

ATM 240 – tentative course outline

Fall Quarter – 2016		Updated: 10 November 2016	
Date	Subjects	Reading: Grotjahn 1993 §(pages)	Homework
Sept. 22	Course admin, Def. of GC. Balances & constraints on rad, T, wind, mass, heat	Reading: Chapt 1.1-1.3 of G2016*	
27	Torques, Summarize constraints. Start deducing general circulation	Reading: 1.2 of G2016*	Assign #1
29	Hybrid circulation, flow instability	G2016* 1.3.1-1.3.6	
Oct. 4	Ocean circulations: ocean torques, wind-driven, Ekman, thermohaline	G2016* 1.4.1-1.4.3	#1 Due, Assign #2
6	Radiation basics, glass slab model	G2016* 3.1.1-3.1.3	
11	No class, Instructor out of town this day	Read Grotjahn (2008)	
13	Glass slab model extensions. Global & zonal radiation variables I, E, A.	Reading: 3.1.4 in G2016	#2 Due Assign #3
18	General summary Zonally-varying rad. Surface HF Horizontal HF,	Reading: 3.1.5, 3.2 in G2016	
20	T fields, start rad/conv model	Reading: 3.2, 6.1 (52-63, 221-227, skim rest of 6.1) 3.2 & 3.3 in G2016	#3 Due Assign #4
25	Finish rad/conv model, U fields, ang moment. cons.	Reading: 3.3 (most of), (first part of 4.1) (63-72, skim: 224-230) 3.4 in G2016	
27	finish [v], & Ψ fields. [u] from M, friction, & [v]. Hadley cell HF,	Reading: 3.3 (end), 3.4, 6.2.3.2, 65-74. start 3.5	#4 Due Assign #5
Nov. 1	P, Z, moisture &, clouds	Reading: 3.4,	
3	Nonzonal fields , averaging,	Reading: 3.5, Appendix A, 4.1 (90-96) 6.2.2:	#5 Due Assign #6
8	maintaining momentum against friction: a KE balance perspective	4.2 (96-111, skim derivation)	
10	Momentum cycle maintaining momentum (KE perspective) some implications	Reading: 4.3.1, 4.3.2, skim 4.3.3 (111-115, skim: 116) (supplements)	#6 Due Assign #7
15	Available potential energy (intro) Observed “global” APE; Limited area energetics (diabatic)	Reading: 4.5.1 Skim: 4.4 (120-121, 128-134, skim: 116-119 122-127)	
17	APE to KE conversion, start Eddy & zonal average energetics	Reading: 4.5.2, skim: 4.5.3-4.5.5, start 4.6 (135-145)	#7 Due Assign #8
22	finish Eddy & zonal average energetics, Summarize energetics	Reading: 4.6 (146-159)	
24	Thanksgiving Holiday		
29	meridional cells (Kuo-Eliassen Eqn)	Reading: 6.3.2, skim 6.3.1 (254-264; skim: 249-254)	
29 (2 nd lect. of day)	Review: Eddy life cycles; momentum & energy summaries, video, course evals.	Reading: 7.3.2, note these figures: 5.6, 5.12, 6.21. Fig. 15 in Grotjahn (2015b)	#8 Due
8 (or 7)	Final Exam: 1:00-3:00p Thurs	“official time” for 1:40/2pm class	
	(However, please note: we may use	same time but on 7 December.)	

* Grotjahn (2015a,b) are Encyclopedia of Atmos Sci articles. Grotjahn (2016; ‘G2016’) is the new book currently being written and revised. All are available at course website.

Former table items:

Lect pd. 16	Start chapter 5, Nonzonal fields: radiation, T, V, P	Reading: 5.1, 5.2, 5.3, 6.2.3.1, 5.4 (skim: 161-181, 238-240)	
Lect pd. 17	finish chapter 5 moisture, momentum & heat fluxes, Storm tracks, Asian Monsoon	Reading: 5.5, 5.6, 5.7, 5.8, skim: 5.10 (skim: 181-217; except skip §5.9)	
Lect pd. 19	Eddy life cycles, reconciling jets & eddies	Reading: 7.3.2, 6.5 (349, 352-358, 269-281)	