

# TECHNOLOGY 312: Design Dimensioning and Tolerancing

**2007-08 Catalog Data:** Design Dimensioning and Tolerancing (3 Credits)

**Catalog Description:** Dimensioning techniques using CAD, limits and fits, material condition modifiers, tolerance stacks and dimensioning standards. Geometric dimensioning and tolerancing.

**Prerequisites:** TECH 211 and (TECH 260 or TECH 265).

**Co-requisites:** None

**Textbooks:**

- Jensen, C. Interpreting engineering drawings, Delmar Publishing, 2002. ISBN: 0-7668-2897-2
- Neumann, Al. Geometric dimensioning and tolerancing workbook. Distributed by the Society of Manufacturing Engineers.

**Supplies:** Portable electronic storage device.

**Instructor:** James W. Wilson, PE

<b>Learning Objectives</b>	<b>Relational ABET Learning Outcomes</b>
Explain the meaning of functional dimensioning and calculate limits/fits.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology. F. An ability to identify, analyze and solve technical problems. J. An ability to understand professional, ethical and social responsibilities. L. A commitment to quality, timeliness, and continuous improvement. M. An ability to program computers and/or utilize computer applications effectively
Apply and distinguish between co-ordinate and positional tolerancing methods.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.

	G. An ability to communicate effectively in writing.
Interpret and apply geometric tolerancing symbology in technical practice.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology. J. An ability to understand professional, ethical and social responsibilities. M. An ability to program computers and/or utilize computer applications effectively
Apply universal dimensioning rules and GDT symbology in detail drawings using a CAD system.	A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines. B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology. J. An ability to understand professional, ethical and social responsibilities. L. A commitment to quality, timeliness, and continuous improvement. M. An ability to program computers and/or utilize computer applications effectively

**Topics:**

1. Minimum requirements of a "drawing for production": The complete size description aspect.
2. Dimensioning and tolerancing terminology
3. General dimensioning practice - Contour dimensioning & other established practices
4. Limit dimensions, Unilateral and Bilateral tolerances, Material conditions such as MMC, LMC and RFS
5. Fit specifications and calculations - ANSI and ISO standards
6. Fundamentals of geometric dimensioning and tolerancing. The ANSI Y14.5M standard.
7. Datum features and the datum reference frame
8. Locational tolerances with emphasis on positional tolerancing
9. Form tolerances - specification, interpretation, and application
10. Orientation tolerances - specification, interpretation, and application
11. Profile and runout specifications
12. Tolerance stacks

**Computer usage:** Students will make use of the AutoCAD™ design package to create detail drawings for production. General dimensioning practice and GDT aspects will be emphasized. They will also use a word processor to write project reports.

**Laboratory Projects:** There will be a two hours of computer laboratory each week. Your attendance is expected at these labs. Selected projects will require teamwork. Unannounced quizzes may be given during lab hours as well. You will be required to prepare a one-page write-up describing your work on selected assignments. All such reports should be word-processed. Students are expected to acquire a computer laboratory account from the CEET following the first class meeting in case they do not have one currently.