CAD Certificate Program
Student Assessment

Part I-Assessment Summary (AY 06-07)

A. Program/Discipline Mission Statement

- **Mission:** It is the mission of the Computer Aided Design Department to provide a learner-centered environment to facilitate student learning and meet the needs of the business community by providing a relevant and current curriculum that is base on sound educational principles. The Computer Aided Design Department is committed to using appropriate instructional strategies, making effective use of instructional resources, and continuously assessing student academic achievement for the purpose of ongoing improvement.

- **Purpose:** The purpose of the Computer Aided Design department's assessment is to provide student data to the faculty for on going improvement of teaching skills among faculty and also to evaluate the student's ability to demonstrate the program's intended learner outcomes outlined in section B. The intended learner outcomes are measurable skill sets that will provide the department's faculty with the data that the department will use to provide an on going improved student learning environment.

B. Intended Learner Outcomes

1) Demonstrate the steps necessary to start a drawing, including the computation of a scale factor and its correct usage.
2) Demonstrate the ability to produce basic drawing projects to scale.
3) Demonstrate the ability to setup and use the layer commands.
4) Demonstrate the ability to setup and use the basic dimensioning commands.
5) Demonstrate the ability to setup and use the text commands.

C. Benchmark

The Computer Aided Design program's benchmark of 80% proficiency has been established for each of the program's intended learner outcomes.

D. Assessment Results

1. Historical Context

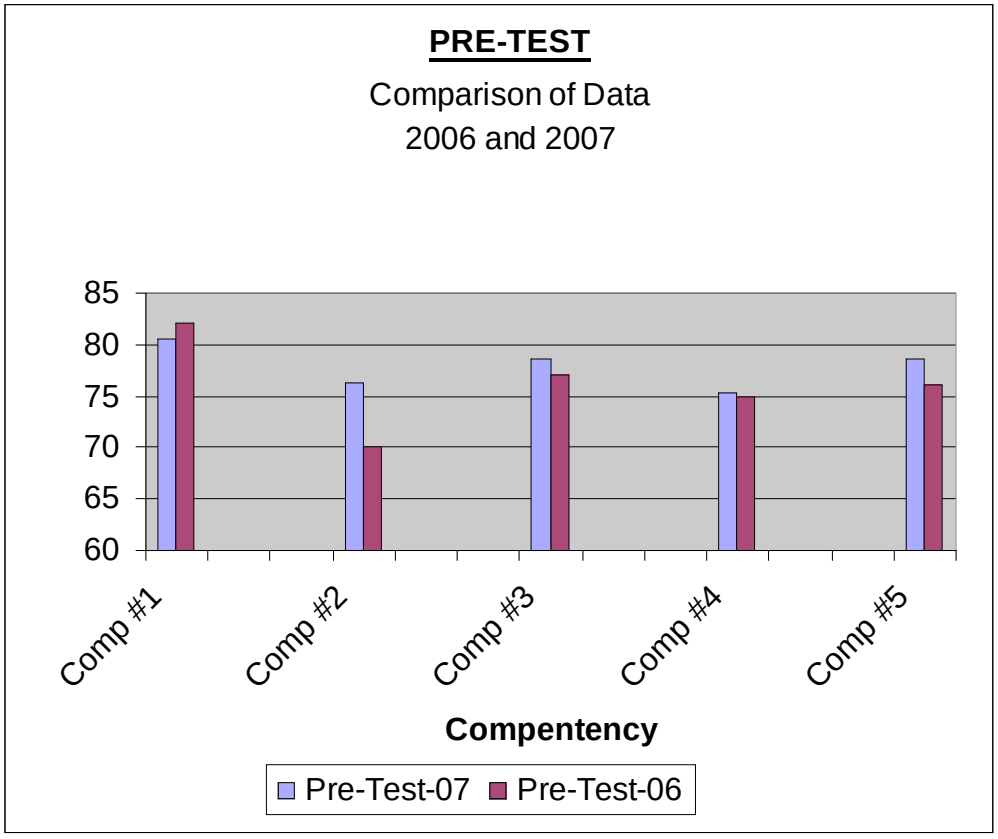
The assessment summary results did not follow the plan set for this year. The department had originally planed on assessing; in addition to the 2D certificate listed within this report, the 3D certificate, and the Custom certificate.

