

Dear Fellow Learners,

Meeting expectations in this course will be difficult. Whether you have recently taken the AP Physics A/B exams, have no previous experience with physics or fall somewhere in between this class will be a lot of work. There is a lot to learn in a relatively short period of time and as you look at the material required, it may feel daunting. However, none of you will be alone in your struggle.

To keep you from tripping up, your Learning Assistants wanted to share how we successfully managed all the coinciding deadlines, trials, and tribulations. We have been where you are and have chosen this job in order to try and make your PH21X experience a little less stressful.

Everyone absorbs new ideas, handles exposure to new concepts and memorizes time-tested techniques differently. No one way is right, so **it is your responsibility to take charge of finding the way that is right for you.**

See you in class!

~Carter, Gage, Hoang, Jordan, Markus, Nicole, Rebecca, & William

### **WHAT WE FOUND HELPFUL LAST YEAR**

**-Dedicate yourself daily!** By that we mean, do a little physics every day! Read, review, and try practice problems until subscripts and units become second nature. Compile weekly summaries by topic, which will be helpful when you're rushed to do the homework. Consider rewriting your notes after class to reinforce the topics covered and highlight what didn't stick.

-Read the chapters before lecture. You can't hone your intuition with the before-class slide deck when you skip this step. Use the before-class problems and in-class clicker questions to reinforce your memory. Use the lab reports to practice writing up solution sets. Use the homework sets to solidify your breadth of knowledge.

-Draft weekly material summaries and condense before exams. Prune your notecard down to concepts you missed points on after you get your exam back, use condensed examples, and end the course with a custom reference card you can use for your graduate school entrance exams.

**-Sketch out your homework early.** By the time you understand all the nuances of the homework problem it was already due.

-Don't underestimate unit conversion. Pay attention, take a minute to do the proper conversions, and let your subscripts stand in if you don't yet have numbers.

**-Create a your exam notecard as you go.** Daily readings, before and after class slides, clicker questions, practice problem sets, and homework problems all use the same basic set of formulae. Revise, condense, and if you learn by writing make several iterations as you do your homework.

-Use the same notecard for all three exams. Allocate  $\frac{1}{3}$  for MT#1, add another  $\frac{1}{3}$  for MT#2, and use the rest for the Final Exam. Any tough examples, outliers, or oddities can go in the whitespace at the last minute, but ideally you end the term with a custom review card. If you're really on top of it, you can use the same one for all three terms of physics.

-If you feel like you need a full notecard, you probably haven't prepared enough. Do another couple practice exam problems, re-state the solutions to your after-class problems to a liberal arts major in your life, or find a four-footed friend to regurgitate definitions at. The more you speak through the material, the quicker it is to recall and the less you need a notecard.

-Feel free to use Chris' skeleton Toolkit notecard as a primer for your own. Include annotations to the formulae, create your own fully-solved examples, or simply practice writing out problem solutions.

-Don't overfill your notecard. Use an illustrative example and annotate exceptions, but be confident that you can remember more than you expect.

**-Pick a team that supports you, not one you have to support.** The colleagues you choose can either lift you up or drag you down. Choose wisely if you want to succeed! A strong group can teach each other, help each other remember deadlines, clarify confusing concepts, scour youtube for the best 3-min explanations, and dial down your anxiety rather than amping it up.

-If you don't like crowds, come to the WormHole early in the week, collab in the CLC, or book a library study room the weekend before the exam to work through the homework assignments. Give yourself a time buffer to come to office hours for clarifications. The man that writes the test also writes the practice problems, so it never hurts to ask him directly.

-Getting stuck or derailed down dead ends is normal. Turn to your group for advice, ask Chris for a hint, or ask your labmates how they're doing it to keep the u-turns to a minimum.

-Try to do it yourself before your study group meets and talk through your drafts together before or after class.

-Everyone should be a teacher and a participant. Take turns writing out the problems and explaining to the group what has to be done to find the answer. If you can teach it to someone then you understand, and if you get stuck, your group can help you over the hurdles.

## WHAT WE WISH WE WOULD HAVE DONE

**-Go to Chris' office hours.** Bring your assignments and treat it like a work session, because everyone else there will be working through it too. He has whiteboards all over his office and encourages people to work through their issues.

**-Work all the practice problems.** All of them! They were simplified versions of the homework and exam problems.

**-Take practice exams.** It never hurts your score to practice under exam conditions, so set your timer and grade each others' work.

**-Talk more.** To Chris, to your lab GTA, to the LA's, to the people that sat next to you, and to anyone who refuses to give up and drop the class. Alternative explanations, additional clarifications, rounding corrections, or diagrams drawn from another perspective ensures you can solve a problem quickly.

**-Don't just memorize to plug and chug.** Take the time to learn what a formula is doing, what is it asking you? What are each of the variables doing to each other. The more you understand what something is doing and what information it is giving you in the end the easier it will be to remember it and know when to apply it to physics issues. If you are using a formula and you don't know why or you don't know exactly what its for or doing, take a moment to figure it out.

## Resources At OSU

### **Physics 212:**

- Chris Coffin's Office Hours: M and F 10-10:50 am and 1-1:50 pm, W 9-10:50 am and 1-1:50 pm in Weniger 309; and T 9-11:50 in Weniger 334
- Wormhole: M-R 12-8 pm, F 12-6 pm, Su 6-8 pm in Weniger 334

### **Stem:**

- Math & Statistics Learning Center: M-R 9-5 pm and F 9-4 pm in Kidder 108
- Molehole (General Chemistry): M-R 11-10 pm, F 11-3 pm, Su 2-10 pm in the Valley Library 3rd floor.
- STEM Study Tables: M 4-6 pm in the Women's Center
- The Major Groove (Biochemistry): M-R 6-8 pm in the Agricultural and Life Sciences building room 2018
- Volehole (General Biology): TBD check outside Weniger 139 during week 1 for times

### **Other:**

- Academic Success Center: By appointment, must be scheduled online, in Waldo 125
- Educational Opportunity Program: TBD check outside Waldo 225 during week 1 for times and locations.
- Louis Stokes Alliance for Minority Participation: TBD check outside Waldo 123 during week 1 for times and locations.
- Supplemental Instruction Study Tables: Times vary, you can sign up and will be part of a study group that meets weekly weeks 2-10, meet in either Beth Ray Student Success Center or Johnson Hall.
- TRiO: By appointment Waldo 301 & Waldo 326 or drop-in TBD check outside Waldo 326 during week 1 for physics-specific times and locations.
- Undergraduate Research and Writing Studio: M-R 10-10 pm, F 10-4 pm, and Su 1-7 pm in the Valley Library Main Floor
- Veterans Benefits Administration [Private] Tutorial Assistance: By appointment \$100/month with form VBA-22-1990t December 2016.
- Women & Minorities in Engineering: TBD check outside 220 Johnson or speak with the Buxton 5th floor RA during week 1 for times and locations.

### **Cultural Resource Centers:**

- Asian and Pacific Cultural Center: M-R 10-7 pm and F 10-5 pm
- César Chávez Cultural Center: M-R 10-7 pm and F 10-5 pm, and tutoring M 5-9 pm
- Eena Haws Native American Longhouse: M-R 10-7 pm and F 10-5 pm, and tutoring T 5-9 pm
- Ettihad Cultural Center: M-F 10-5 pm in the Student Experience Center 3rd floor.
- Lonnie B. Harris Black Cultural Center: M-R 10-7 pm and F 10-5 pm, and tutoring W 5-9 pm
- Pride Center: M-R 10-7 pm and F 10-5 pm
- Women's Center: M-R 9-6 pm and F 9-5 pm