

Hi everybody.

Thanks for the feedback Monday, the first day of our third week. I will write in purple, and your statements are in black.

You all wrote an enormous amount, and it seems there were lots of concerns and questions to write about.

Regarding content. Yes, *physics of energy* is eclectic. This is my specialty and I find it wonderful *because* it includes societal, economic, theoretical, computational, and personal reflection (because we are *all* participating in energy use). Some people indicated that some of these sections don't belong in the class. My experiences in the field indicate that if you want to have a conversation with someone about energy, you will need to know the three laws of thermal physics (OK, really just the first two), the cost of electricity and where those costs come from and what the trends are, what are the environmental concerns, and why people do or don't like something; what's going on in DC, in Sacramento, and in poor countries; and why we should care; and how we regard our own actions in the field. You would have to have an idea of the average total energy use, electricity use, and carbon emissions of the average US American and average world citizen. And understand units. In order to cover all these things, we have readings, videos, discussions, interventions, and projects. The discussions may not be about the readings or video content, unless you initiate them.

Grading. Yes, several things in the class do not count toward your final grade. Should you do the HW and hand it in? I leave this up to you. My experience is that people who hand in HW do much better on the exams. Should I just give you the answers first? Then it's not HW but rather reading through an example. My experience is that doing the HW with friends without the answers will benefit you more than reading through worked examples. Again, this is your choice. After reading the first comment below, I improved the syllabus where it describes your grade. Please read the syllabus again and let me know if you have any questions.

The flipped classroom and peer education is strange to many. It may take getting used to. The shift in responsibility for your learning has been shifted to you. It may appear as though I'm not doing my job. However, education research indicates that students learn much better through discussions with peers than from an identified "expert". If there's something you wish to know more about, please take the initiative and bring this question into your group for discussion and possibly the class.

Many of you expressed concern about what to expect from the midterm. Part of the intention of the big exams was to help you develop clear expectations. It also helped *me* develop expectations. In particular, question #3 on BE #2 was very helpful to me to see that technical questions will be more fundamental in nature and not involve unit conversion between metric and English units. However, please understand that you must become fluid in use of units. In fact, Dan Kammen (Obama's energy advisor before winning the presidency) who I worked for at Berkeley 2006-2007 once told me that that unit conversions was *all* that energy calculations were about. So please show your work and include unit calculations.

Is there just too much work associated with this class? Should this be two classes – one to learn about energy, and one to have a service learning project? I look forward to better answering this question as we progress through the quarter. As for now, I've reduced the rigor of homework, exams, and use of units. There is less computational work in the problem solving and my expectation is to see it in your projects.

Many people requested more structure for the projects. I don't think I can do this because I don't know what you will find, and I don't want to control your efforts. I express this inability with considerable confidence as I directed two project-based classes for the past decade. However, I have put my grading expectations in the syllabus and I will help get you started with contacts if you want some. Next Monday, after the first midterm, we will allocate a little more attention for the projects.

The formula sheet: put anything you like on it, but understand the limit on the number of 200 characters. "Characters" does not mean "words" or "numbers". "NGCC Efficiency = 23.96%" constitutes 21 characters, or more than 1/10 of the total allotment. However, written " $\eta_{CC}$  24%" is only 6 characters!

Please help me understand the syllabus. This is my current understanding:

Projects:	40%*
MT1:	15%
MT2:	15%
MT3:	15%
MT4:	15%
Videos	?%** <a href="#">please see syllabus</a>
Self-Intervention	?%** 0%
Big Exams	0%
Problem sets	0%
*Grading Criteria?	<a href="#">please see syllabus</a>
Values please	

Doing problems in my head doing gross rounding seems pointless when I have a calculator. I spend more time thinking about math than I do actual concepts. I would rather just discuss obscure topics.

- The "flipped classroom" format is hard to get used to.
- The videos are very cool.
- Since the homework isn't worth anything anyway, it would be useful if the solutions were posted ahead of time, that way I can check my work as I am doing it.
- Give more background on how we should be doing research for our projects.

The videos create a good learning experience, just do not have a good direction on this class. What are we focusing on in this class and why do you talk about many other topics in addition to video?

I have been a bit confused about what exactly is expected of our work as well as what is actually being graded. According to the syllabus, homework does not contribute to our grades, yet some of it is collected. Also, the “big tests” are almost more stressful than a “real” test because of how rushed they are. Additionally, for the midterm, we need a bit of guidance on a few things.

1. What can we include on the formula sheet? i.e. conversions, facts (US pop = 300 mil), examples, equations.
2. Are the homework questions representative of midterm questions?

Otherwise, I find this class very interesting and am enjoying it! Thank you!

I would like if the expectations of what is going to be on the midterm were made more clear. i.e. give number of questions, topics of questions, important conversions, must haves on the EQ sheet.

I'm just very confused on what I am expected to do on the tests and what I am expected to have on my Equation sheet that is necessary to complete the exam.