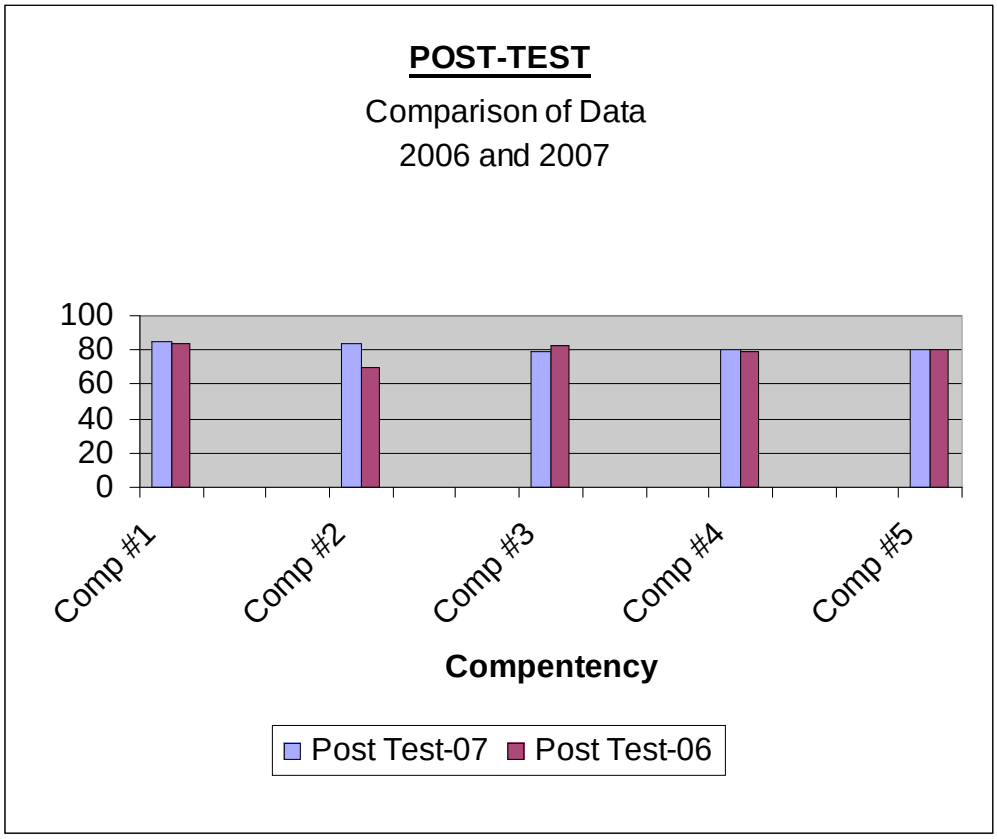
D. Assessment Results (continued)

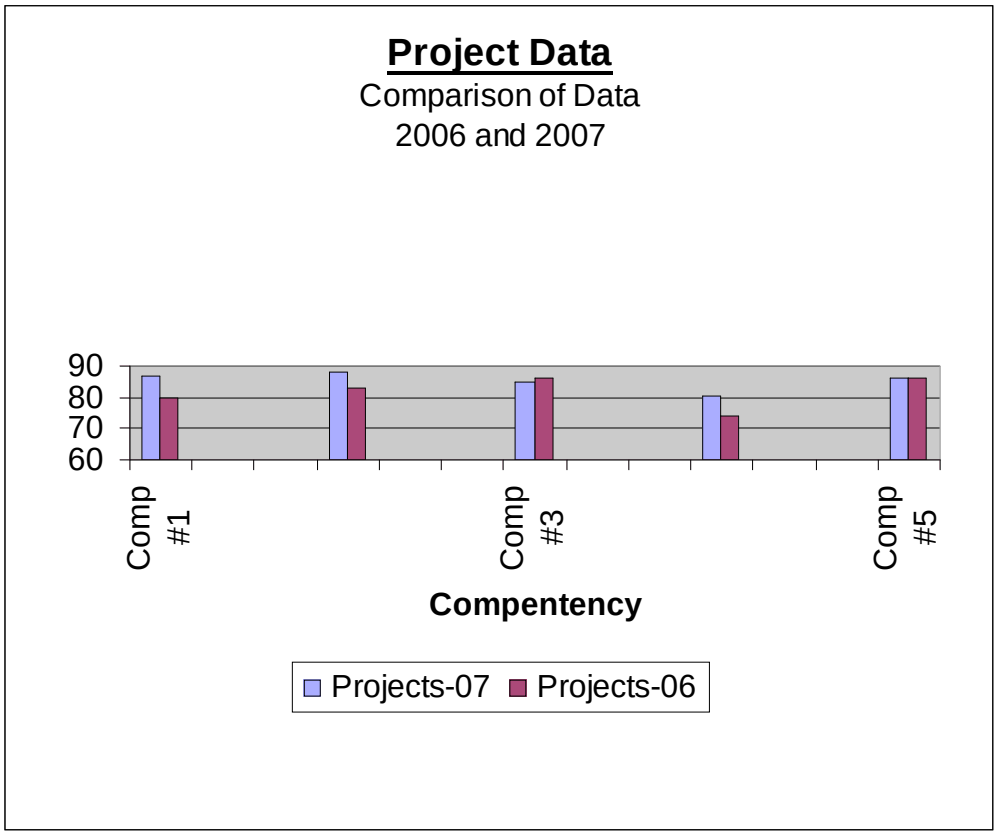
1. Historical Context (continued)

