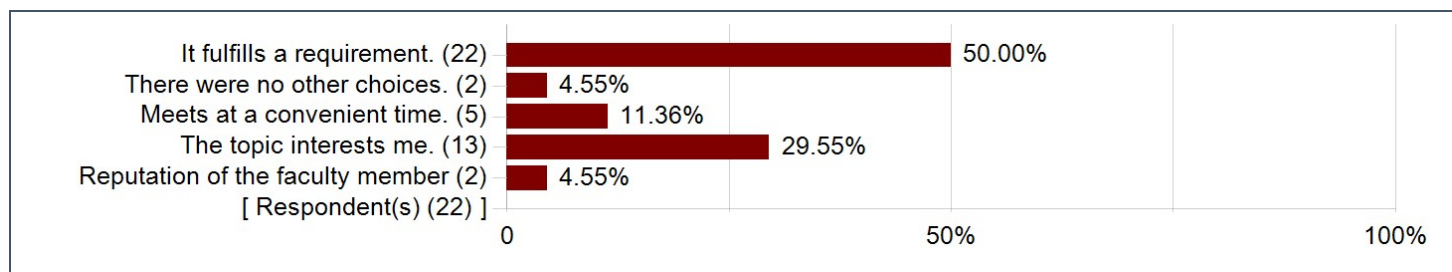
Prior to starting this class, your interest level was?



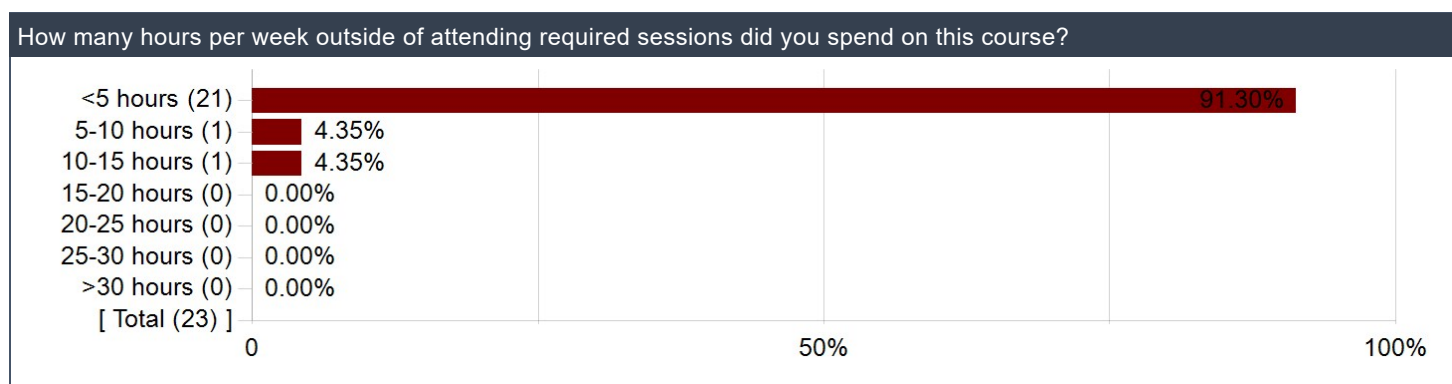
Now that this class is over, your interest is?



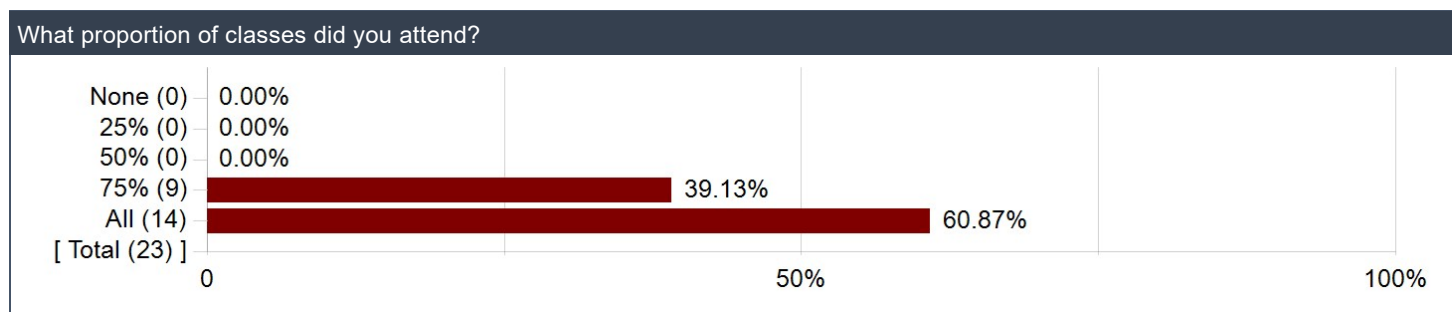
Why did you choose to take this course? (Select all that apply)



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



What proportion of classes did you attend?



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

Comments
Not difficult at all. You don't need any background knowledge in physics, math, or anything else. It helps to have some common sense to make the approximations about the world, but apart from that it's an easy A.
Having experience definitely would have helped me, but I had no physics experience and still did well in the class. Knowing more coming into the class definitely helps during collaborations, but by the quizzes, everyone is on the same playing field. He gives you everything you need to know in the classes or on the quiz.
VERY DIFFICULT if you're trying to actually understand what's going on, though I'm sure others are finding it more manageable.
Easy class. No physics background necessary. I took physics in high school and still learned more about physics in this class than I ever have learned
Helpful to have taken high school physics and chemistry, but even without, it's still quite easy
I have no Physics background and this course was so challenging. It is easier for people with STEM background
We have yet to receive final grades, so this is hard to precisely evaluate, but one certainly does not need background experience for this course. Just be ready to learn and know more about the world!
This class was completely manageable even with very little science background
Please take this course. It is very fun and very worth it. This course is challenging at first because of the relatively unorthodox kind of thinking you need to do, but once you get the hang of it (by doing a lot of practice in and outside of class), you'll find that you can solve problems more and more easily—both the ones inside of class and ones that peak your interest in casual settings.
I found the class to be very easy, but I had a full physics and chemistry background + a lot of geosciences courses under my belt. It was taught at a level where someone without that background would likely succeed without significant trouble.
There's no real background that could help someone in this class – it's all about being able to problem solve by extrapolating on a set of known parameters. In my opinion, it was somewhat easy, though there could always be a question on a quiz that could throw you off.
Definitely can be difficult at times for those without some basic physics and chemistry experience, but manageable for students of any background.
This is an AMAZING course. So so interesting and relatively difficult as well — don't expect an easy A without putting in some effort. But so applicable to daily life. Take it!!