

# ILLINOIS VALLEY COMMUNITY COLLEGE



## COURSE OUTLINE

DIVISION: Career and Technical Programs

COURSE: EGR 1000; Engineering Graphics I

Date: 2012

Credit Hours: 4

Prerequisite(s): NONE

Delivery Method:  **Lecture**                    **2 Contact Hours** (1 contact = 1 credit hour)  
 **Seminar**                    **0 Contact Hours** (1 contact = 1 credit hour)  
 **Lab**                                **4 Contact Hours** (2 contact = 1 credit hour)  
 **Clinical**                    **0 Contact Hours** (3 contact = 1 credit hour)  
 **Online**  
 **Blended**

Offered:  **Fall**     **Spring**     **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>:

### CATALOG DESCRIPTION:

This course is designed to introduce to the beginning engineering student to the principles of the graphic language. The student will learn the principals involved in sketching, mechanical drawing and CAD and all the standards that govern those principles. Topics include including sketching, computer aided drafting, dimensioning, tolerancing, multi-view orthographic representations, auxiliary views, section views, and working drawings. Upon completion of this course students will have a better understanding of the role an engineer pertaining to design principles and working drawings.

## GENERAL EDUCATION GOALS ADDRESSED

*[See the last page of this form for more information.]*

### Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

### EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

*[Outcomes related to course specific goals.]*

#### Upon completion of the course, the student will be able to:

1. Use freehand sketching to sketch isometric, oblique and perspective pictorials.
2. Describe the basic terms, concept and techniques of computer aided drafting.
3. Set up Cad drawings, use drawing aids, save drawings, and get help when needed.
4. Using geometric construction techniques sketch shapes by hand and on Cad.
5. Using orthographic principles sketch multi view drawings of detailed parts.
6. Produce 2d multi view drawings on Cad.
7. Produce section views and auxiliary views by freehand sketching and in 2d cad.
8. Find true sizes, distances, and angles between points, lines, and planes in three dimensions.
9. Dimension sketches and cad drawings.
10. Produce Cad generated working drawings-both detail and assembly.
11. Use auto Cad solid modeling software to produce 3d models and drawings of detailed parts.
12. Convert solid model parts to drawings, assemblies, and .stl files to model on a rapid prototyping machine
13. To use the design process to design a product to be prototyped and manufactured on campus
14. To present final design with an oral and written report

### COURSE TOPICS AND CONTENT REQUIREMENTS:

- |   |
|---|
| 1. Introduction to the graphic language and design. |
|---|

2. Introductions to computer aided drafting.
3. Instrumental drawing, freehand sketching and lettering.
4. Geometric construction.
5. Shape description and multiview projection.
6. Sectional views.
7. Auxiliary views and descriptive geometry
8. Dimensioning
9. Tolerancing
10. Design and working drawings

### **INSTRUCTIONAL METHODS:**

Lecture  
 Lab  
 Group projects  
 Presentations

### **INSTRUCTIONAL MATERIALS :**

#### **Text**

**Required Reading:** Technical Drawing with Engineering Graphics 14th Edition – Giesecke

Lab supplies for hand sketching

### **STUDENT REQUIREMENTS AND METHODS OF EVALUATION:**

Completion of assigned problems, required reading of text.

Periodic tests.

Group Projects

Problem Based Learning

Oral presentation

Written report

### **Grades will be based on the following criteria:**

Tests	40%
Lab work assignments	35%
Design project (including working drawings, oral presentation and written report)	25%

### **OTHER REFERENCES**

# Course Competency/Assessment Methods Matrix

EGR 1000; Engineering Graphics I		Assessment Options																															
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment	
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																	
1. Use freehand sketching to sketch isometric, oblique and perspective pictorials.				X	X										X			X															X
2. Describe the basic terms, concept and techniques of computer aided drafting.							X	X			X				X																		X
3. Set up Cad drawings, use drawing aids, save drawings, and get help when needed.					X		X	X			X				X																		X
4. Using geometric construction techniques sketch shapes by hand and on Cad.					X		X	X			X				X																		X
5. Using orthographic principles sketch multi view drawings of detailed parts.				X	X		X	X			X				X			X															X
6. Produce 2d multi view drawings on Cad.				X	X		X	X			X				X			X															X
7. Produce section views and auxiliary views by freehand sketching and in 2d cad.				X	X		X	X			X				X			X															X
8. Find true sizes, distances, and angles between points, lines, and planes in three dimensions.				X	X		X	X			X				X			X															X
9. Dimension sketches and cad drawings.				X	X		X	X			X				X			X															X
10. Produce Cad generated working drawings-both detail and assembly.				X	X		X	X			X				X			X															X

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	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																	
11. Use auto Cad solid modeling software to produce 3d models and drawings of detailed parts.				X	X		X	X			X				X			X															X
12. Convert solid model parts to drawings, assemblies, and .stl files to model on a rapid prototyping machine				X	X		X	X			X				X			X															X
13. To use the design process to design a product to be prototyped and manufactured on campus					X						X			X	X			X															X
14. To present final design with an oral and written report																												X					