Due to a large turnover in the department's faculty, this resulted in not being able to bring the new faculty up to the assessment program's details for administering the assessment tests within a timely manor.

From the three charts below you will be able to compare the 2006 results to the 2007 results. The data includes the Pre-Test data, Post-Test data, and the student Project data for the CAD 2D Certificate program.



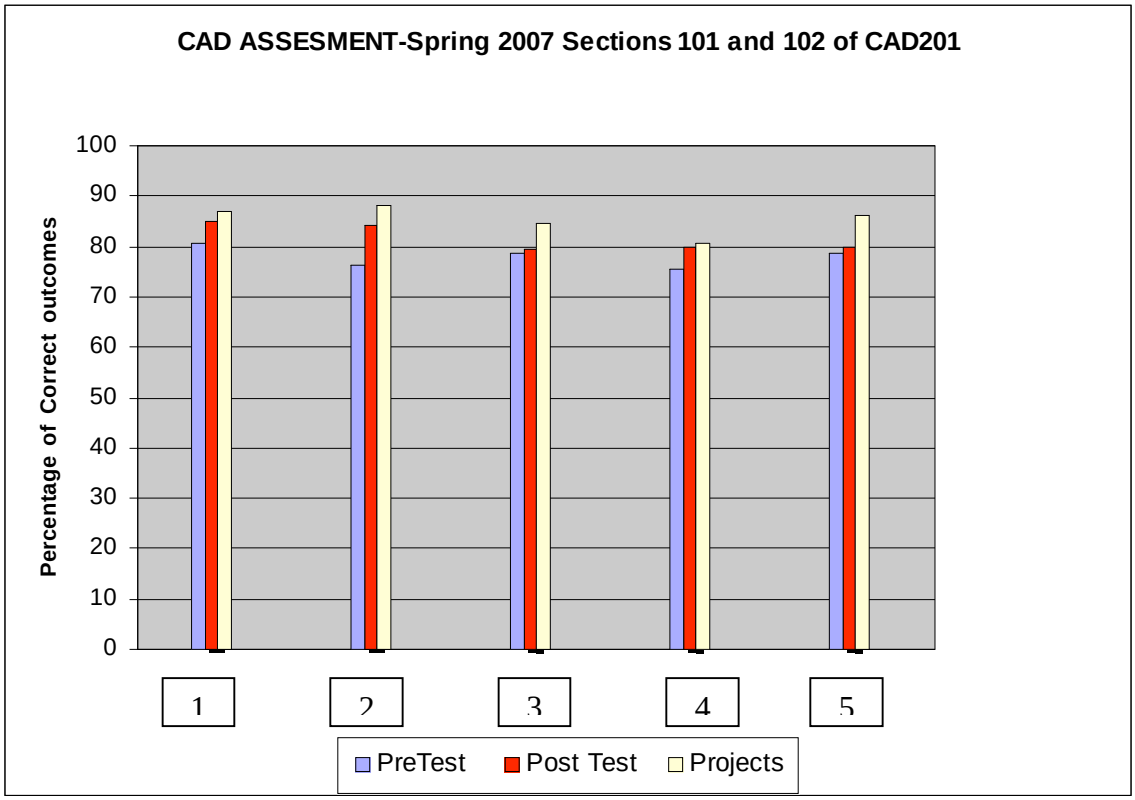

POST-TEST
Comparison of Data
2006 and 2007
100
80
60
40
20
0
Comp #1
Comp #2
Comp #3
Comp #4
Comp #5
Compentency
Post Test-07
Post Test-06


