Des Moines Area Community College

Course Information – EFFECTIVE Aug. 2006

Acronym/Number CAD 196 **Historical Ref** CADT 415

Title Engineering Disciplines and Practices

Credit breakout 3 2 2 0 0

(credit lecture lab practicum work experience)

PREREQUISITE(S): CADT 405, CAD 151

COURSE DESCRIPTION:
Types of engineering disciplines and their application of drawings will be examined. Drawing styles, engineering units and professional standards (ANSI, ASME, etc.) will be covered.

COURSE COMPETENCIES:
During this course, the student will be expected to:

1. Discuss mechanical drawing practices.
   - 1.1 Examine standard mechanical units.
     - 1.1.1 Examine standard mechanical dimensioning practices.
   - 1.2 Identify detail drawings.
     - 1.2.1 Discuss piece part drawings.
     - 1.2.2 Discuss tabulated drawings.
   - 1.3 Discuss purchased parts.
     - 1.3.1 Discuss specification drawings.
     - 1.3.2 Discuss sole source drawings.
   - 1.4 Discuss assemblies.
     - 1.4.1 Discuss inseparable assemblies.
     - 1.4.2 Discuss separable assemblies.
   - 1.5 Identify parts lists.
     - 1.5.1 Examine part numbers
     - 1.5.2 Examine assembly balloon identification.
   - 1.6 Identify installation drawings.
     - 1.6.1 Discuss customer drawings.
   - 1.7 Discuss schematics.
   - 1.8 Discuss diagrams.
   - 1.9 Discuss drawing notes.
     - 1.9.1 Discuss required notes.
   - 1.10 Discuss altered item drawings.
   - 1.11 Define flow diagrams.
     - 1.11.1 Discuss part family trees.
   - 1.12 Discuss illustrations.
     - 1.12.1 Discuss exploded view drawings.
   - 1.13 Examine engineering change orders (ECO).

1.13.1 Discuss revising a drawing.
1.14 Create a mechanical assembly drawing.

2. Discuss pipe drawings.
2.1 Define pipe drawings.
2.1.1 Examine pipe drawing units.
2.2 Discuss pipe flow diagrams.
2.3 Discuss pipe line representation.
2.3.1 Discuss pipe plans.
2.3.2 Discuss pipe elevations.
2.4 Describe types of pipe.
2.4.1 Examine pipe sizes.
2.5 Discuss pipe connections.
2.5.1 Discuss pipe connection symbols.
2.6 Discuss pipe fittings.
2.6.1 Discuss pipe fitting symbols.
2.7 Discuss pipe flow controls.
2.7.1 Discuss pipe flow control symbols.
2.8 Discuss pipe dimensioning.
2.9 Exam pipe details.
2.10 Examine pipe isometric drawings.
2.11 Create a pipe drawing.

3. Examine structural drawings.
3.1 Discuss structural drawing units.
3.2 Examine structural steel shapes.
3.2.1 Examine structural steel schematic symbols.
3.3 Discuss standard connections.
3.3.1 Examine structural steel connection symbols.
3.4 Discuss structural steel drawings.
3.4.1 Examine structural sections.
3.4.2 Examine dimensioning.
3.4.3 Discuss bill of materials.
3.5 Create a structural drawing.

4. Examine architectural drawing practices.
4.1 Discuss architectural drawing units.
4.1.1 Examine dimensioning.
4.1.2 Discuss schedules.
4.2 Discuss architectural line work.
4.2.1 Discuss architectural lettering.
4.3 Examine architectural construction systems.
4.3.1 Examine HVAC symbology.
4.4 Examine plan views.
4.5 Examine elevation views.
4.6 Examine sections.
4.7 Discuss plot plans.
4.8 Create an architectural drawing.

5. Discuss civil engineering drawings.
    - 5.1 Discuss civil drawing units.
        - 5.1.1 Discuss surveying units.
        - 5.1.2 Examine traverses.
        - 5.1.3 Discuss distance and elevation.
    - 5.2 Define metes and bounds.
    - 5.3 Discuss contour lines.
    - 5.4 Examine a highway layout.
        - 5.4.1 Discuss the plan layout.
        - 5.4.2 Discuss the profile layout.
    - 5.5 Examine a cut and fill.
    - 5.6 Create a civil drawing.

6. Examine electrical drawings.
    - 6.1 Discuss electrical drawing units.
    - 6.2 Examine electrical diagrams.
    - 6.3 Discuss power distribution drawings.
        - 6.3.1 Examine ASNI power system schematic symbols.
        - 6.3.2 Examine bus layouts.
    - 6.4 Discuss residential /commercial drawings.
        - 6.4.1 Discuss architectural symbols.
    - 6.5 Discuss electronic schematic drawings.
        - 6.5.1 Examine block drawings.
        - 6.5.2 Examine schematic diagrams.
            - 6.5.2.1 Examine ANSI schematic symbols.
            - 6.5.2.2 Discuss MIL-STD system.
    - 6.6 Examine printed circuits.
        - 6.6.1 Examine printed circuit design.
    - 6.7 Discuss electrical pictorial drawings.
    - 6.8 Create a schematic.
    - 6.9 Create a block diagram.

COMPETENCIES REVIEWED AND APPROVED BY:

DATE: _____

FACULTY:
1.
2.
3.
4.
5.
6.

Effective date: 4/10/95

by: J. Leetch

Campus: **A** B C U N W OC

extension: 6377

Revision(s): 4/95;