

# AST302-Sp2014

## General Logistics, Syllabus

- **Office hours:** MWF: 11:30-12:30, or see if I'm in my office, or send an email.

- **Home Works:** Online submission using onCourse. Typeset using L<sup>A</sup>T<sub>E</sub>X (one point off for non-latex submissions). For numerical or computational problems use any software or language of your choice. Document your codes. Attach the source code and output with answer. *We will discuss the HW a few days after the final submission deadline. Submissions after we have already discussed the HW will be accepted but not receive grade points.*

- **Exam:** April 14. 3 hours, after class. Time/location: TBD.

- **Research Paper:** Write a review paper summarizing recent advances in a subtopic of astronomy/astrophysics. 2500-3000 words (excluding figure or table captions, or bibliography). The journal "Annual Reviews of Astronomy and Astrophysics" is a great resource where the reviews summarize the recent advances in various subfields of astronomy and astrophysics. Our library has print copies till 1995, and then again from 2010 onwards (electronic editions, you can download PDFs). If you need article any between 1995-2010, email me and I can get it for you. **Deadline for submission of the research paper: Thurs, May 8, 18:00**

- **Grading Scheme:** HW: 40%, Exam: 40%, Research Paper: 20%. Some additional extra-credit problems/projects may be thrown in from time-to-time.

• Syllabus (tentative):

**1 Photons**

1.1 Magnitudes, Fluxes

1.2 Blackbody, Wien's law, Stefan's law

1.3 Spectral index, Colors, Temperature

1.4 Distance modulus, HR Diagram, Stellar spectra

**2 Orbits**

2.1 Central Forces

2.2 Kepler's Laws and their derivation from Newton's Laws

**3 Stars**

3.1 Stellar Structure

3.2 Stellar Populations

3.3 Star Formation

3.4 Main Sequence

3.5 Post-Main Sequence

3.6 Remnants: WDs, NSs, BHs

**4 Galaxies**

4.1 Milky Way

4.2 Nearby galaxies: formation, evolution, interaction

4.3 Active Galactic Nuclei

**5 Cosmology**

5.1 Current models of the evolution of the Universe

5.2 Early Universe