AST 553. Plasma Waves and Instabilities

Course Schedule (tentative)

09/04 Wed	Lecture 1	Electromagnetic dispersion
09/09 Mon	Lecture 2	A sneak preview: waves in cold non-magnetized plasma
09/11 Wed	Lecture 3	Quasimonochromatic waves: basic theory
09/16 Mon	Seminar 1	[HW] Basics
09/18 Wed	Lecture 4	Equations of geometrical optics I
09/23 Mon	Lecture 5	Equations of geometrical optics II
09/25 Wed	Lecture 6	Waves in cold magnetized plasma
09/30 Mon	Seminar 2	[HW] Wave propagation in inhomogeneous plasma
10/02 Wed	Lecture 7	Waves in warm plasma: hydrodynamic approach
10/07 Mon	—	APS (Oct 7-11)
10/09 Wed	—	APS (Oct 7-11)
10/14 Mon	—	Fall recess (Oct 12 - Oct 20)
10/16 Wed	—	Fall recess (Oct 12 - Oct 20)
10/21 Mon	Exam 1	Midterm exam
10/23 Wed	Seminar 3	[HW] Fluid waves in magnetized plasma
10/28 Mon	Lecture 8	Introduction to kinetic theory of plasma waves
10/30 Wed	Lecture 9	Eigenmodes in kinetic theory
11/04 Mon	Lecture 10	Dispersion in nonmagnetized plasma, power dissipation
11/06 Wed	Lecture 11	Electrostatic waves in isotropic Maxwellian plasma
11/11 Mon	Lecture 12	Landau damping. General waves in nonmagnetized plasma
11/13 Wed	Seminar 4	[HW] Kinetic waves I
11/18 Mon	Lecture 13	Dielectric tensor of magnetized plasma: kinetic theory
11/20 Wed	Lecture 14	Waves in warm magnetized plasma
11/25 Mon	Seminar 5	[HW] Kinetic waves II
11/27 Wed	—	Thanksgiving recess (Nov 26 - Dec 1)
12/02 Mon	Lecture 15	Quasilinear theory
12/04 Wed	Lecture 16	Dressed particles and ponderomotive forces
12/09 Mon	Seminar 6	[HW] Kinetic waves III
12/16 Mon	Exam 2	Final exam