ES302 Introduction to Brunton Compass Exercise

Refer to the class notes and diagrams related to the parts and components related to the Brunton Pocket Transit (http://www.wou.edu/las/physci/taylor/g302/compton_map.pdf). The Brunton compass is a specialty device designed for field geologists that includes both a compass for measuring bearings, as well as a vertical clinometers for measuring heights. The lab exercise below provides an introduction to the types of measurements that are possible with a brunton compass.

Materials Needed: Monmouth Quadrangle, Brunton Compass, measuring tapes, Clip Board with class notes and lab work sheets.

Follow your professor to the lawn area outside of the Natural Sciences Building (NSB) near the Jackson St. and Monmouth Ave. entrances. Make the following observations of your local surroundings:

(A) Note "telephone pole 1" at the NSB steps/entrance from Jackson Street; note "telephone pole 2" at the corner of Monmouth Ave. and Jackson St., at corner intersection adjacent to the Academic Programs and Support Center (APSC).
(B) Note "cedar tree" adjacent to parking lot entrance across Jackson Street from NSB, behind West House.

Complete the following Tasks / answer the following questions in the space provided:

Task 1. Using your mental map, list the general compass directions from/to the following locations:

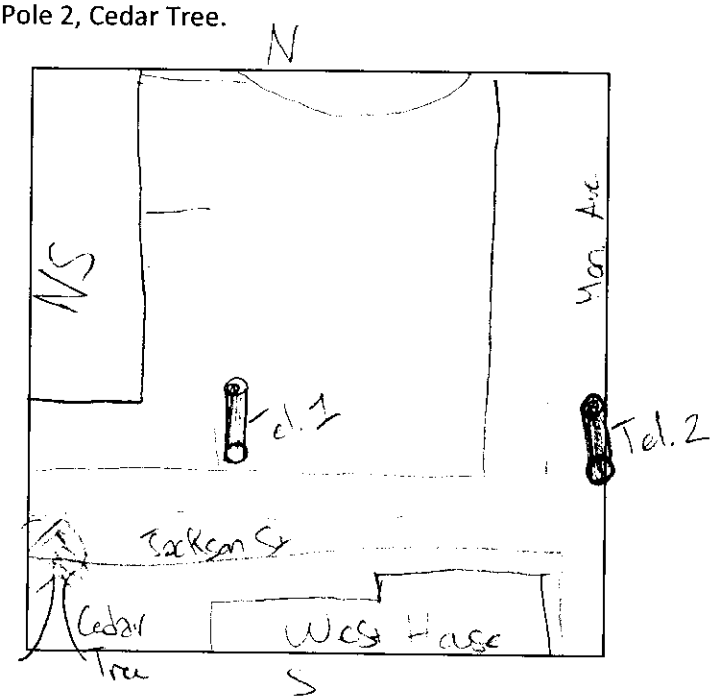
NSB towards APSC East

NSB towards HSS/Belamy Hall North

NSB towards Health & Wellness Center West

NSB towards West House South

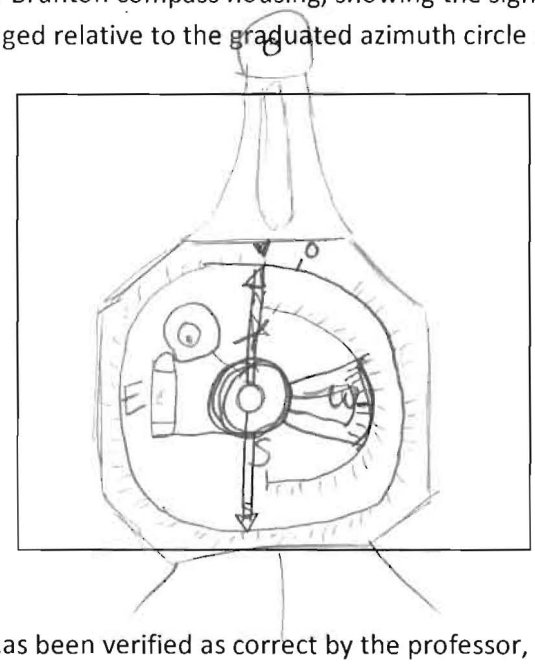
In the box below, draw a sketch map of the lawn area with north arrow in the standard orientation, parallel to the sides of the neat box, towards top of page. Include the following objects, Jackson St., Monmouth Ave., NSB, West House, Telephone Pole 1, Telephone Pole 2, Cedar Tree.



Task 2. Set the magnetic declination of your Brunton Compass. Use the Monmouth 7.5-Minute Quadrangle as your standard of reference.

What is the magnetic declination according to the Monmouth Quad? 19°

In the box below, draw a sketch of your Brunton compass housing, showing the sighting arm, true north marker, the index pin (declination marker), as arranged relative to the graduated azimuth circle riming the compass.



Task 3. Once your declination setting has been verified as correct by the professor, use the "upright /standing hip shot" technique (see figure below) to measure the following bearings :

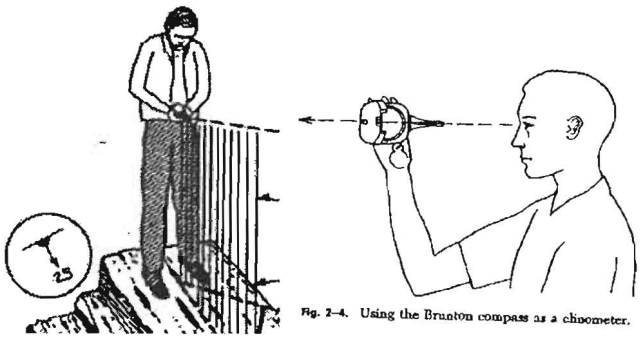
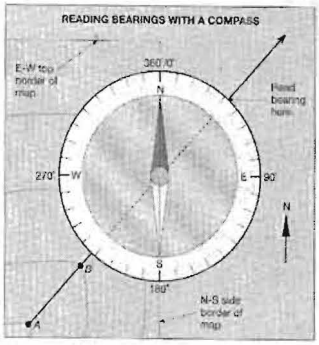


Fig. 2-4. Using the Brunton compass as a clinometer.



FROM (origin)	TO (destination)	Azimuth	Quadrant
Telephone Pole 1	Telephone Pole 2	97°	S83E
Telephone Pole 2	Telephone Pole 1	270°	N90W
Telephone Pole 1	Cedar Tree	235°	S55W
Cedar Tree	Telephone Pole 2	77°	N77E

Task 4. For further practice, reset the magnetic declination to a fictitious **10 degrees west**, and repeat the above bearing measurements using the Brunton.

FROM (origin)	TO (destination)	Azimuth	Quadrant
Telephone Pole 1	Telephone Pole 2	76°	N76E
Telephone Pole 2	Telephone Pole 1	156°	S24E
Telephone Pole 1	Cedar Tree	210°	S30W
Cedar Tree	Telephone Pole 2	50°	N50E

Task 5. Starting at Telephone Pole 1, lay out the measuring tape and measure out 100 feet parallel to, and along the sidewalk towards Telephone Pole 2. From the 100 ft mark, facing Telephone Pole 1, measure the angle of inclination to the top of the pole from your standard ocular height using the clinometer (refer to diagram above).

Angle of Inclination at 100 Feet Distance 21° degrees