

PHYS 1304 Midterm Review Sheet

The format of the midterm will be much like the quizzes that you have been taking with 8-10 short answer questions that can include both concepts and mathematics. In many ways they will be like the quiz questions. On thing that will be different from the quizzes is that I will not be providing you with formulas and constants. Instead, you are allowed to bring in a single 8.5x11 sheet of paper with whatever notes you want on it. Obviously, including all the formulas and constants on the sheet will be a high priority. It is also very highly recommended that you bring a calculator as there will be math problems and not having a calculator could slow you down significantly.

The midterm can cover any material that was presented in lecture or in the reading since the first midterm. Below is a list of major topics that we have covered as well as a rough description of what you might be expected to know about those topics. I cannot promise that this list is inclusive, nor can I possibly get one question from every topic on the test since there are only 10 questions.

Matter and Energy – You need to know the fundamentals of matter and energy. This includes formulas, units, and unit conversions. Understand what happens to energy in different processes.

Atoms and Phases of Matter – You need to understand that atomic description of matter and how it explains things like the different phases of matter. Also have some idea about the internal structure of atoms. That includes numbers of electrons, protons, neutrons, and the energy states of electrons.

Linear Motion and Newton's Laws – Understand linear momentum and what it means that it is conserved. Know Newton's laws and how to apply them.

Angular Motion – Understand angular momentum and the implications of the fact that it is conserved.

Gravity and Tides – You need to understand Newton's description of gravity, how Kepler's laws fall out of that description, and how it results in tides. Know about tidal forces and how they have impacted the Earth and Moon in the past and present.

Light – You need to understand how we get as much information from light as we do. Know that light is both a particle and a wave. Understand the spectrum of light and how wavelength, frequency, and energy are related for light. Understand the basics of both thermal emission and line emission and absorption. Also be able to apply or explain Doppler shifts and the information we can get from them.

Telescopes – Understand how telescopes work. You need to know why having bigger telescopes is helpful to astronomers. Also know about the impact of the atmosphere on observing and how we get around that.