

ADVM 0001D - GEOMETRIC DIMENSIONING AND TOLERANCING

Catalog Description

Formerly known as ADVM 0012

Hours: 54 lecture

Prerequisite: Completion of ADVM 0001A or ENGR 0151 with grade of "C" or better or equivalent as determined by instructor

Advisory: Completion of ADVM 0001B with grade of "C" or better or equivalent as determined by instructor

Description: This course expands upon the basic knowledge of dimensioning mechanical drawings by adding form and feature controls in order to clearly define parts. Review of basic dimensioning and tolerancing. Topics, as defined in ASME Standards, include geometric tolerancing symbols and terms, rules of geometric dimensioning and tolerancing, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and runout, location tolerances, and virtual condition. (CSU)

Course Student Learning Outcomes

- CSLO #1: Apply appropriate, current, and relevant industry standards in preparing technical documentation.
- CSLO #2: Apply fits and allowances to mating parts and explain the advantages and disadvantages of chain and Datum Dimensioning.
- CSLO #3: Identify dimensioning and geometric characteristic symbols and evaluate the appropriate use of dimensioning and geometric characteristic symbols.

Effective Term

Fall 2026

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

By the end of this course, the student should be able to apply the following principles, rules, symbols, and conventions to drawings and CAD Solid Models in compliance with ASME Y14.5 Standard:

1. Dimensioning and Tolerancing
2. Symbols & Terms
3. Datums

4. Material Condition Symbols
5. Tolerance of Orientation & Runout
6. Location Tolerances

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Objective Examinations
 - Example: Students take an objective exam on Datums. Example: Define Datums.
- Skill Demonstrations
 - Example: Students submit 2 dimensional detail drawing demonstrating their ability to apply Geometric tolerances to manufacturing documentation. A faculty member grades the student's performance of learned objectives and accuracy to the ASME standards. A point system is used and a letter grade assigned to the point totals.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. The instructor guides students in the development of viable technical documentation of various product designs to ensure proper manufacturability. The instructor facilitates student learning through guided discussions, interactive lecture curriculum and the evaluation of weekly assignments and drawings. The weekly assignments and drawing are checked for completeness and accuracy according to the current industry standards and an appropriate grade assigned.

Distance Learning

1. Instructor will facilitate an online lecture on Defining and applying positional tolerance to parts on drawings. Students will then participate in a Discussion where they will read and share ideas on the importance of positional tolerancing applications.

Typical Out of Class Assignments Reading Assignments

1. Students must read chapter on positional tolerancing and complete the review questions and apply the knowledge to the print reading assignments. 2. Students required to read articles on tolerancing from professional journals relative to geometric dimensioning and tolerancing principles and practices and discuss industry applications of tolerancing.

Writing, Problem Solving or Performance

1. Students write papers comparing and contrasting various approaches to the application of geometric dimensioning and tolerancing to design problems. 2. Students construct drawings, based upon their written solution to design problems, demonstrating the objectives learned each week.

Other (Term projects, research papers, portfolios, etc.)

1. Students will compile samples of work accomplished into a portfolio that will demonstrate material examined in this course.

Required Materials

- Geometric Dimensioning and Tolerancing
 - Author: Madsen
 - Publisher: Goodheart-Wilcox
 - Publication Date: 2020
 - Text Edition:
 - Classic Textbook?:
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.