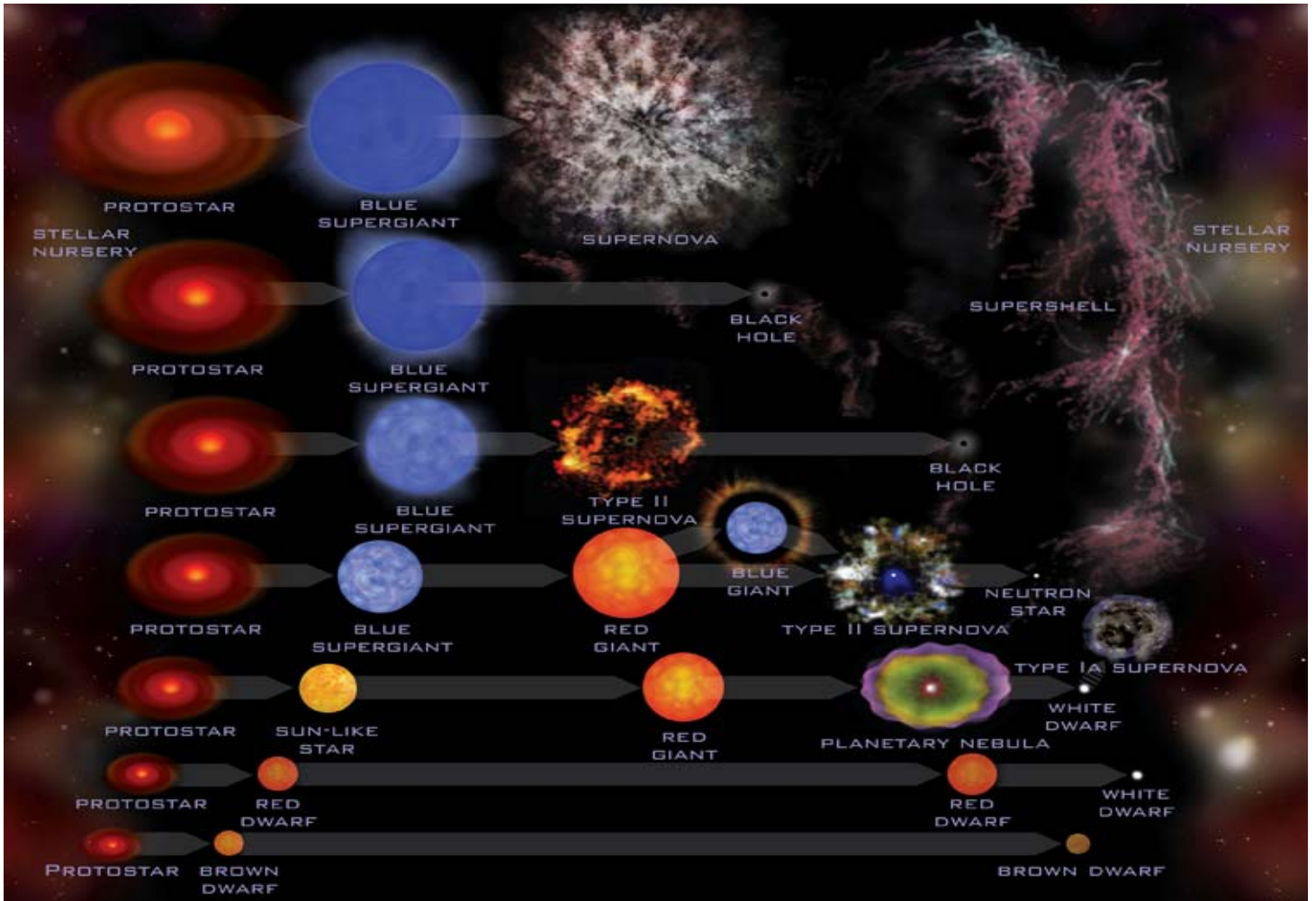


ASTR/PHYS 536-001: Advanced Astrophysics I

Fall 2010



This class is a 3-credit graduate course.

Instructor: Rouzbeh Allahverdi

Time and Location: T R 11:00-12:15, Physics and Astronomy Room 5

Book(s):

None required but below is a short list of books that may be useful as references. I will try to put as many of these on reserve at the Centennial Library.

- Clayton, D. 1983, "Principles of Stellar Evolution and Nucleosynthesis"
- Hansen, C.J. and Cawaler, S.D. 1994, "Stellar interiors: physical principles, structure, and evolution"
- Kippenhahn, R. and Weigert, A. 1998, "Stellar Structure and Evolution"
- Chandrasekhar, S. "An introduction to the study of stellar structure"
- Padmanabhan, T, "Theoretical Astrophysics I, II, II", a 3 volume set

Requisites:

Graduate Students: A solid foundation of undergraduate Statistical Physics, Thermodynamics, E&M, Quantum Mechanics, and Mathematics.

Grading Policy:

The final grade will consist of equal contributions from the following three things:

- a) Homework assignments 60% (there will be assignments roughly every 2 weeks)
- b) Final project 40% (a final project involving a term paper and a short talk on the paper topic)

Preliminary Outline:

This course will largely cover topics on the subject of stellar astrophysics. Here is an approximate list that I hope to cover in chronological order:

- Introduction to stellar systems
- Protostar formation
- Models of stellar structure and basic theory of stellar atmospheres
- Thermonuclear reactions & nuclei generation
- Stellar main sequence models
- Post-main sequence evolution
- Final stages of stellar systems (white dwarfs, supernovae, neutron stars, pulsars, black holes)
- Nucleosynthesis (details of nuclei production in various stages of stellar evolution)