Astronomy 31: Stellar Structure and Evolution

TENTATIVE COURSE AND READING SCHEDULE

Block T+: Tuesdays and Thursdays, 9:00 - 10:15 am

Chapter numbers refer to the Carroll & Ostlie book

Lecture 1 Lecture 2	Tuesday Thursday	Sep. 8 Sep. 10	Presentation of the course + survey test; Q&A Review of concepts of celestial mechanics: Newtonian mechanics, Kepler's laws and derivation (Ch. 2)
Lecture 3	Tuesday	Sep. 15	Introduction of basic concepts I: stellar parallax, magnitude scale, apparent and absolute magnitudes, blackbody radiation (Planck's law, Stefan-Boltzmann law, Wien's law), total energy density (Ch. 3)
	Thursday	Sep. 17	NO LECTURE - PFS Collaboration Meeting

HOMEWORK 1 DUE TUESDAY, SEP. 22ND BEFORE CLASS BEGINS

Lecture 4	Tuesday	Sep. 22	Continuation of Lecture 3
Lecture 5	Thursday	Sep. 24	Introduction of basic concepts II: Kirchoff's Laws, interaction of light and matter proper motion, Doppler shift, atom model, type of spectra, emission/absorption, spectral lines, photons (Ch. 5)
Lecture 6	Tuesday	Sep. 29	Binary systems and stellar parameters (Ch. 7)
Lecture 7	Thursday	Oct. 1	$\label{eq:classification} Classification of stellar spectra (Ch. 8): Maxwell \\Boltzmann's eq., Boltzmann's eq., Saha's eq., definitions \\of temperatures (T_{eff}, T_{color}, T_{exc}, T_{ion}, T_{kin})$

HOMEWORK 2 DUE TUESDAY, OCT. 6TH BEFORE CLASS BEGINS

Lecture 8	Tuesday	Oct. 6	Continuation of Lecture 7 [only 9-9:55 AM]: stellar spectra classification and physical explanation, H-R diagram, virial theorem, light curves in binary systems.
	Thursday	Sep. 8	NO LECTURE
Lecture 9	Tuesday	Oct. 13	Continuation of Lecture 7
Lecture 10	Thursday	Oct. 15	Important concepts in stellar atmospheres Ch. 9): pressure integral, radiation pressure and photon energy density, LTE, growth curve method and abundances.

Lecture 12	Tuesday	Oct. 20	The interiors of stars I: hydrostatic equilibrium, eq. of state, stellar energy sources, energy transport and thermodynamics_stellar model building_MS (Ch. 10)
Lecture 13	Thursday	Oct. 22	The interiors of stars II (nuclear fusion)
HOMEWOR	K 3 DUE TUES	SDAY, O CT. 27 ¹	TH BEFORE CLASS BEGINS
Lecture 14	Tuesday	Oct. 27	The interiors of stars III (nuclear fusion)
Lecture 15	Thursday	Oct. 29	The interiors of stars $IV\left(energy\ transport\right)$
	Tuesday	Nov. 3	ISM, Jeans criterion, initial mass function, pre-MS evolution (Ch. 12) Stellar Evolution I (Ch. 13). Stellar Evolution II, stellar clusters (Ch. 13)
Lecture 14	Thursday	Nov. 5	
HOMEWOR	K 4 DUE TUES	SDAY, NOV. 10	TH BEFORE CLASS BEGINS
	Tuesday	Nov. 10	NO LECTURE - Wednesday schedule
Lecture 15	Thursday	Nov. 12	MID-TERM IN-CLASS EXAM
Lecture 16	Tuesday	Nov. 17	
Lecture 17	Thursday	Nov. 19	
	Tuesday	Nov. 24	Students' presentations (4 students)
	Tuesday	Dec. 1	Students' presentations (4 students)
	Thursday	Dec. 3	Students' presentations (4 students)
	Tuesday	Dec. 8	Students' presentations (4 students)
	Thursday	Dec. 9	Students' presentations (4 students)
Monday	Dec. 21	12pm-3pm	Students' presentations (9 students)