

## Astronomy 5682 Midterm Review Guide

The midterm exam will be held in class, for the full class period, on Wednesday, February 22. You may bring one page of *handwritten* notes (both sides) and a calculator. You may *not* use your cell phone as a calculator, so bring a standalone if you want one, though you shouldn't strictly need it.

The exam will cover material in sections 1-5 of the course notes and chapters 1-5 of the textbook, and any other material that came up in problem sets 1-3 (including, for example, the influence of expansion history and curvature on angular sizes and the inference of dark matter from galaxy rotation curves or gravitational lensing) or the in-class questions. You should also review §6.3 of the textbook, which relates to homework problems where you have calculated angular sizes or used angular sizes to infer distances.

The most useful things to review are the lecture notes and the solutions to the problem sets. Make sure you read and understand my solution sets, whether or not you did well on the assignment yourself. You should also look back at the in-class questions and convince yourself that you understand the correct answer, even if you didn't get it correct at the time. It is worth looking over my lecture notes (available on the web page) in addition to your own notes, as they sometimes capture points that I say in class but don't write down on the board.

When writing down equations for your notes, pay attention to the *physical interpretation* of each equation: what principles does it represent, what are the quantities that enter, what are their units, and how can the equation be used? You don't have to memorize equations, but you do have to know what they mean.

Also pay attention to the empirical evidence for the big bang theory (at the level we have covered so far, especially in §1), and to the difference between Newton's and Einstein's theory of gravity and the empirical evidence that favors GR.

The exam will include a mix of qualitative questions and problems to solve.

### *Review Sessions*

We will hold two review sessions, and you are welcome to attend either or both. Both will be in the usual classroom, and both will be 5:30-6:45 pm.

On Monday 2/20, Joy Bhattacharyya will lead a review session that goes over the solutions to the homework assignments, including discussion of the concepts from those assignments that may be important for the midterm.

On Tuesday 2/21, I will conduct a Q&A review session. You should come prepared with questions, though you will find it useful to hear the answers to other students' questions as well your own.