

UCF Physics: AST 6165 Planetary Atmospheres

Spring 2020 Schedule (1 January 2020)

Read the listed chapters BEFORE class on the day of their listing. Topical review articles are due each Thursday. Readings here are from Andrews. Additional readings from Pierrehumbert will be assigned on the homework.

Date	Day	#	Topic	Student Presentation	HW	Reading
January						
7	T	1	Introduction			
9	R	2	Global Mean Temperature			1.1 – 1.5
14	T	3	Thermodynamics in Atmospheres		1	2.1 – 2.4
16	R	4	Structure, Pot. Temp.			
21	T	5	Oscillation		2	2.5 – 2.10
23	R	6	Atmospheric Energy			
28	T	7	Moisture Basics		3	3.1 – 3.3
30	R	8	Moisture	Example: Pollution		
February						
4	T	9	Radiative Transfer Review	: Tornadoes	4	3.4 – 3.8
6	R	10	Atmospheric Spectrum Genesis	: Thunderstorms		
11	T	11	Line Broadening in Atmospheres	: Upper atmosphere	5	
13	R	12	Spectra of Common Gasses	: Magnetosphere		
18	T	13	Planetary Spectra	: El Nino	6	
20	R	14	Atmsopheric Properties from Data	: Atmospheric optics		4.1 – 4.4
25	T		Exam review		7	
27	R		Mid-term Exam			
March						
3	T	17	Material Derivative, Governing Eq.	: Hurricanes		4.5 – 4.7.1
5	R	18	Rotating Reference Frames	: Climate change		
7 – 15	— Spring Break					
17	T	19	Geostrophy and Cyclostrophism	: Lightning	8	
19	R	20	Vorticity, Modeling, Vertical Coord.	: Biosignatures		4.9 – 4.10
24	T	21	HW8	: Irradiated flows	9	
26	R	22	Gradient wind, Coriolis, Vort. review	: Giant winds		
31	T	23	Approximations	: Condensing atm	10	4.7.2 – 4.8.2, 5.3
April						
2	R	24	Gravity (Buoyancy) Waves	: Titan		5.1
7	T	25	Gravity (Buoyancy) Waves	: SS magnetosph.	11	5.2
9	R	26	Rossby (Planetary) Waves	: Disk atm		5.4 – 5.7
14	T	27	Thermochemical Equilibrium	: Hydrodyn. escape	12	6.1 – 6.2
16	R	28	Disequilibrium Atmospheric Chemistry	: Giant interiors		6.3 – 6.4
28	T		Final Exam, 1:00 – 3:50			