# GD&T BASICS
# FUNDAMENTALS COURSE

## Make Better GD&T Decisions with your Drawings

### 2-Day GD&T Fundamentals Public Workshop
### Upcoming March 2020 - Dates and Location Coming Soon

With the GD&T Basics Fundamentals 2-Day Workshop, you will learn a simple framework that will allow you to understand how GD&T is used and why. We don't throw every concept at you – we make absolutely sure that what we teach is what you will actually need in the real world.

Our #1 goal is that you retain the information you learn and make a noticeable impact at your company when you get back from training!

### Course Objectives:

- Understand the simple GD&T framework that simplifies 95% of all GD&T.
- Breaks down the main requirements and terminology of the ASME Y14.5 Standard into simple English.
- Learn all 14 major symbols & how to use them, which ones are most useful & which ones to avoid.
-Discover how Max Material Condition creates bonus tolerance while maintaining a functional part.
-Understanding what datums do & how they are applied on drawings for design, manufacturing, & inspection.
-Study real drawings to understand how GD&T is applied on actual parts.
-Learn best practices that represent a realistic approach on getting started using GD&T on real drawings.
-Retain key concepts using our included resources so you will be able to apply what you learn after training.

• Please see the training curriculum for this Fundamentals Training on the next page.

### Pricing and Discounts:

Training Price: $997 (Prices Subject to Change)

** Early Registration Discount ($100 off) available when registered up-to 1-month before training date
** 10% Discount when registering 3 or more people from the same organization
** Price does not include travel or lodging costs

### What's Included in the Training:

-2 Days of training hosted by Tom Geiss – Certified ASME Senior-Level Trainer
-6 Months of Online Access to our GD&T Fundamentals Training ($299 Value!)
-Printed Premium GD&T Wall Chart
-GD&T Pocket Guide
-Summary Review Handout Packet
-Certification of Completion
-16 PDHs (Personal Development Hours)
-Continental Breakfast & Lunch both days
-Evening reception – Immediately following the first day of training

### Who Should Attend GD&T Fundamentals:

Our training is designed to be very approachable and geared towards everyone from entry level to those with intermediate experience. To take this training, you should have some experience in a design, production or inspection environment working with engineering drawings. You should also be able to understand how parts are represented and viewed on a print. No prior GD&T knowledge is required though

**We promise, once you take our training & understand our GD&T framework, you will drastically improve the way you work with your drawings. We don't want you to just understand theory – we want you to apply what you learn!**

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# Syllabus for the GD&T Fundamentals Course

**Section 1: Introduction**

- Course Introduction
- Simple Example - What is GD&T?

**Section 2: The GD&T Framework**

- Terminology & Basic Rules
- The Feature Control Frame
- S.L.O.F. & the 3 Simple Principles of GD&T

**Section 3: S&F – Size and Form**

- Intro to Features and Material Conditions
- Rule #1 of GD&T (Envelope Principle)
- Straightness (Surface)
- Straightness (Feature of Size)
- Flatness (Surface)
- Flatness (Feature of Size)
- Circularity
- Cylindricity

**Section 4: Datums Control**

- Intro to Datums
- Datum Reference Frame
- Primary Datum Controls
- Basics of Datum Selection

**Section 5: L – Location (Position)**

- Why Use Position Over Coordinate Dimensions
- True Position – Basics
- The Position Calculation

**Section 6: ⌭ - Orientation Tolerances**

- Parallelism (Surface)
- Parallelism (Axis)
- Perpendicularity (Surface)
- Perpendicularity (Axis)
- Angularity (Surface and Axis)

**Section 7: Material Modifiers**

- Maximum Material Condition
- Least Material Condition
- Regardless of Feature's Size & Rule #2

**Section 8: Profile Tolerances**

- Profile of a Surface – Basics
- Profile In-Depth (Modifiers)
- Profile of a Line

**Section 9: Runout Tolerances**

- Runout/Circular Runout
- Total Runout

**Section 10 – Symbols to Avoid Using**

- Concentricity
- Symmetry

**Course Summary: Real -World Exercises**

- SLOF Review for Drawings (Size, Location, Orientation & Form)
- Interpreting Weldment Print
- Axle Shaft Interpretation & Inspection
- Applying GD&T Yourself - Clevis Bracket Exercise

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# GD&T Advanced

## Make Better GD&T Decisions with your Drawings

2-Day GD&T Advanced Public Workshop
Upcoming March 2020 - Dates and Location Coming Soon

With the GD&T Basics Advanced 2-Day Workshop, you will learn a simple framework that will allow you to understand how GD&T is used and why. We don't throw every concept at you – we make absolutely sure that what we teach is what you will actually need in the real world.

