
Geometric Dimensioning & Tolerancing (GD&T)

Practical Interpretation and Measurement

Course No. 135-5

FOR WHOM INTENDED: Individuals performing inspection, design, manufacturing and assembly. Understanding geometric dimensioning and tolerancing is essential for anyone reading blue prints

BRIEF COURSE DESCRIPTION: Course 135 has two parts, which are also available as two separate courses: Course 135A: *Beginning GD&T*, and Course 135B: *Intermediate GD&T*.

Part One commences by introducing GD&T, the concepts of size control and material tolerances. After defining the terminology to be used, geometric characteristics and symbols, the course proceeds to demonstrate how the Geometric system works. Practical applications are included, also blueprint reading and interpretation.

The course next covers application of position tolerance measurement and limits of size methods. Part One concludes with a section on form tolerances for configurations such as flatness, straightness and roundness.

In Part Two, Datum reference methods are covered in detail. Orientation tolerances are also covered, for perpendicular, parallel and profile views of various items.

The topic of profile and position tolerances are covered in some depth as are co-axial, symmetrical and concentric applications.

Students will participate in practical exercises to demonstrate their understanding of the material covered.

Participants successfully completing this course will be able to understand, evaluate and use geometric dimensioning techniques. They will be able to read and fully understand blueprint drawings of mechanical devices.

CERTIFICATE PROGRAMS: This course may be used as an elective for TTI's [Metrology Specialist Certificate \(MSC\) Program](#), or for any other [TTi specialist certificate program](#).

PREREQUISITES: There are no definite prerequisites for this course. However, this course is intended for individuals involved in a related technical field.

TEXT Each student will receive a copy of the *Geometric Dimensioning and Tolerancing Workbook* by Al Neumann, which is considered the definitive reference work in the GD&T industry.

COURSE HOURS, CERTIFICATE AND CEUs Open courses meet seven hours per day. Upcoming presentation dates can be found on our current [open course schedule](#). Class hours/days for on-site courses can vary from 14–35 hours over 2–5 days as requested by our clients. Upon successful course completion, each participant receives a certificate of completion and one Continuing Education Unit (CEU) for every ten class hours.

For [schedules](#), [general information](#) and [registration forms](#), see TTI's web site.

Course Outline

Part I (Course 135A, Beginning GD&T)

Introduction to GD&T

Symbols, Terminology

The Geometric System

Plus /Minus • Angle blocks

Material condition modifiers

Zero tolerances

Position Tolerance Verification

Hole verification

Measurement conversion

Cartesian and Polar Coordinates

Limits of Size

Go-No Go Gages

Hub application

Quality product plans:

Manufacturing, Dimensional

Datum Reference Frame Theory

Simulators, Features with and without size

Establishing and Qualifying a DRF

Form Tolerances

Flatness, Straightness, Circularity

Part II (Course 135B, Intermediate GD&T)

Datum Modifiers

Effect of modifiers

Paper gage, Round part with slot

Datum Reference Frame Selection and Qualification

Edges, Slot, Pilot Pin

DRF Applications

Plates, Holes and Slots

Orientation Tolerances: Parallelism, Perpendicularity, Angularity

Profile and Position Tolerances

Unilateral, Bilateral

Rectangular, Cylindrical

Spherical, Conical

Non-Cylindrical controls

Coaxial, Run-out, Concentricity

Fastener and Screw threads

Floating and Fixed, Tolerances

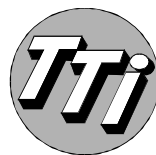
Inner and Outer Boundary Stack-up Calculations

Wall thickness

Final Review of Course Material

Student Exercise—utilizing course material in a practical application

Award of Certificates for Successful Completion



**Technology
Training, Inc.**

(a tti group company)

Toll-free telephone:

866-884-4338 (866-TTI-4edu)

805/715-2638 Fax: 805/715-2650

e-mail: training@ttiedu.com

<http://www.ttiedu.com>