

## **Rotating Tank Lab**

AOS 801

Spring 2009

<u>Instructor</u>	Prof. Galen McKinley, AOS&S 1511, 262-4817, gamckinley@wisc.edu Prof. Michael Morgan AOS&S 1401, 262-1957, mcmorgan@wisc.edu
<u>Time and Location</u>	1:30-3:20 Monday AO&SS 1411 and AO&SS 1518
<u>Credits</u>	2
<u>Course website</u>	Learn@UW
<u>Prerequisites</u>	AOS 311 or 610. Or permission of instructor.
<u>Enrollment Max</u>	12

### Recommended References:

1. Marshall, J. and R.A. Plumb, 2008, Atmosphere, Ocean and Climate Dynamics: An Introductory Text, Academic Press, New York, 319 pp.
2. Holton, J. R., 2004, An Introduction to Dynamic Meteorology, 4th ed., Elsevier, New York, 535 pp.

Books have been requested for reserve in the Schwerdtfeger Library.

### Course Description:

We use rotating fluid experiments, theory and data analysis to deepen understanding of geophysical fluid dynamics and observed phenomena in the atmosphere and ocean. The course will be primarily in the laboratory -- focusing on hands-on experiences in the rotating tank lab and with real data. Student lab groups will do 3 multi-week projects on (1) fronts (2) atmospheric general circulation and (3) Ekman processes / wind-driven oceanic circulation. Students will also pursue independent explorations for a term project.

This course is highly recommended as an elective for graduate students or seniors majoring in AOS.

### Grading:

Grading will be based on lab write-ups, presentations and discussion of the 3 common experiments. The term project will also be a substantial portion of the grade.

Daily Schedule  
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<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Assignments due Readings</b>
1	26-Jan	Introduction to the Lab, Taylor Column Experiment Fronts - Introduction	
2	2-Feb	Fronts	
3	9-Feb	Fronts	
4	16-Feb	Student presentations - Fronts General Circulation - Introduction	<b>Lab writeup</b>
5	23-Feb	General Circulation	
6	2-Mar	General Circulation	
7	9-Mar	Student Presentations - General Circulation Student Projects	<b>Lab writeup</b>
8	23-Mar	Student Projects	
9	30-Mar	Student Projects Ekman / Wind-driven Ocean Circulation - Introduction	
10	6-Apr	Ekman / Wind-driven Ocean Circulation	
11	13-Apr	Ekman / Wind-driven Ocean Circulation	
12	20-Apr	Student presentations - Ekman / Wind-driven Ocean Circulation	<b>Lab writeup</b>
13	27-Apr	Final Presentations - Student Projects	
14	4-May	Final Presentations - Student Projects	<b>Final Paper</b>