

# Geometric Dimensioning and Tolerancing

Level 1 Design, Manufacturing and Quality Skills Training



ISO 9001:2008  
CERTIFIED

## Overview

Geometric Dimensioning and Tolerancing (GD&T) is a standardized symbolic language and design methodology used on engineering drawings and 3D models to ensure the product requirements are clearly understood by everyone using the information. GD&T are the tools by which we know a product will fit or align properly *before it is manufactured*. The use of and ability to understand GD&T is required by many large organizations and this requirement is passed onto the suppliers.

This course provides GD&T system concepts, rules, legal implications, tools and techniques from design, inspection, manufacturing, and concurrent engineering points of view. Learn functional dimensioning and tolerancing, explained in detail with many examples, all the symbology as well as the legal reasons for GD&T and its practical applications. Gain an understanding of how GD&T eliminates the deficiencies of plus and minus (+/-) dimensioning and tolerancing. This level 1 fundamental course is based on the ASME Y14.5-2009 Standard. Books are supplied and a calculator is recommended.

## Who Should Attend

Anyone who deals with engineering drawings or annotated models is an ideal candidate for this course. Engineering, design, inspection, quality assurance, quality control, manufacturing, assembly, service, purchasing, management, and other staff can also benefit from this material.

## Content

- The Purpose of GD&T
- Types of Geometry
- Engineering Drawing and Tolerancing Philosophy
- GD&T Symbology
- Plus and Minus Dimensions and Tolerances
- Types of Features
- Actual Mating Envelopes: Unrelated and Related
- Form Tolerances: Flatness, Circularity, Cylindricity and Straightness
- Orientation Tolerances: Perpendicularity, Parallelism and Angularity
- Floating and Fixed Fasteners
- Circular and Total Runout Tolerances
- The ASME Y14.5 Standard
- Legal Issues Pertaining to Part Definition
- Business Implications of GD&T and Engineering Drawing Specifications
- Interpretation of Limits and Measurement
- Material Condition and Boundary Modifiers
- Basic Dimensioning Practices
- Datums: Features, Feature Simulators, Targets and Reference Frames
- Virtual and Resultant Condition
- Positional and Projected Tolerance Zones
- Concentricity and Symmetry Tolerances
- Uniform and Non-Uniform Profile Tolerances

## Benefits

Upon completion of this course, students can improve their design, manufacturing and quality skills by utilizing the fundamentals of GD&T. A certificate of completion is also provided.

## Duration, Registration and Pricing

Contact the training center via any of the methods provided below for scheduling and pricing of this three-day course. Ask about these other classes within the series also available upon request.

- Level 2 Applications of GD&T
- Level 3 Advanced GD&T
- Level 4 Tolerance Stackup and Analysis



ACI Technologies, Inc. • phone: 610.362.1200 • web: [www.aciusa.org](http://www.aciusa.org)  
Training Center • phone: 610.362.1295 • email: [registrar@aciusa.org](mailto:registrar@aciusa.org)  
Helpline • phone: 610.362.1320 • email: [helpline@aciusa.org](mailto:helpline@aciusa.org)

LD0000