

# 463 Instructor/Student Guide

## Drawing Requirements for the Student Machine Shop

To make parts in the student machine shop you need to have your drawings approved by the student shop staff. Submit your drawings to Adam Krichbaum for review. He will give feedback for required corrections and/or clarifications. After these drawings are approved by Adam, he will instruct you on how to begin making and assembling the parts.

### Drawing Requirements

1. Neat, clear, properly scaled, properly dimensioned (CAD or Hand drawn)
  - Geometry to scale, enough views to define the geometry
  - Material specification
  - Tolerances for all dimensions (good defaults are 0.000 +/- 0.005, 0.00 +/- 0.015, 0.0 +/- 0.03)
  - Tighter tolerances for bearings, usually +0.000, -0.001
  - Use ordinate dimensioning (see below)
2. Include part drawing for each part you will make in the shop
3. Include an assembly drawing to show how your manufactured and purchased parts go together.
4. Include contact information on you drawings so Adam can contact you with questions and approval notification.

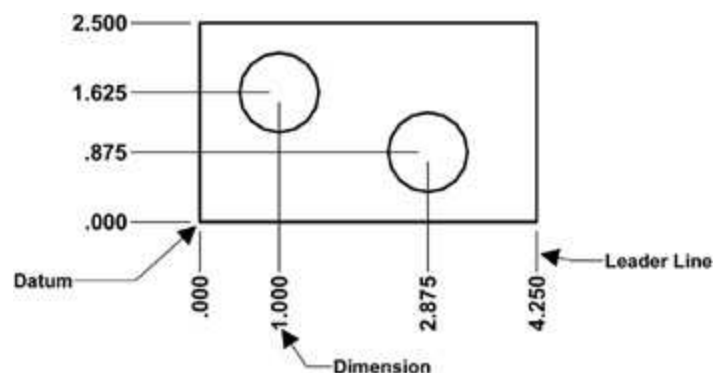
### Ordinate Dimensioning:

Use ordinate dimensioning when possible. This greatly simplifies the machining process because the dimensions on your drawing directly match the digital readouts on the milling machines.

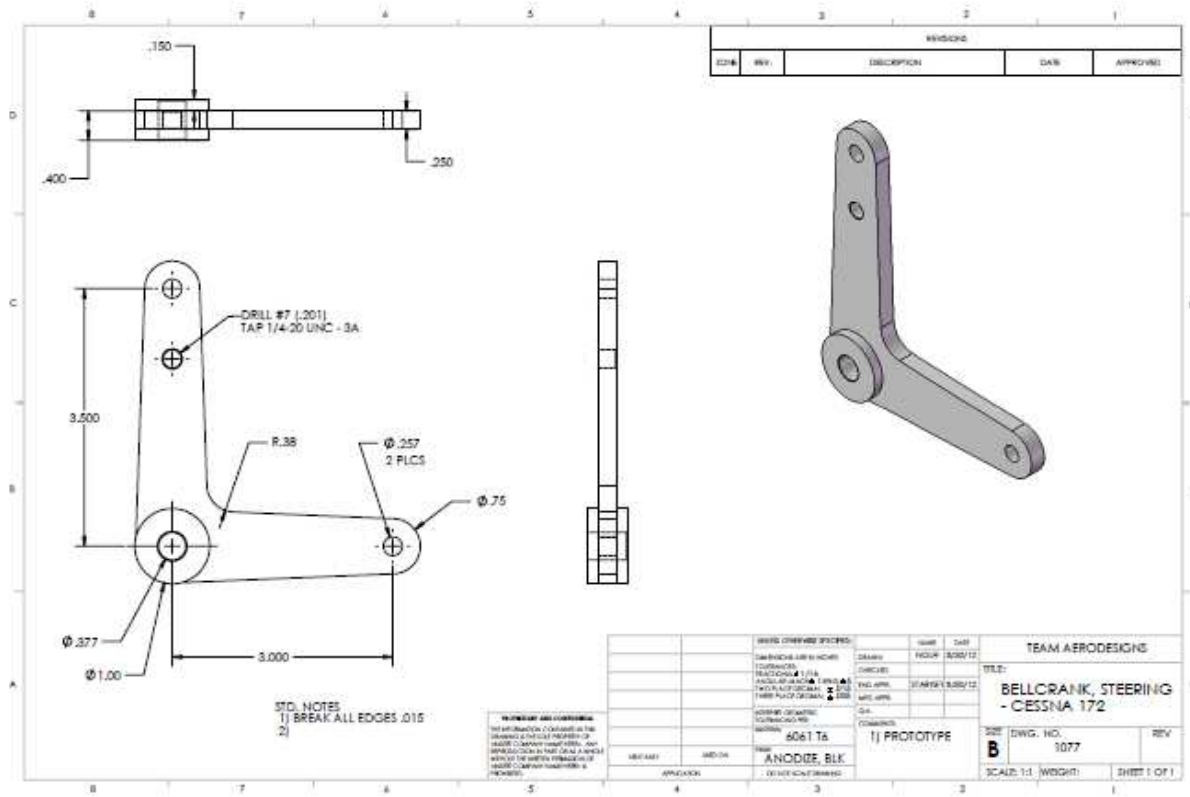
Ordinate dimensioning is used when the X and the Y coordinates, from one location, are the only dimensions necessary. Usually the part has a uniform thickness, such as a flat plate with holes drilled into it. The dimensions to each feature, such as a hole, originate from one datum location. This is similar to baseline dimensioning. Ordinate dimensions have only one datum. The datum location is usually the lower left corner of the object.

