

**A506**  
**Stellar Populations**  
**Spring 2016 Lectures**  
**MacLaurin Building D109**  
**Wednesdays, 9:30am-12:20pm**

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This is a one-semester graduate course in stellar populations. It will cover the following topics:

- An Overview of the Stellar Evolution Theory
- The Stellar Evolution Computer Code of MESA
- Transformations of Theoretical  $T_{\text{eff}}$  and  $L$  to Observed Colors and Magnitudes
- The Basics of the Stellar Population Synthesis
- Simple Stellar Populations: Basic Methods for Estimating Distances, Ages, and Chemical Composition
- Composite Stellar Populations
- Stellar Population Diagnostics of Galaxies
- Supernovae
- Chemical Evolution of Stellar Populations

Making notes and participating in discussions in the class will be enough for successful completion of both homework assignments and research projects.

**For additional reading on the stellar evolution theory and stellar populations, the following textbooks are recommended:**

- “Stellar Structure and Evolution” by R. Kippenhahn and A. Weigert
- “Stellar Interiors - Physical Principles, Structure, and Evolution” by Carl J. Hansen, Steven D. Kawaler, and Virginia Trimble
- “Evolution of Stars and Stellar Populations” by Maurizio Salaris and Santi Cassisi
- “Stellar Populations: A User Guide From Low to High Redshift” by Laura Greggio and Alvio Renzini

### **Assesment**

Assignments and research projects will be discussed in the class.

### **Usefull Databases and Codes:**

- <http://vizier.u-strasbg.fr/viz-bin/VizieR> (CMDs for star clusters)
- <http://193.204.1.62/index.html> (a database of stellar evolution tracks and isochrones)
- <http://mesa.sourceforge.net/> (MESA stellar evolution code)
- [http://cococubed.asu.edu/code\\_pages/chem.shtml](http://cococubed.asu.edu/code_pages/chem.shtml) (a Galactic chemical evolution code)