Geometric
LEARNING SYSTEMS

GD&T FUNDAMENTALS OUTLINE
on-site training program; conducted in 2 or 3 days

DRAWINGS AND DIMENSIONING
- Importance of engineering drawings
- Fundamental dimensioning rules
- Review of coordinate dimensioning and tolerancing
- Benefits of geometric dimensioning and tolerancing
- History of GD&T
- Quality issues: how GD&T fits into other standards
- GD&T standard: ASME Y14.5-2018

INTRODUCTION TO GD&T SYMBOLS AND TERMS
- Definitions (local size vs. envelope, feature of size)
- Material conditions: MMC, LMC, RFS
- Radius and controlled radius
- Reading the feature control frame

RULES AND CONCEPTS OF GD&T
- Rule #1: “Size also controls form”
- Inspecting a part for size limits
- Rule #2: Implied RFS
- Virtual condition
- Bonus tolerance
- Gaging GD&T — fixtures, special gages, CMMs

FORM TOLERANCES
- Flatness
- Straightness
- Circularity
- Cylindricity
- Form tolerance applied to a feature of size
- Per-unit form control

DATUMS
- Purpose of datums in GD&T
- Single planar datum
- The datum reference frame
- How to select datums for a part
- Simulating datums on gage fixtures and CMMs
- Feature-of-size datums (MMB, formerly MMC)
- Compound datum features
- Datum targets

PROFILE TOLERANCES
- Profile of a line
- Profile of a surface
- Profile with datum references
- Composite profile control

ORIENTATION TOLERANCES
- Perpendicularity
- Angularity
- Basic dimensions
- Parallelism
- Tangent plane modifier
- Pitch diameter rule for screw threads

LOCATION TOLERANCES
- Definition of “true position”
- Application of position with MMC or LMC
- Application of MMB and RMB to datum features
- Inspecting parts for position
- Composite position control
- Two single-segment position control
- Projected tolerance zone
- Calculating tolerances: fixed and floating fasteners
- Concentricity; why it is has been dropped
- Symmetry; why it is has been dropped

RUNOUT TOLERANCES
- Discussion of TIR, FIM, coaxiality
- Difference between runout and other circular controls
- Circular runout
- Total runout

GD&T DESIGN PHILOSOPHY
- The 4 steps to applying GD&T to a new design
- Mock design for an actual part
- Review sample drawings

Pricing depends on the number of participants and any travel costs for the instructor. For further information, contact:

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