Ordinate dimensions appearance is also different. Each **dimension** has only one **leader line** and a **numerical value**. Ordinate dimensions do not have extension lines or arrows.

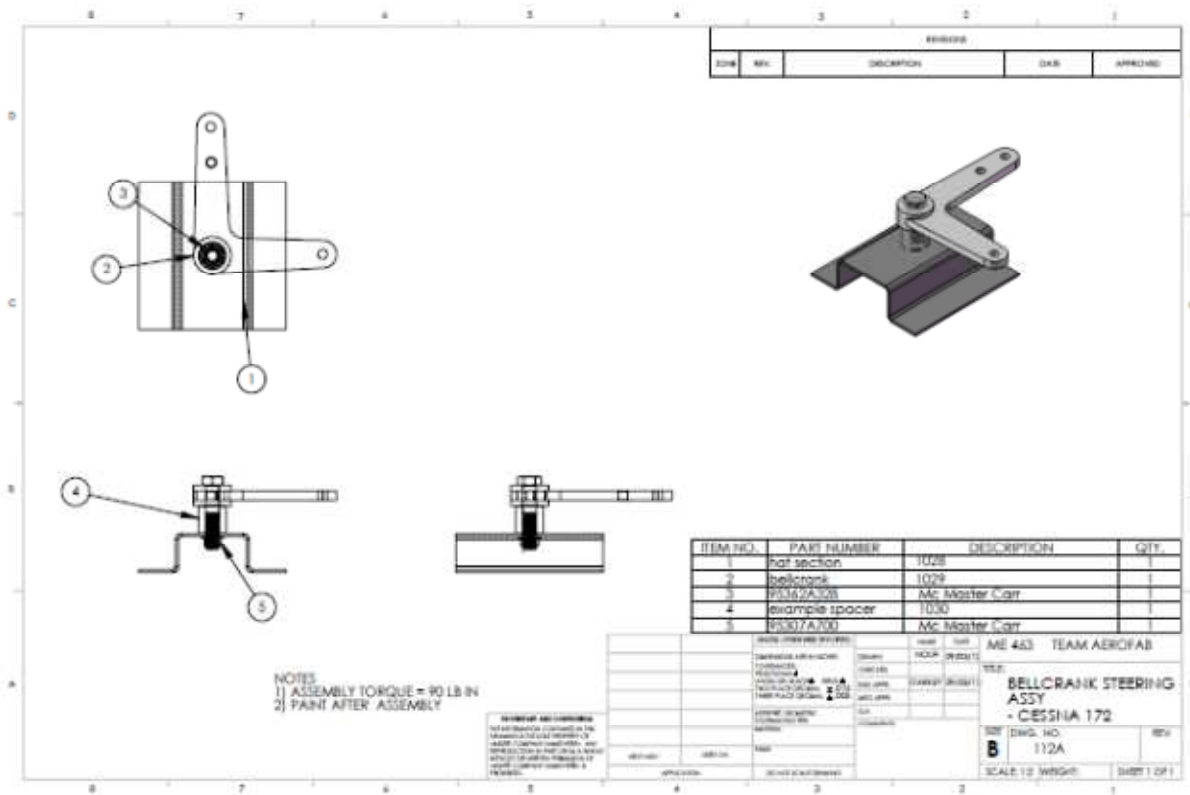
Example of Ordinate dimensioning:



## Drawing Samples – Part Drawing



## Drawing Samples – Assembly Drawing



Sample Solid Works drawing template can be found here (include link)