BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

DFT 2 - Engineering Graphics I **3 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level IV; English Level III; Math Level III
Transfer Status: CSU/UC
34 hours Lecture
51 hours Lab

This is a computer-based engineering graphics course that introduces students to graphical design and problem solving using freehand sketching and a solid modeling application. Topics include sketching and modeling using extrudes, sweeps, and lofts. Additional topics include assemblies development and detail drawing output. Graphics standards including American National Standards Institute (ANSI) Y14.5 and international standards application will be introduced and practiced.

II. **OBJECTIVES**

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

A. Describe the role of technical graphics in the engineering design process.
B. Set up a solid modeling application to develop parts, assemblies and output drawings.
C. Create orthographic and pictorial sketches of mechanical parts and objects using freehand sketching techniques.
D. Create parts with extrudes, sweeps and loft attributes using a solid modeling application.
E. Manipulate and combine parts to produce assemblies from modeled parts using a solid modeling application.
F. Create drawings from parts and assemblies including three view orthographic projection, isometric and exploded pictorial projection using a solids modeling application.
G. Apply relevant areas of graphics standards to document attributes of parts, assemblies and associated drawings.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Technical Graphics Applications	2.00
2. Engineering Design	3.00
3. Basic solids modeling operations	3.00
4. Freehand Sketching and Lettering	2.00
5. Engineering Geometry and Modeling	3.00
6. Parts with extrudes, sweeps and lofts	6.00
7. Assemblies with mates and limits	6.00
8. Drawings with orthographic and pictorial views	2.00
9. Dimensioning, annotation and tolerancing	4.00
10. Graphic Standards	3.00
Total Hours	34.00

Lab

Topics		Hours
1.	Technical Graphics Applications	2.00
2.	Engineering Design	2.00
3.	Basic solids modeling operations	8.00
4.	Freehand Sketching and Lettering	4.00
5.	Engineering Geometry and Modeling	8.00
6.	Parts with extrudes, sweeps and lofts	8.00
7.	Assemblies with mates and limits	6.00
8.	Drawings with orthographic and pictorial views	6.00
9.	Dimensioning, annotation and tolerancing	4.00
10.	Graphic Standards	3.00
Total Hours		51.00

IV. METHODS OF INSTRUCTION

A. Lecture
B. Collaborative Group Work
C. Class Activities
D. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
E. Demonstrations
F. Multimedia Presentations

V. METHODS OF EVALUATION

A. Exams/Tests
B. Quizzes
C. Projects
D. Homework
E. Class participation

VI. EXAMPLES OF ASSIGNMENTS

A. Reading Assignments
   1. Please read the chapter on the History of Engineering Graphics. Be prepared to discuss at our next scheduled class.
   2. Please read the preface and introduction to the ANSI Y14.5 standard provided by the instructor. Be ready to discuss at our next scheduled class.

B. Writing Assignments
   1. After reading the the preface and introduction to the ANSI Y14.5 standard, please summarize in your own words the scope of application of the standard to engineering graphics and submit to instructor when complete.
   2. After reading the chapter on the History of Engineering Graphics, please complete the questions in the study guide and submit to the instructor.

C. Out-of-Class Assignments
   1. Outside of class, go to YouTube on the web and search the terms "engineering graphics and solidworks" exactly as in the quotes. Find the video entitled: "Create an exploded view with SolidWorks 2011" and watch video. Answer the following question: "How does an exploded view apply to the assembly development process?". Submit written answers to instructor at next class.
   2. Please complete the study guide exercises outside of class and be prepared to review your

results in groups at the next class.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Planchard, P.M. . Engineering Graphics with Solid Works. Schroff Development Corporation, 2011.

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