Project Data
Comparison of Data
2006 and 2007
90
80
70
60
Comp #1
Comp #3
Comp #5
Compentency
Projects-07
Projects-06

D. Assessment Results (continued)

2. Current Year Data Results

CAD Program's Five Assessment Outcomes for CAD201



COMPETENCIES

1. Demonstrate the steps necessary to start a drawing, including the computation of a scale factor and its correct usage.
2. Demonstrate the ability to produce basic drawing projects to scale.
3. Demonstrate the ability to setup and use the layer commands.
4. Demonstrate the ability to setup and use the basic dimensioning commands.
5. Demonstrate the ability to setup and use the text commands

D. Assessment Results (continued)

3. Analysis

As faculty had hoped for, the overall results from the pre-test to the post-test had indicated an improvement on the student's outcomes from last year's data to this year's assessment of the same outcomes.

From the charts above, the areas of concern are listed below for each area of the assessment.

Pre-Test:

The program has noticed an improvement of Pre-Test level scores from last year's assessment to this year's assessment.

Post-Test:

The students have shown improvements in the Post-Test scores over the Pre-Test scores in all of the five intended outcomes being assessed

With the students having higher scores from last year's assessment in four of the five intended outcomes, faculty are pleased that the overall assessment shows to be at or above the 80% benchmark for all five of the intended outcomes. Faculties have reported that most students in the program can perform these functions well within the AutoCAD program, however students do not prefer written quizzes.

Projects:

Projects are meeting or exceeding the 80% benchmark in all five outcomes.

E. Use of the Results

All project assessment data shows to be above the 80% benchmark. Faculty will review the wording of each question on the Pre and Post-Test for consistent verbiage being used within the classrooms among the different faculty. Project requirements will be reviewed to assure consistent testing data will be acquired for the intended learner outcomes.

E. Use of the Results (continued)

This year's summary report will continue to recommend that future assessments of the pre-test and post-test will represent 5% of the student's final grade for the assessment being administered.

Spring of 2008 will include assessments for CAD102 the final course of the 2D Certificate, CAD217 the final course of the 3D Certificate, and CAD249 the final course in the Custom Certificate. This decision was based on the need to do program assessments in not just one area of the CAD program; (currently CAD201), but all of the three CAD certificates.

The information within this document will be shared with the program's advisory committee and students participating in the assessment. The information will also be shared with the faculty during the department's faculty meetings to develop better program deliveries of CAD software.

Computer Aided Drafting Program's
Assessment Plan
Fall 2007

1. Mission Statement

It is the mission of the Computer Aided Design Department to provide a learner-centered environment to facilitate student learning and meet the needs of the business community by providing a relevant and current curriculum that is base on sound educational principles. The Computer Aided Design Department is committed to using appropriate instructional strategies, making effective use of instructional resources, and continuously assessing student academic achievement for the purpose of ongoing improvement.

2. Intended Learner Outcomes

Computer Aided Drafting – 2D, Certificate:

1) Demonstrate the commands necessary to start 2D drawings.
2) Demonstrate the ability to produce basic drawing projects to scale within paperspace.
3) Demonstrate the ability to setup and use the layer commands.
4) Demonstrate the ability to setup and use the dimensioning commands.
5) Demonstrate the ability to setup and use the text commands.

Listed below are the new intended outcomes for spring 2008 certificates and are a result of faculty meetings determining what should be the program's intended learner outcomes for the 3D and Custom Certificates.

