

### Course Outline

**COURSE:** CGD 6                      **DIVISION:** 50                      **ALSO LISTED AS:**

**TERM EFFECTIVE:** Summer 2017                      **Inactive Course**

**SHORT TITLE:** ADVANCED COMPUTER GRAPHICS

**LONG TITLE:** Advanced Computer Graphics

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
4	18	Lecture:	2	36
		Lab:	6	108
		Other:	0	0
		Total:	8	144

#### **COURSE DESCRIPTION:**

Technical skills for using computer design for precision manufacturing, including ANSI/ASME Y14.5 2009 geometric dimensioning and tolerancing (GD&T). Prepares students for careers as designers, engineers; CAD/CAM/CAE specialist; drafter, inspectors, machinists, technical sales, and other jobs that interpret engineering drawings. Students may concurrently enroll in CGD 110. **ADVISORY:** Eligible for English 250, 260 and Mathematics 233. Computer lab work can be done both in lab and off-site.

**PREREQUISITES:**

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

L - Standard Letter Grade

**REPEATABILITY:** N - Course may not be repeated

**SCHEDULE TYPES:**

- 02 - Lecture and/or discussion
- 03 - Lecture/Laboratory
- 04 - Laboratory/Studio/Activity
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed
- 73 - Dist. Ed Internet Delayed LAB

## **STUDENT LEARNING OUTCOMES:**

1. Identify examples and explain benefits of Geometric Dimensioning and Tolerancing (GD&T).

Measure: Quizzes & exercises

ILO: 2.3,1,7,4

GE-LO: B7, B8

2. Apply ASTM and ANSI standards in design projects

Measure: Design Project

ILO: 1, 7, 2, 3

GE-LO: ,4B7, B8

3. Incorporate GD&T rules when detailing SolidWorks or other parametric 3D models and working drawings

Measure: Design Project

ILO: 7, 3, 2, 1, 6, 5

GE-LO: B7

4. Propose and render material for student project using ASTM and ANSI Standards

Measure: Design Project

ILO: 7, 2, 1, 3, 6

GE-LO: B7

5. Develop portfolio document that illustrates knowledge of GD&T, ASTM and ANSI standards for creating products for manufacturing industry

Measure:

ILO:

GE-LO: B7

6. Provide and receive constructive criticism and incorporate suggested improvements in design project

Measure: Revisions & Critique

ILO: 2, 1, 6, 3, 7, 4, 5

GE-LO: A2, A2, B8

7. Develop portfolio document that illustrates knowledge of GD&T, ASTM and ANSI standards for creating products for manufacturing industry.

Measure: Portfolio

ILO: 2, 7, 5, 3, 1, 6

GE-LO: B7

## **CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Inactive Course: 02/27/2017 Effective Summer 2017

12 Hours

CONTENT: Overview of GD&T and use in design fields.

SPO: Synthesize ways GD&T is required in design fields.

HOMEWORK: Write research report on ways GD&T in students desired career path.

24 Hours

3/8/2017

CONTENT: Tolerancing in SolidWorks or other Parametric Models.

SPO: Select and use tolerances for optimal production.

HOMEWORK: Select and provide tolerances on parametric mode.

24 Hours

CONTENT: Incorporating GD&T symbology in Parametric Models.

SPO: Apply GD&T symbology in 3D projects.

HOMEWORK: Produce 3D models that correctly use GD&T Symbology.

24 Hours

CONTENT: Overview of Y14.5 2009 requirements.

SPO: Refer to ANSI/AMSE standards to solve problems.

HOMEWORK: Propose incorporating ANSI/AMSE standards for 3D design solution.

24 Hours

CONTENT: Apply Y14.5 2009 in setting up 3D models.

SPO: ANSI/AMSE used for creating 3D models.

HOMEWORK: Create ANSI/AMSE standards matrix for use in 3D design.

24 Hours

CONTENT: Incorporating GD&T to create Working Drawings.

SPO: Prepare Working Drawings that use CG&T.

HOMEWORK: Prepare working drawings of 3D model that applies GD&T rules.

10 Hours

CONTENT: Documentation of technical expertise in portfolio

SPO: electronic documentation of technical expertise.

HOMEWORK: Compile computer graphics of assignments that communicate technical

2 Hours

Final

### **METHODS OF INSTRUCTION:**

Entire class lecture and small group lectures are used as needed by the class or individual. This method is used in the lab times on a need to know basis. The teacher uses the drawing board, computer, and blackboard as actual drawing and design demonstrations encouraging student interaction.

### **METHODS OF EVALUATION:**

CATEGORY 1 - The types of writing assignments required:

Percent range of total grade: 10 % to 15 %

Written Homework

Reading Reports Lab Report

Term or Other Papers

Other: written critiques

If this is a degree applicable course, but substantial writing assignments are not appropriate, indicate reason

Course is primarily computational

Course primarily involves skill demonstration or problem solving

CATEGORY 2 -The problem-solving assignments required:

Percent range of total grade: 25 % to 45 %

Homework Problems

Quizzes

Exams

Other: Design Projects

CATEGORY 3 -The types of skill demonstrations required:

Percent range of total grade: 10 % to 30 %

Class Performance/s

Performance Exams

CATEGORY 4 - The types of objective examinations used in the course:

Percent range of total grade: 15 % to 25 %

Multiple Choice

Matching Items

Completion

Other: Applied Skill Exam Computer Aided Design

CATEGORY 5 - Any other methods of evaluation:

Percent range of total grade: 10 % to 15 %

Portfolio

### **REPRESENTATIVE TEXTBOOKS:**

Required:

David A. Madsen and David P. Madsen, Geometric Dimensioning and Tolerancing, Goodheart-Willcox, 2011, or other appropriate college level text.

ISBN: 0831130725

Reading level of text: 14 grade Verified by: <http://www.standards-schmandards.com/exhibits/rix/index.php>

Other textbooks or materials to be purchased by the student:

Y14.5 - 2009 Dimensioning and Tolerancing. American Society of Mechanical Engineers, ASME. 2009  
ISBN: 9780791831922. 2009.

Grid paper, sketch pens, engineering scale, pencils, headphones, flash drive

### **ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 199330

UC TRANSFER:

Not Transferable

### **SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y  
Noncredit Category: Y  
Cooperative Education:  
Program Status: 1 Program Applicable  
Special Class Status: N  
CAN:  
CAN Sequence:  
CSU Crosswalk Course Department: CGD  
CSU Crosswalk Course Number: 6  
Prior to College Level: Y  
Non Credit Enhanced Funding: N  
Funding Agency Code: Y  
In-Service: N  
Occupational Course: B  
Maximum Hours:  
Minimum Hours:  
Course Control Number: CCC000141196  
Sports/Physical Education Course: N  
Taxonomy of Program: 095300