



# IIGDT Training

## “GD&T - Tolerancing Optimization”

### Objective:

To apply tolerancing optimization techniques using multiple analytical methods to a wide variety of components and sub-assemblies, from the very simple to the more complex analysis.

### Course Length:

2 days (16-hours)

### Course Content:

#### Tolerancing Optimization

- Analysis of geometric tolerances, resultant conditions, virtual conditions and plus and minus tolerated dimensions
- Analysis using single-segment and composite feature control frames using Position and Profile
- Optimization of derived inner and outer boundaries using floating and fixed fastener formulas
- Calculating derived boundaries using MMC, LMC and RFS Material Condition modifiers and apply transformation principles to different tolerancing scenarios to ensure optimal design intent
- Calculating and understanding the effects of angular stack-up contributors
- Calculate minimum and maximum gaps for components and assemblies
- Analysis and implications of different datum reference frames and implications of form errors in the analysis
- Understand vector-loop analyses and monty-carlo simulations

### Targeted Audience:

Anyone with the responsibility of specifying, analyzing and applying tolerances to mechanical components and assemblies, tooling, equipment, fixtures or gages, or anyone requiring a more thorough understanding of tolerancing optimization and analysis. Specifiers and decision makers of engineering requirements and specifications as well as specifiers of manufacturing processes and measurement applications and anyone doing statistical analysis of design, manufacturing or measurement data. Engineers, designers, metrologists, technicians, machinists, toolmakers, designers, senior inspectors, senior technicians, statisticians and mechanical engineers at all levels.

### Prerequisites:

GD&T - Advanced Applications! An advanced knowledge of GD&T is required to allow all participants to be successful in learning tolerancing optimization and tolerance analysis techniques. If not proficient in GD&T at an advanced level it is strongly recommended that all individuals take or retake the advanced course prior to the tolerancing optimization and analysis course to ensure an optimum and proficient level of understanding.