Computer Aided Drafting – 3D, Certificate:

1) Demonstrate an understanding of, and be able to employ user-defined coordinate grids including the world coordinate grid, and each of the following coordinate systems within those grids: Absolute and Relative Cartesian Coordinates, Absolute and Relative Polar Coordinates, Absolute and Relative Cylindrical Coordinates, and Absolute and Relative Spherical Coordinates.
2) Demonstrate an understanding of, and be able to use solid modeling commands including EXTRUDE, REVOLVE, UNION, SUBTRACT, INTERSECT, and INTERFERE to create 3D solid models.
3) Demonstrate an understanding of, and be able to use surface modeling commands, including SURFTAB1, SURFTAB2, RULESURF, REVSURF, and EDGESURF to create 3D surface models.
4) Demonstrate an understanding of, and be able to setup cameras, control their settings, such as focal length, field of view and depth of field, and render multiple vantage points within a scene to static image files.
5) Demonstrate an understanding of, and be able to control the timeline, animate objects, including walk-though and fly-by cameras, using motion tweening and animation tracks, and render animations to video files.

6) Demonstrate an understanding of, and be able to create Lights, Photometric Lights and Daylight systems within a scene, and to control advanced lighting effects, such as Radiosity, for rendering in both static images and animations.

Computer Aided Drafting – Custom, Certificate:

1. Demonstrate an understanding of, and be able to create custom linetypes.
2. Demonstrate an understanding of, and be able to create dynamic blocks.
3. Demonstrate an understanding of, and be able to use the Customize User Interface tools to manage and create custom toolbars including the ability to create new custom commands.
4. Demonstrate an understanding of and be able to create an ACADDOC.LSP file and define basic keyboard shortcuts (command-line functions) within that file, that start common AutoCAD commands, implementing the appropriate command options as necessary.
5. Demonstrate an understanding of and be able to create custom AutoLISP program files that can identify and manipulate entities within AutoCAD using custom utilities and command line functions defined by the student.
6. Demonstrate an understanding of and be able to properly manipulate system variables to manage the AutoCAD user interface, both at a global drafting environment level and at a local level within specific custom AutoLISP programs.

3. Outcomes Assessed for the 2006/2007 Spring Semester

1) Demonstrate the steps necessary to start a drawing, including the computation of a scale factor and its correct usage.
2) Demonstrate the ability to produce basic drawing projects to scale.
3) Demonstrate the ability to setup and use the layer commands.
4) Demonstrate the ability to setup and use the basic dimensioning commands.
5) Demonstrate the ability to setup and use the text commands.

4. The Methods

The method used for student assessment is a pre/post test and a final project to be completed by all CAD 2D, 3D and Custom Certificate seeking students enrolled in the spring semester of 2008 using the AutoCAD software. The test and project has points tied to the successful completion of each competency the student will have to demonstrate. The points for each of the student's competencies and a class average will be collected and compared to the last day of class results. Class outcomes will then be compared between each section to determine teaching differences between sections. After the differences have been identified, instructors will decide between themselves at the department meetings how each outcome could be delivered to help students acquire the intended outcome skill.

Type of Tool

The project was derived from the list of Intended Learner Outcomes submitted during the fall semester (2007). Of all the outcomes listed in item two of this report, we will use all intended outcomes to assess the student's skills.

How the Assessment will be set up

The assessment project will be distributed to all sections of Computer Aided Drafting II (CAD102), VIZ (CAD217), and AutoLisp (CAD249) the first day of class and then again the last day of class. The pre-test and post-test will represent 10% of the student's final grade for all sections. Each competency will be recorded for each student for all sections. After each individual's data is collected, a class average for each part of the pre/post test and final project will be determined to establish the CAD program's outcomes for this year. A benchmark of 80% proficiency in each program learner outcome is the program's goal.

The current assessment program for spring 2007 was based on the course CAD201. This current assessment is not a true assessment of the CAD program. The current assessment program does not satisfy any of the 3D courses, Custom, or AutoLISP courses.

The new assessment program that will be used during the 2007-08 spring semester will be base on a Pre-Test, Post-Test and Project data collected during the 2008 spring semester. The new assessment program will satisfy all of the CAD program's certificates that a student may obtain. The three certificates are the Computer Aided Drafting-2D Certificate, Computer Aided Drafting-3D certificate, and the Computer Aided Drafting-Custom certificate.

5. Use of the Results

Who will the information be shared with?

The information will be shared with the students participating in the assessment. The information will also be shared with the faculty during the department faculty meeting to determine teaching differences between sections. The advisory committee members are also listed in last year's report to be informed of student outcomes. This report will be discussed at the fall semester Engineering Technologies advisory committee meeting.