



HRD
awards
2022

**TRAINING
PROVIDER**



GEOMETRICAL PRODUCT SPECIFICATION

- ISO 8015, ISO 1101

2 DAYS PROGRAM BY SELVARAJ

Date : 22 & 23 Nov 23 (Wed & Thu)

Venue : Hilton Petaling Jaya Hotel, Selangor

COURSE OBJECTIVES:

At the conclusion of this 2 days program, participants will be able to:

1. Gain knowledge on what GPS is all about
2. Explain the benefits of geometric tolerancing.
3. Learn how to apply GPS in their job.
4. Able to interpret customers requirements from the design drawing.
5. Be reminded of the Do's & Dont's of proper tolerancing.
6. Able to set quality control criteria from design drawing.
7. Identify datum features and determine their order of precedence.
8. Identify and interpret each of the characteristic symbols.
9. Correctly interpret GPS feature control frames and explain the impact on manufacturing and inspection.

INTENDED AUDIENCE :

1. This 2 day's workshop has been designed for Engineers, Supervisors, Technicians, Inspection & Measurement Technicians and Production staff who are involved in design, measurement and production of mechanical parts.
2. This course is designed for personnel whose work requires them to communicate, interpret or manufacture products using engineering drawings and/or CAD models.
3. Also, those communicating constantly with customers for new parts/molds manufacturing.
4. Participants should understand basic blueprint reading.

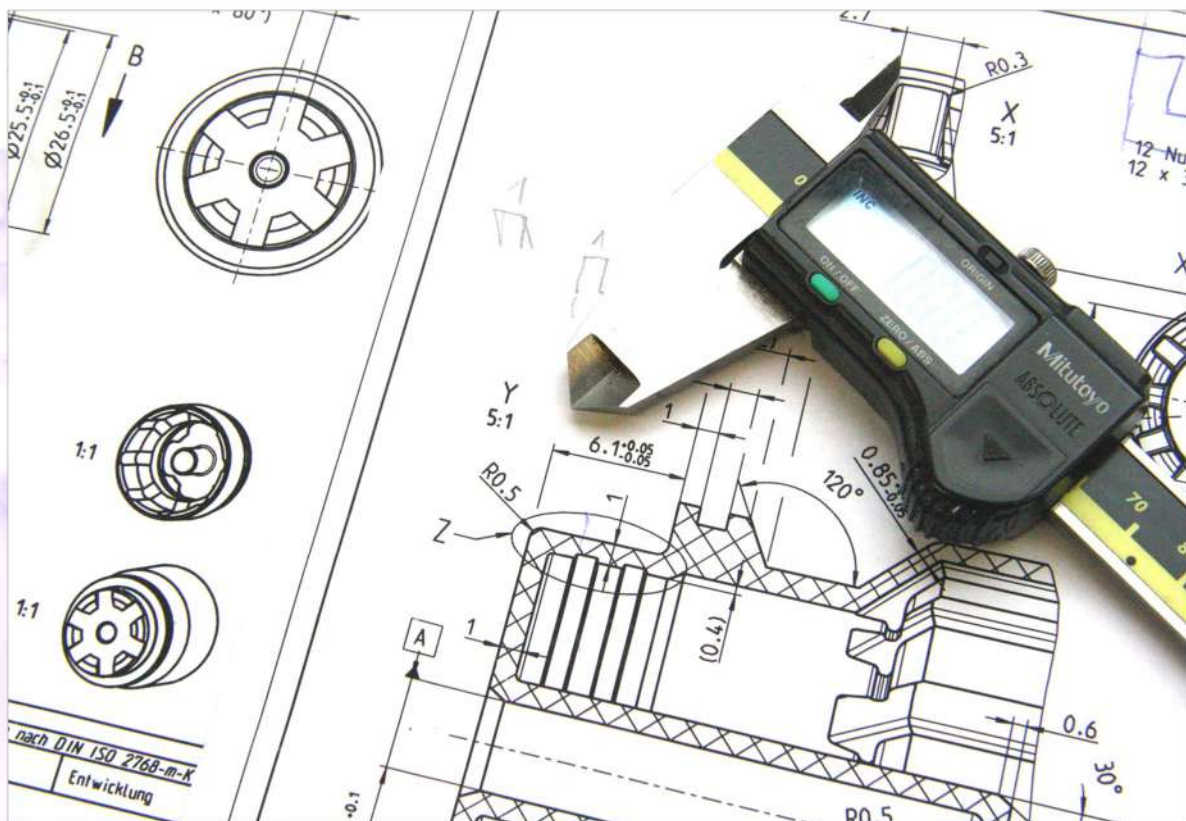
METHODOLOGY :

