

Eastern Illinois University
New Course Proposal
INT 2043, Computer-Aided Engineering Drawing

1. Catalog Description

- a. Course number: INT 2043
- b. Title: Computer-Aided Engineering Drawing
- c. Credit: 1-4-3
- d. Terms to be offered: F,S
- e. Short title: CAD Engr Drawing
- f. Course description: Sketching, spatial visualization, computer-aided drawing (CAD) procedures, multiview drawing, dimensioning, tolerancing, threads and fasteners, and descriptive geometry.
- g. Prerequisites: INT 1012 or permission of instructor.
- h. Initial term of course offering: Spring 2004

2. Objectives and Evaluation of the Course

a. Objectives of the Course:

After completion of the course, the student will be able to:

- 1. perform fundamental operations in the use of a CAD system.
- 2. understand orthographic projection principles and concepts.
- 3. visualize a solid object given the orthographic views of an object and vice versa.
- 4. technical sketch according to established principles.
- 5. identify and apply drafting standards and conventions to dimensioning, tolerancing, sectioning, and threads and fasteners.
- 6. perform descriptive geometry according to established principles.
- 7. complete advanced courses in CAD

b. Methods of assessing students' achievement of the course objectives:

Thirteen drawing problem assignments to be completed in the laboratory:	40%
Three tests at approximately four-week intervals	40%
Final examination	20%

- c. This is not a technology-delivered course.
- d. This course is not numbered 4750-4999
- e. This course is not designated writing-intensive

3. Outline of the Course

a. The units of time for each major topic on the outline:

	<u>Week</u>
Introduction	
Getting Started with CAD	1
○ Loading and manipulating toolbars	
○ Accessing tools	
○ Naming a drawing	
○ Specifying drawing units and limits	
○ Using the grid and snap features	
○ Saving a drawing	
○ Exiting a drawing	

Fundamentals of 2-D CAD	2 & 3
○ Drawing basic shapes	
○ Editing objects	
○ Understanding coordinate systems	
Advanced CAD concepts	4 & 5
○ Drawing with object snaps	
○ Editing with grips	
Technical Sketching	6
○ Line sketching	
○ Arc sketching	
○ Object sketching	
○ Maintaining proportion	
○ Multiview sketching	
○ Pictorial sketching	
Orthographic Drawing and Spatial Visualization Procedures	7,8 & 9
○ Drawing principal views	
○ Drawing auxiliary views	
○ Visualizing 3-D objects from multiview drawings	
○ Creating multiview drawings	
Sketching	10
○ Sectioning standards and conventions	
○ Creating full and half sections	
○ Creating special types of sections	
Dimensioning	11
○ Dimensioning standards and conventions	
○ Creating a dimension style	
○ Dimensioning square shapes	
○ Dimensioning curved shapes	
○ Creating notes	
Tolerancing	12
○ Understanding plus/minus and limit tolerancing	
○ Creating plus/minus and limit tolerances	
Threads and Fasteners	13
○ Understanding thread standards	
○ Creating thread notes	
Fundamentals of Descriptive Geometry	14
○ Finding true lengths of lines graphically	
○ Finding true shapes of planes	
○ Determining the true relationships between lines	
○ Determining the true relationships between lines and planes	
Introduction to 3-D Drawing	15
○ Creating basic solid shapes	
○ Solid modeling and UCS	
○ Combining solid models	

b. This is not a technology-delivered course

4. **Rationale**

- a. The purpose for INT 2043 is to ensure that students enrolled in the Industrial Technology Program receive sufficient computer-aided drawing (CAD) experience. Currently the only required drawing course is INT 1043, Engineering Graphics, which includes only a brief introduction to CAD. INT 3053, Industrial CAD, is currently an elective course. INT 2043 would be a required course (replacing INT 1043) and would provide students with basic, as well as advanced, CAD experience along with presenting engineering graphics principles, standards and concepts.
- b. The level of the course is justifiable since the content will contain in-depth computer-aided drawing experience and also build upon the knowledge and experience gained in technical drawing.
- c. Similarity to existing courses:
 1. There would be no similarities to existing courses.
 2. INT 1043, Engineering Graphics, and INT 3053, Industrial CAD, would be deleted.
- d. Impact on program:
 1. This course would be a required course for the undergraduate Industrial Technology Program, General and Manufacturing Options.

5. **Implementation**

- a. Faculty member to whom the course may be assigned:
Ron Sutliff and Wafeek Wahby
- b. Additional cost to student: None
- c. Texts:
Bethune, James D. (2002). Engineering Graphics with AutoCAD 2002. Englewood Cliffs, NJ: Prentice Hall.

Sorby, James A., Manner, Kim J. & Boartmans (1998). 3-D Visualization for Engineering Graphics. Englewood Cliffs, NJ: Prentice Hall.

6. **Community College Transfer**

A community college course may be judged equivalent to this course.

7. **Date approved by the department or school** December 5, 2002

8. **Date approved by the college curriculum committee** February 12, 2003

9. **Date approved by CAA** _____