Overall, I think that this class so far doesn't feel like a physics course. It feels more like a GE instead. I would have preferred to learn more about the different kinds of power generation and the tech. behind them, which would be more appropriate for a physics course. In the future it may be better to list this course in a different department, to give people a better expectation of what this class entails.

-unclear expectations

-I need to read book more carefully.

-an equation sheet by you would be helpful for midterms and Big Exams so we can still answer the question seven if we didn't bring the right conversion with us.

-I'd rather learn more concepts than calculations.

-stressed from project on top of HW amount.

I love it man, great information all the time. Thank you.

- There's been a lot of talk about the projects but there's not been much direction on where to start.

- I appreciate the HW calculations but they don't sync well with the mainly conceptual teachings of the videos (focus on concepts versus calcs)

- In my opinion this class doesn't need to worry about knowing general numbers and indepth concepts.

I'm enjoying the class but not too excited. I've turned into a human google machine. Basically the problems seem too much like scary unit conversion and not trying to solve a problem. I.e. the house problem on BE #2 is just unit conversions. Maybe ask how many people need to be in the room to equal x number of additional walls with respect to external heat flow. Or make the test questions more representative of class discussion.

I find that I could use more structure in the class and more info on what is expected for the projects and the midterms etc.

I feel like I don't know how to allocate my studying time. We've covered mostly environmental science, some related social issues (through articles/videos), basic physics, and some fairly advanced thermal & materials physics. We don't really cover this extensively in class & I don't know how much time to spend on what. I also think that all relevant conversion factors should be provided. I spend as much time search for them as I do using them in problems.

This class seems to be split between a physics examination of energy use and generation, and socio-economic one. Done together, the amount of work for this class is excessive. Either we should focus on the details of energy-generation physics, and ditch the projects and "political" articles/videos, or we should focus on the social aspects, ditching most of the equations and HW and focus on the project. Remember – 3 unit class ~ 6 hr HW/week.

I have found it difficult at some points to find conversion factors; whether I should be looking in the book, online. I spend time looking through the EPA website and feel like it is an overload of statistics.

The information in this class is useful to know, but not what I expected to learn. I expected to learn more about physics and less about world situation. I want to learn more about physics.

- ⇒ More interaction about technical aspect
- ⇒ Get rid of the math, focus on the philosophy and current affairs. I presume this means to get rid of the philosophy and current affairs.

The "flipped classroom" is a little hard for me. I can watch videos and read articles, but I'm not sure of what should be written down. I suggest possibly spending some class time quickly going over key concepts you expect us to know.

- Concerned about what the MT will cover
- Feel like I lack understanding of the base concepts like what is "energy" & "electricity".
- PS2 is very in line with what I want to get out of the class.
- I definitely want to continue to discuss societal issues, and the technologies of energy
- My group and I feel that the math/calculations can be completely dropped since we are doing them on a project. We are interested in learning how energy affects society.

I like the class & the low stress environment but some more instruction on how to do problems would be helpful (whether in class or in the videos.)

I have been enjoying the class thus far, although I would prefer to see a stronger structure in class, but it's not bad as it is.

In other words, I'm good with what I've got.

It's kind of hard to determine what we need to do as "set up" for PS, exams, and midterms. It's also confusing what we're supposed to do for the projects right now as well.

I enjoy the reverse classroom, but I wonder about the effectiveness. Being the first time in a reversed classroom gives me mixed feelings. I would prefer a little lecture during class highlighting the videos more in depth or maybe more of a formal structure.

There has been a lot of information put out but there are a couple things I am confused about.

- 1) What are the expectations of the project? I think this project needs far more guidance from the instructor.
- 2) While information presented in videos is clear on what we need to know, however, I am unclear from the readings what is important (formulas/info) for midterms. Some mention during class would be helpful.
- 3) I am unclear on the objectives of this class. There is a lot of politics/economics presented and limited physics. I question how much politics and economics relates to what we should know for midterms.

I'm still having a hard time getting used to the dynamic of the class. It feels a little relaxed/discussion based and I'm worried something hard will hit me later in the quarter and I won't be ready for it.

I feel like the mixture of stress on the calculations/math and philosophy/information on energy will be a big problem for me down the line when the projects are due.

I feel like I only ever know 65% of what's going on in this class.

A lot of the little assignments are hard to remember the specifications for.

I definitely need to do the textbook reading more intensively, but most of the reading is extremely inaccessible.

A lot of the topics are super interesting, but it feels like they have nothing to do with each other and I don't understand any of them well enough to do the sort of problems on the BE.

In general, I feel like the class moves not only too fast, but also in every direction at once.

There are a lot of tangents that we go off on, which can be relevant, but we don't explain how, and half the time we drop them in the middle of it.

Prioritization seems key in this class. I can spend time on the class all Sunday and then still come in and feel behind, because I don't understand the priorities and pacing. For the self-intervention, I was still saving, but it feels possibly due and ongoing recording experience? Simply more accurate representations of expectations.