

# SIO 210 Tank Experiments Guidelines – Fall 2018

## Contact

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## About the teams

Teams of 2-3 students will experiment in the SIO classroom rotating tank following the guidelines and requirements on this document. Some useful links to find experiments examples and instructions are <http://paoc.mit.edu/labguide/projects.html> . There are also interesting images and links at <https://www.ocean.washington.edu/research/gfd/index.html> (Prof. Peter Rhines, emeritus).

## Requirements

1. Practice running tank experiment in Hydro Lab prior to presentation. Ensure that all necessary material are available and if something is missing, constructing a new piece may be required. Some materials should be provided by the grad department, consult with Jessica or Alfredo about each individual situation.
2. Record the practice experiment and edit the video to show it during your presentation. If you do not have a camera, the grad department can lend you a GoPro. Contact Gilbert Bretado ([gbretado@ucsd.edu](mailto:gbretado@ucsd.edu)) in case you need it. You really want to record your practices, as sometimes the experiment will not work during the class.
3. Review the theory behind the dynamics demonstrated by your experiment. You do not need to get too deep into the math, just explain the relative importance of the terms in the movement equations and any special considerations for the observe phenomenon. Identify some real-world oceanographic/atmospheric examples of the phenomenon.
4. On the day of your experiment, arrive to Hydro Lab at LEAST 30 minutes ahead of time (10:30 am). The tank will need to be transported from the Hydro Lab to Eckart. In order to ensure that your tank is in solid body rotation, it should spin up for at least 15 minutes beforehand.
5. Perform the tank experiment at the beginning of the class on your assigned date. Present the theory and real-life examples to help illuminate the concepts for the rest of the class. Make a hard copy of any materials presented to the class and submit to Lynne and Luke. **DO NOT EXCEED THE ALLOTTED 10 MINUTES.**
6. Submit a short (2-4 pages double spaced) report on your experiment. It should include a section on theory, experimental setup, results, troubleshooting, real-life examples, and finally a 2-3 sentence per member itemization of the individual work each one did.

**Calendar for tank experiments:**

Oct. 16 Internal waves

Oct. 23 Taylor columns

Nov. 6 Ekman pumping

Nov. 13 Rossby waves

Nov. 27 Ocean gyres

Dec. 4 Thermohaline circulation

~~Skip or do in stead of Dec. 4 Source-sink flow~~