

# 12.215 Modern Navigation

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# Review of last Lecture

- Dead reckoning and conventional navigation
  - Magnetic North pole
  - Distance measurements
- Use of Sextant
  - Principles of instrument
  - Vernier Scale reading (ex. Pierre *Vernier* (1580?–1637), French mathematician.)
  - Corrections needed for sextant measurements
  - (Next class we make sextant measurements)

# Today's class

- Sextant measurements using the sun:
  - We will track the sun to find its highest elevation and the time this occurs.
- CAUTION: We will be looking at the sun with dark filters on the sextant. Make sure the filters are in place before measurements are made (they tend to flip out of the way when the scales are read).
- Our one cheat will be using GPS to get time (and to check the results)

# Basic measurement

- Since we can not see a level horizon from the class room we will use a “poor-man’s” artificial horizon (i.e., a bowl of water).
- Basic measurement will be to measure twice the elevation angle of sun (geometry shown on next slide).
- “Tricky” part is moving back and forth so that image of sun from reflection can be seen. Basic measurement will be to align the two images of the sun.

# Measurement geometry

OK: Lets get to it!

