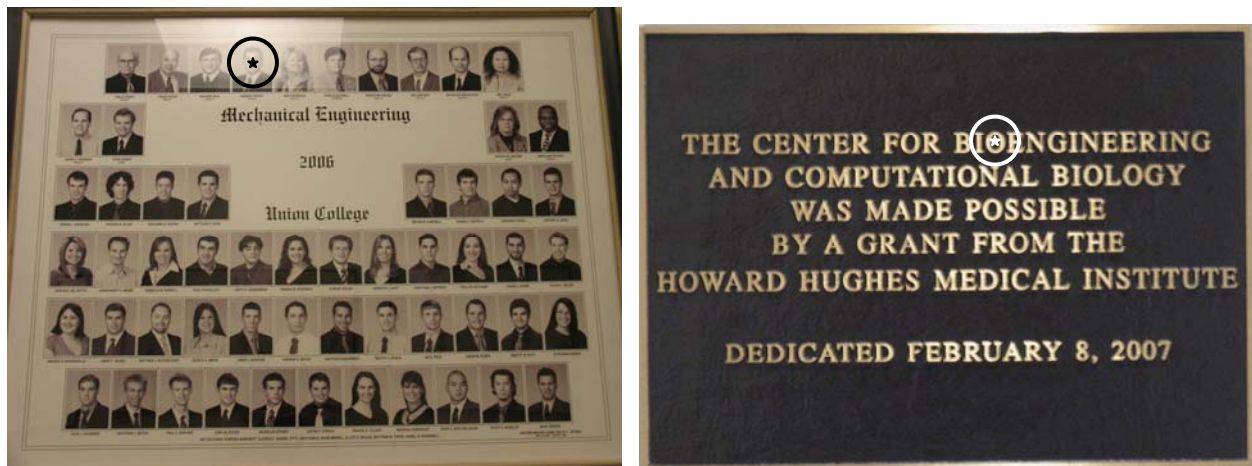


## LAB 2: DETERMINING POSITION VECTORS

### BACKGROUND

The objective of this laboratory is to reinforce the concepts of position vectors and vector addition in a rectangular coordinate system. The task is to determine the resultant position vector from the tip of Dr. Rapoff's nose in the 2006 Mechanical Engineering composite photo (Figure 1 left) around the corner from NWSE 205 to the "O" in "BIOENGINEERING" on the dedication plaque for the Bioengineering Center (Figure 1 right) on the first floor of Butterfield Hall. The individual position vectors that comprise the resultant position vector will be determined using common tools: compass, yard stick, tape measure, plum bob and bubble and angle levels.



**Figure 1.** Composite photo (left) and dedication plaque (right). A star at the center of a circle indicates the nose tip (tail) and "O" (head) of the resultant position vector.

### METHODS

- (1) Define a rectangular  $xyz$  coordinate system.
- (2) Measure using the common tools, name and record the intermediate position vectors.
- (3) Determine the resultant position vector using vector addition.
- (4) Determine the length of the resultant position vector.

### REPORTING REQUIREMENTS

Produce a report with the following guidelines: one page maximum, 1" margins all around, Times New Roman 12 point font text, justify all text (header (title, name may be centered). Figures and tables must be numbered, captioned and embedded with either top-bottom or square justification. The report should briefly describes the objectives, measurement methods, analysis methods and results. Make an estimate of accuracy in your measurements and the effect of this on the determined length.