

**IT 110**  
**Geometric Dimensioning & Tolerancing**  
**Fall 2009**  
**Barksdale Air Force Base**

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**Course Objective:** This course will present the principles of geometric dimensioning and tolerancing (GD&T) as it applied to industry accepted standards, such as ANSI/SME Y14.5M – 1994. This includes the use and meaning of GD&T symbols on manufactured part drawings. The interpretation of GD&T symbols in feature control frames and the application of GD&T symbols to various working drawings are emphasized.

**Textbook:** Geometric Dimensioning and Tolerancing, by David A. Madsen, The Goodheart-Willcox Company, Inc., 2003.

**EVALUATION:**

Exam 1	30%
Exam 2	30%
Homework	40%

**Grading Scale:**

A:	90-100%
B:	80-89%
C:	70-79%
D:	60-69%
F:	<60%

**Equipment Needed:** A hand-held scientific calculator.

**Academic Conduct:** Cheating on examinations, submitting work of other students as your own, or plagiarism in any form will result in penalties ranging from an **F** on the assignment to expulsion from the university, depending on the seriousness of the offense.

**Exams:** All exams are open book & open note

**Homework:** Homework will be completed, graded by peers, and corrected during class. This will reinforce learning by giving students timely feedback on and allowing them to see the material multiple times (once while completing the homework, once while grading a peer's homework, and once while correcting the homework). Homework not completed in class will be subject to a 10-point grade reduction.

**Major Topics:**

- ANSI/ASME Y14.5M standard
- GD&T rules and practices

- Rules 1 & 2
- Material conditions
  - Maximum material conditions (MMC)
  - Least material conditions (LMC)
  - Regardless of feature size (RFS)
- Extreme form variation
- GD&T symbols and terms
  - Feature control frames
  - Basic dimensions
  - Geometric characteristic symbols
  - Bonus tolerances
- Datums
  - ANSI/ASME Y14.5M symbols
  - Datum targets
  - Datum simulators
- Form tolerances
  - Straightness
  - Flatness
  - Circularity
  - Cylindricity
- Profile tolerances
  - Of a line
  - Of a surface
- Orientation tolerances
  - Parallelism
  - Perpendicularity
  - Angularity
- Runout tolerances
  - Circular runout
  - Total runout
- Location tolerances
  - Position
  - Concentricity
  - Symmetry
  - Composite
  - Virtual condition
  - Fixed and floating fastener formulas
- Functional gages

## **HOMEWORK**

First weekend read chapters 1 through 4 and answer the following questions in there entirety.

Chapter 1 – Answer questions Test 1 pg 27

Chapter 1 – Answer questions Print Reading Exercise questions pg 32

Chapter 2 – Answer Print Reading Exercise questions 59

Chapter 3 – Answer Print Reading Exercise questions 97  
Chapter 4 – Answer Print Reading Exercise questions 125

FIRST WEEKEND HOMEWORK: IF YOU HAVE QUESTIONS BRING THEM TO CLASS.  
WE WILL COVER YOUR QUESTIONS IN CLASS.

First weekend assignment Due at 8AM October 17<sup>th</sup>.

2<sup>nd</sup> weekend due Saturday October 17th Read chapters 4 through 8

Chapter 5 – Answer Print Reading Exercise questions 159  
Chapter 6 – Answer Print Reading Exercise questions 190  
Chapter 7 – Answer Print Reading Exercise questions 229  
Chapter 8 – Answer Print Reading Exercise questions 236

Second weekend assignment Due at 8AM October 31<sup>st</sup>.

**ALL HOMEWORK WILL BE HANDED IN NEAT:**

**IN THE UPPER RIGHT HAND CORNER OF YOUR PAPERS YOU TURN IN  
I WANT YOUR NAME, CHAPTER OF PROBLEM, PAGE NUMBER OF  
PROGRAM, CLASS NUMBER AND DATE. I WILL DEDUCT POINTS IF I  
HAVE TO HUNT FOR YOUR NAME OR IF YOUR HOMEWORK IS MESSY.**

**TESTS**

Test 1 will be given on Sunday of the 2<sup>nd</sup> weekend

Test 2 will be given on Sunday of the 3<sup>rd</sup> weekend

