ASTR. 403/Phys. 402 – Syllabus Spring 2013

Instructors: Bruce Draine [BTD], Adam Burrows [AB]

H ≡ homework due

Date	Lecturer	Topic
Feb. 4	BTD	Introduction to the Interstellar Medium
6	BTD	Collisional Processes in Interstellar Space
11	BTD	Energy levels of Atoms and Diatomic Molecules
13 **H**	BTD	Emission and Absorption of Radiation
18	BTD	The 21 cm line; The CO $J = 1 \rightarrow 0$ line; Interstellar Absorption Lines
20 **H**	BTD	Ionization Processes; Recombination Processes; H II Regions
25	BTD	Atomic (H I) Clouds: Ionization and Thermal Balance
27 **H**	BTD	Molecular (H_2) Clouds: Ionization and Chemistry
Mar. 4	BTD	Molecular Clouds: Gravity, Magnetic Fields, and Turbulence
6 **H**	BTD	Star Formation: Angular Momentum Problem; Magnetic Flux Problem
11	BTD	Star Formation: Protostellar Classes and Star Formation Rates
13, Wednesday		**MID-TERM EXAM**
March 16-24		***Spring Recess***
25	AB	Stellar Timescales and Basics
27 **H**	AB	Equations of Stellar Structure and the Virial Theorem
Apr. 1	AB	Microphysics: Equation of State, Opacities
3 **H**	AB	Radiative Transfer, and Convection
8	AB	Scaling Relations and Polytropes
10 **H**	AB	Nuclear Masses, Fusion Reactions, and Energetics
15	AB	Hayashi Track, Ignition Mass, and Schönberg-Chandrasekhar Limit
17 **H**	AB	Shell Burning
22	AB	Stages of Stellar Evolution
24 **H**	AB	Nucleosynthesis
29	AB	Stellar Endpoints: White Dwarfs, Neutron Stars, and Black Holes
May 1	AB	Supernova Explosions
May 6-14		—**Reading Period**—
20, Mon.		**FINAL EXAM**