

PHYSICS 5160
Introduction to String Theory
Spring 2022

Instructor: Peter Arnold (parnold@virginia.edu)

Grader: Sid Ajith (sa4fb@virginia.edu)

Lecture: MWF 10-11, Physics Rm. 218

TEXT: Barton Zwiebach, *A First Course in String Theory* (2nd edition), published by Cambridge University Press. [Warning: If you are thinking of buying an electronic version, which I have not looked at myself, be sure to read reviews of the electronic edition before making a final decision.]

Grading: Homework assignments 80%; pledged take-home final 20%.

Scheduling of take-home final exam: Since nobody in class objected, the final exam will be a 24-hour take-home exam starting at **5:00 pm Monday May 9** and due by **5:00 pm Tuesday May 10**. The exam will be open Zwiebach textbook.

Topics covered: Roughly chapters 1–13 of Zwiebach.

Attendance: You are responsible for all announcements made in lecture, as well as all materials presented in lecture, including any material or techniques not covered by the textbook. Though attendance at lecture is not required, it is encouraged in the strongest terms. If you need to miss a class, let me know. And, in particular, if you miss a class because of illness, let me know, and I may be able to help out.

Homework: Late homework will generally be assessed a penalty, which will grow as time increases. (But if you know in advance that you have some scheduling problem or an unusual burden that particular week, just talk to me in advance about the possibility of an extension. And if you have technical problems submitting the homework electronically, just talk to me about that.) I am not currently planning on giving any credit after I post the solution set, so please do not fall far behind. (But if you have some major health event, then talk to me about it.)

Collaboration on Homework: Collaborating with your classmates on working out methods of solution is allowed. However, you must write up your solutions on your own—I consider copying someone else’s paper unacceptable and a violation of the honor code.

Many of the non-Zwiebach problems that I assign will be ones that I have assigned in previous years—***do not seek out copies of past solutions***. I would consider doing so a clear violation of the honor code.

As to the internet, I am sure you can find solutions to problems from Zwiebach somewhere. I strongly, strongly, *strongly* discourage you from looking for solutions except as a *very last* result, after hours of struggle. And, even then, I strongly recommend asking your classmates and me for help before turning to the internet. You will not learn anything if, to save time in what I know are busy schedules, you make the internet your source for solving problems. No pain, no gain.

A pen suggestion: When doing your homework or other assignments, if you’d like something that shows up on a scan as well as pen but is erasable like pencil, you could consider trying my personal favorite, which is Pilot Frixion pens. (This is strictly optional — use whatever works for you!)

Warning: if you put your paper on a hot air outlet or leave it in a hot car, the Frixion ink will turn invisible and stay that way if it gets very hot (145 degrees F?). Conversely, every erasure (which work from the heat of rubbing the pen’s “eraser” end on the paper) will become visible again and stay that way if it gets cold enough (0 degrees F?). If your notes get too hot and turn invisible, you can fix it by putting them in a cold freezer, but at the cost of being stuck with everything you ever erased also becoming visible. Another warning: It seems to me that the ink runs out faster in these pens than other types of pens.

Course Grades: I will roughly curve the grades, but I do not have any preconceptions about exactly how many A's or B+'s or whatever there will be. That will depend on my judgment of how the class and individual students do.

Mental Health and Well-being: If you are feeling overwhelmed, stressed, or isolated, there are many individuals here to help. The Student Health and Wellness Center offers Counseling and Psychological Services (CAPS) for its students; call 434-243-5150 to speak with an on-call counselor and/or schedule an appointment. If you prefer to speak anonymously, you can call Madison Houses HELP Line at any hour of any day: 434-295-TALK. Alternatively, you can call or text the Disaster Distress Helpline (1-800-985-5990, or text TalkWithUs to 66746) to connect with a trained crisis counselor; this is toll free, multilingual, and confidential, available to all residents in the US and its territories.