

## Fundamentals of Geometric Dimensioning and Tolerancing (GD&T)

### 3-Day Seminar

(~24 hours of instruction; 2.4 CEU's)

#### Course Description

This course is an introduction to the American Society of Mechanical Engineers (ASME) Y14.5 Standard

#### Objectives

1. Explore key concepts and the "language" of the ASME Y14.5 Standard.
2. Enable participants to understand and apply each of the Y14.5 Standard's geometric symbols.
3. Instill a fundamental understanding and the ability to read and understand Datum Reference Frames.
4. Understand the definitions and the effects of Material Condition Modifiers and when to use them.
5. First step to prepare for the ASME Geometric Dimensioning and Tolerancing Professional (GDTP) Technologist and Senior certification exams.

#### Benefits

Your drawings have GD&T on them (or perhaps they are supposed to)! If you have attempted to work with GD&T and you lack the confidence to choose which geometric controls to apply or you have trouble interpreting existing specifications and reading the "language" of GD&T, this course is for you. The improper use of GD&T can be far more costly than not using it at all! This program is a complete introduction to the ASME Y14.5 Standard.

In this program we focus on the "What, When, Why and How" of GD&T. The main goal is to bring all participants to a common, basic and operational level of understanding. The course is a thorough introduction for those with a little, to a moderate, level of experience using GD&T. Complete GD&T training requires more than just a few days and a single class; however, this class is the first step in the journey to forming a solid foundation of GD&T knowledge from which a true grasp of GD&T principles (and the ability to properly apply and interpret the complex simplicity of the "language" of GD&T) will come.

*AGI is dedicated to continuing service. Our concern is that the individuals we teach actually retain that which their companies and we have worked so hard to present. This is precisely why we offer, for each participant of any AGI seminar, access to an ASME GDTP Senior certified instructor who will be available to answer follow up questions after the course via e-mail or phone.*

#### Program Outline

The program begins with the history of GD&T, then looks at the cost of designing and manufacturing a part. We compare the "old" methods of +/- coordinate dimensioning and discover Geometric Tolerancing to the ASME Y14.5 Standard. In this analysis, we demonstrate the strengths and advantages of GD&T as an effective design tool, as a manufacturing or purchasing (estimator) aid, and as a quality control interpretation tool. When used and applied properly, a highly efficient tool to facilitate clear communications within your business.

#### Subject matter covered (as a minimum):

- Introduction - a review of the "old" system versus GD&T, Rule #1, Datum Features and other key AGI "Rememberalls"
- General rules of dimensioning and drafting per the ASME Y14.5 Standard.
- Tolerance Zones – definition, concepts, comparison to existing systems.
- GD&T symbology and definitions of controls – particular emphasis on position tolerancing
- "Bonus" Tolerance –how to take advantage of the material modifier effect
- Datum Reference Frames - definition, proper construction and the proper selection
- Application - demonstrating many practical "real world" exercises to enhance learning, and to increase user confidence

#### Who Should Attend

This program is designed for anyone who designs, drafts, engineers, purchases, manufactures, estimates, or inspects parts and assemblies. Particular emphasis is placed on those who design and manufacture, and those responsible for quality.

#### Prerequisites

Ability to read and understand nomenclature of technical drawings/prints and correctly interpret perspective, section, and detail views.