1. The workshop is a mixture of presentations with personal examples, videos, assessment, discussions and group activities.
2. Practical activity on drawing interpretation and measurement methods will be given throughout the training for better understanding.

INTRODUCTION

Geometric product specification (GPS) is a language used on mechanical engineering drawings composed of symbols that are used to communicate geometry requirements efficiently and accurately for associated features on components and assemblies. GPS is, and has been, successfully used for many years in the automotive, aerospace, electronic and the commercial design and manufacturing industries.

Success oriented industries and organizations which require accurate and common lines of communications between engineering, design, manufacturing, and quality should consider GPS as their mechanical drawing standard.



DAY 1

Introduction to GPS

- i. Limitations of coordinate tolerancing
- ii. Why we need geometrical tolerances? (ISO 14405-2)
- iii. Advantages of GPS
- iv. *Exercise 1*

Standards

- i. ISO vs ASME – main differences
- ii. ISO 8015
- iii. ISO 1101
- iv. ISO 14405
- v. ISO 5459
- vi. ISO 2768
- vii. ISO 22081
- viii. ISO 20457
- ix. *Exercise 2*

Dimensioning & tolerancing fundamentals

- i. Basic dimension or TED
- ii. Critical dimension
- iii. Reference dimension
- iv. Feature control frame
- v. Functional limits
- vi. Tolerance limits
- vii. General tolerancing (ISO 2768)
- viii. Workpiece functional level
- ix. *Exercise 3*

Common symbols used in GPS.

- i. New symbols (from ISO 1101)
- ii. *Exercise 4*

Rules for drawing & design (as per ISO 8015)

- i. Invocation principle
- ii. Principle of GPS standard hierarchy
- iii. Definitive drawing principle
- iv. Feature principle
- v. Envelope and Independency principle
- vi. Decimal principle
- vii. Default principle
- viii. Reference condition principle
- ix. Rigid workpiece principle
- x. Duality principle
- xi. Functional control principle
- xii. Responsibility principle
- xiii. *Exercise 5*

Datums

- i. Datum vs. datum feature (as per ISO 5459)
- ii. The datum reference frame
- iii. Primary, secondary, and tertiary datums
- iv. *Exercise 6*

DAY 2

Forms (ISO 1101)

- i. Straightness
 - a. Straightness Brief
 - b. Line Element Straightness
 - c. Design
 - d. Tooling / production
 - e. Inspection
- ii. Flatness
 - a. Flatness Brief
 - b. Surface Flatness
 - c. Design
 - d. Tooling / production
 - e. Inspection
- iii. Roundness
- iv. Cylindricity
- v. *Exercise 7*

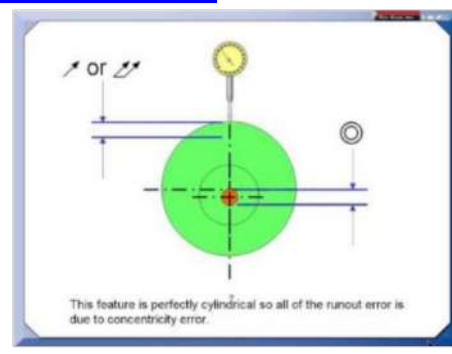
Orientation (ISO 1101)

- i. Angularity
- ii. Perpendicularity
- iii. Parallelism
- iv. *Exercise 8*

Location (ISO 1101)

- i. Position
- ii. Symmetry
- iii. Concentricity
- iv. *Exercise 9*

Runout (ISO 1101)



- i. Circular runout
- ii. Total runout
- iii. *Exercise 10*