Our #1 goal is that you retain the information you learn and make a noticeable impact at your company when you get back from training!

### Course Objectives:

- Build off the topics learned in the GD&T Fundamentals Course to understand advanced GD&T controls.
- Learn how advanced datum controls are to be interpreted and applied in measurement.
- Create functional gauges for inspection and understand how to fully understand the limits of a part.
- Understand composite controls for position and profile tolerances and understand why they are beneficial.
- Calculate what tolerance values are required to correctly assemble bolted connections with guaranteed fits.
- Learn cost saving techniques that benefit manufacturing processes and inspection.
- Perform boundary tolerance calculations on parts to detect minimum and maximum limits.
- Gain a full understanding for industry specific topics in the ASME Y14.5 that you may come across on your prints.

• Please see our training curriculum for this Advanced Training on the next page.

### Pricing and Discounts:

Training Price: $997 (Prices Subject to Change)

** Early Registration Discount ($100 off) available when registered up-to 1-month before training date
** 10% Discount when registering 3 or more people from the same organization
** Price does not include travel or lodging costs

### What's Included in the Training:

-2 Days of training hosted by Tom Geiss – Certified ASME Senior-Level Trainer
-6 Months of Online Access to our GD&T Advanced Training ($399 Value!)
-Printed Premium GD&T Wall Chart
-GD&T Pocket Guide
-Review Handout Packet
-Certification of Completion
-16 PDHs (Personal Development Hours)
-Continental Breakfast & Lunch both days
-Evening reception Wednesday November 6th – Immediately following training

### Who Should Attend GD&T Advanced:

Our GD&T Advanced Training builds on the information in our Fundamentals Training. We will explore a deeper understanding and application of advanced concepts of GD&T. We recommend completion of our GD&T Fundamentals Course, or an equivalent GD&T course from another company, before enrolling in the GD&T Advanced Training.

**We promise, once you take our training & understand our GD&T framework, you will drastically improve the way you work with your drawings. We don't want you to just understand theory – we want you to apply what you learn!**

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# Syllabus for the GD&T Basics Advanced Course

**Section 1: Introduction**

- Intro: Review Key Rules from Fundamentals Course and SLOF Principles
- Discuss Specific Use Cases of Advanced Concepts

**Section 2: Advanced Datums**

- Datum vs Datum - Feature vs Datum - Feature Simulators
- Patterns as Datums
- Datum Targets
- Datum Translation & Movable Targets
- Irregular & Inclined Datums

**Section 3: Functional Gauging & Datum Modifiers**

- Maximum Material Boundary (MMB)
- Simultaneous Requirements
- Gauge Building Exercise with Position
- Functional Gauge Design Considerations

**Section 4: Composite Tolerances**

- Composite Tolerances – Single Datum
- Composite Tolerances – Multiple Datums
- Multiple Single Segment Tolerances
- Composite Profile Tolerances
- Clevis Bracket – Composite Design Case Study

**Section 5: Fastener Tolerances & Design**

- Projected Tolerances
- Fixed Fasteners
- Floating Fasteners
- Zero Tolerance at MMC
- Hole Processes (Counterbore etc.)

**Section 6: Geometric Tolerance Calculations**

- RFS Wall Thickness Boundary Calculations
- Practice Tolerance Calculation–RFS Example
- MMC & LMC Positional Stack-Up Method
- Practice Tolerance Calculation–MMC Example
- Tolerance Impact of Datum Surfaces (Orientation & Form)
- Practice Application–Datum Surface Tolerance Calculation

**Section 7: Additional Features, Rules and Symbols**

- Tangent Line, Free State & Statistical Tolerance
- Individually Callout & Continuous Features
- Parts in Restrained Condition for Measurement
- Screw Thread & Gear Spline Rules
- Knurling and Keyseats
- Conical & Flat Tapers, Slope, & Full Dia. Depth
- Review of User Designs/ Use Cases & Closing

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