

12.307

Weather and Climate Laboratory Syllabus

Instructors:

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Summary

The course comprises four projects chosen to explore fundamentals of climate science and illuminate major contemporary environmental challenges facing mankind – see list below. Each project includes hands-on experiments in a rotating fluid laboratory and exploration of data from the EAPS Synoptic Laboratory.

02/8 – 02/29: [*P1. Weather and extremes – hurricanes*](#)

Lab: the balanced vortex experiment.

Data: hurricane data.

03/5 – 03/21: [*P2. Tracer transport - plastic in the ocean*](#)

Lab: the wind driven ocean gyre experiment.

Data: tracers in the atmosphere and dispersion of plastics in the ocean.

04/02 – 04/18: [*P3. Heat and moisture transport – the general circulation*](#)

Lab: the general circulation experiment.

Data: heat and moisture transport.

04/23 – 05/9: [*P4. Dig Deeper – dig deeper in one of the previous projects*](#)

Text Book

Marshall and Plumb: Atmosphere, Ocean and Climate Dynamics (Academic Press)

Grading

Grading will be based on the final reports for Projects 1, 2 and 3 plus the presentation of Project 4. See [reports guidelines](#).