

**SAC Name:        Drafting Technology and Design**

**Officially changed to:**

**Computer Aided Design and Drafting CAD**

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**1. Please describe your plan of action for 2009-2010 Academic Year:**

To begin the process, in one class, DRF 117 Drafting Fundamentals, students received instruction in correct methods of dimensioning, based on Industry Standards. Then the students were given a project to add dimensions to. When they finished dimensioning the project they submitted their project. The plan was to have the students evaluate a project from one of the other students in the class. Evaluating the project for proper dimensioning standards.

**2. When your project is completed, please describe the method(s) you used.**

When students submitted their assignments, I made copies of the assignment. I assigned each assignment a number after I had cut the students name off to preserve their anonymity. The projects were then randomly handed out to students in the class. The instructions were to draw the project based on the dimensions placed by the first student. If dimensions were inadequate, or missing, the second student was to note that on the drawing. The drawing assignments were then handed back in and given back to the first student to see how the drawing assignment was evaluated.

**3. What did you learn?**

I feel the project was beneficial to the students. It emphasized the importance of correct dimensioning for the size and location of features. I also learned that more instructions to the students in the class should have been addressed concerning not making verbal comments about how poor the dimensioning was in the opinion of the student doing the evaluation.

For the most part, the students were challenged in their critical thinking and problem solving skills in placing the dimensions correctly in accordance with Industry Standards, as well as in the evaluation of dimensions placed by other students. Several students made comments about seeing the importance of correct dimensioning.

#### **4. What changes, if any, are you making or recommending as a result?**

This project was an opportunity for students to apply dimensioning standards to a project, then evaluate dimensioning done by another student. Perhaps a rubric could be developed to direct a student to a more specific evaluation of a project.

#### **5. Follow up in 2010-2011 based on any changes you have made:**

Expand this type of project to additional assignments in this class, and then expand it to other classes in the program.

### **EXAMPLES OF DO'S AND DON'T'S OF DIMENSIONING**

1. Each dimension should be given clearly so that it can be interpreted in only one way.
2. Dimensions should not be duplicated , nor should the same information be given in two different ways – except for dual dimensioning – and no dimensions should be given except those needed to produce or inspect the part.
3. Dimensions should be given between points or surfaces that have a functional relation to each other or that control the location of mating parts.
4. Dimensions should be given to finished surfaces or important centerlines, in preference to rough surfaces, whenever possible.
5. Dimensions should be given so that it will not be necessary for the machinist to calculate, scale, or assume any dimension.
6. Dimension features should be attached to the view where the feature's best shape is shown.
7. Dimensions should be placed in the views where the features dimensioned are shown true shape.
8. Dimensioning to hidden lines should be avoided wherever possible.
9. Dimensions should not be placed on a view unless clarity is promoted and long extension lines are avoided.
10. Dimensions applying to two adjacent views should be placed between views, unless clarity is promoted by placing some of them outside.
11. The longer dimensions should be placed outside all intermediate dimensions so that dimension lines will not cross extension lines.
12. In machine drawing, all unit marks should be omitted, except when necessary for clarity; for example, 1"VALVE or 1mm DRILL.
13. Don't expect production personnel to assume that a feature is centered (as a hole on a plate), but give a location dimension from one side. However, if a hole is to be centered on a symmetrical rough casting, mark the centerline and omit the locating dimension from the centerline.
14. A dimension should be attached to only one view, not to extension lines connecting two views.
15. Detail dimensions should line up in chain fashion.

16. A complete chain of detail dimensions should be avoided; it is better to omit one. Otherwise add a reference to the overall dimension by enclosing it within parentheses.
17. A dimension line should never be drawn through a dimension figure. A figure should never be lettered over any line of the drawing. The line can be broken if necessary.
18. Dimension lines should be spaced uniformly throughout the drawing. They should be at least 10mm (.38 in.) from the object outline and 6mm (.25 in.) apart.
19. No line of the drawing should be used as a dimension line or coincide with a dimension line.
20. A dimension line should never be joined end to end with any line of the drawing.
21. Dimension lines should not cross, if avoidable.
22. Dimension lines and extension lines should not cross, if avoidable. (Extension lines may cross each other).
23. When extension lines cross extension lines of visible lines, no break in either line should be made.
24. A centerline may be extended and used as an extension line, in which case it is still drawn like a centerline.
25. Centerlines should not extend from view to view.