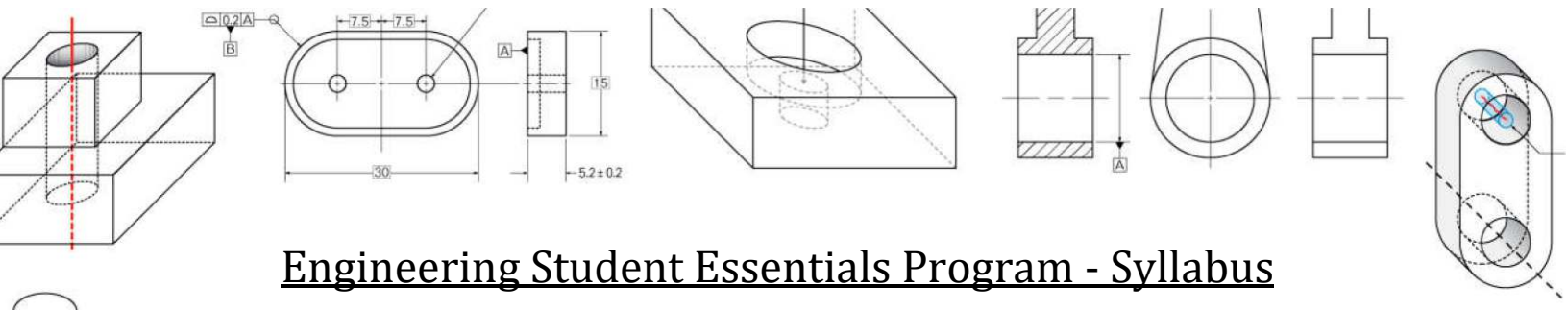
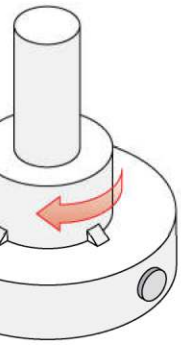
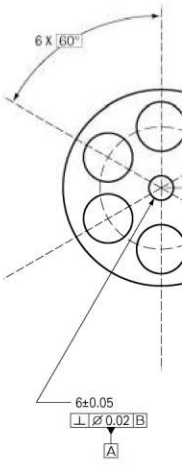


Engineering Student Essentials Program - Syllabus

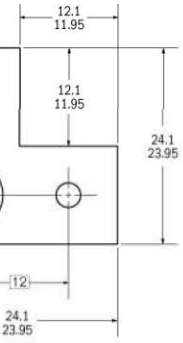
Engineering Drawing Lessons:





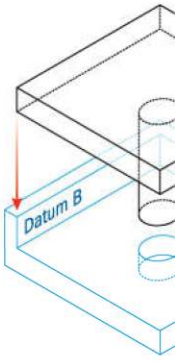
Section 1: Intro to Engineering Drawings

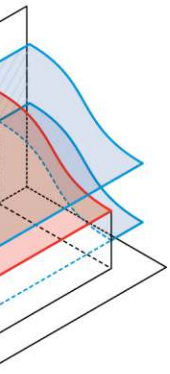
- Types of Drawings and How They're Used
- Goal of an Engineering Drawing
- Most Important Parts of the Drawing



Section 2: Parts of a Drawing

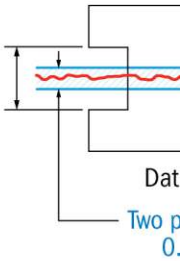
- Field of View
- Title Block
- General Drawing Notes
- Revision Block
- Bill of Materials
- Drawing Intro - Examples

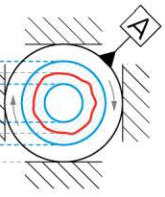




Section 3: Understanding Engineering Graphics

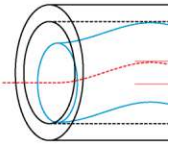
- Part Geometry Lines
- Orthographic Views – Understanding a 2D Print for a 3D Part
- Example of Visualizing Orthographic Views
- Common Drawing Views
- Types of Section Views
- Descriptive/Dimension Lines
- Understanding Drawing Views - Example

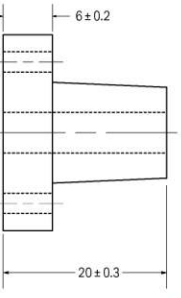




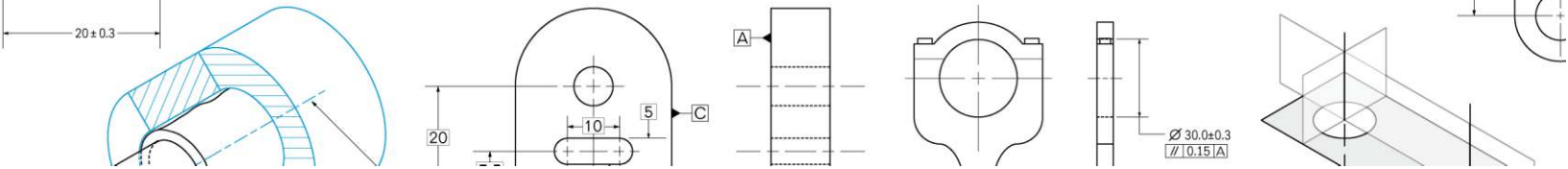
Section 4: Tolerances & Dimensions

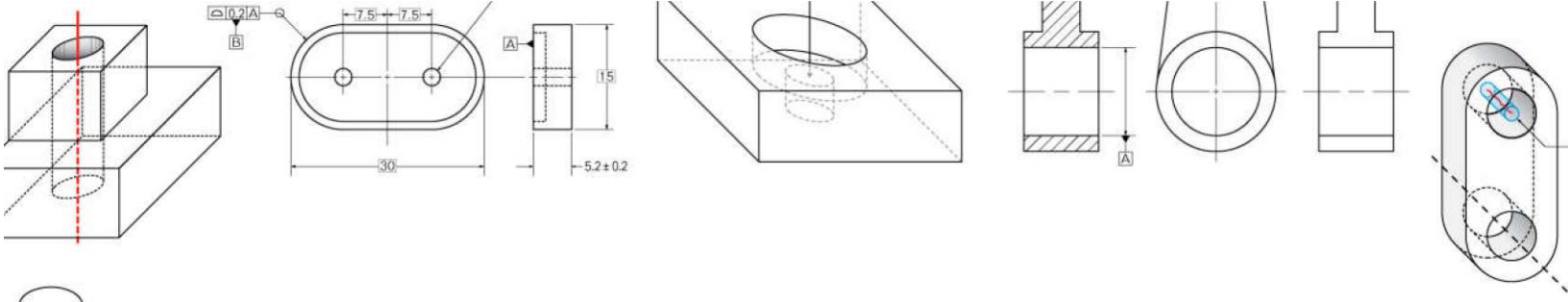
- Intro to Part Tolerances
- Inch vs. Metric
- Types of Dimensional Tolerances
- Coordinate Dimension Tolerances
- Dimensional Tolerancing - Example



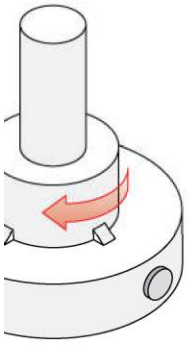


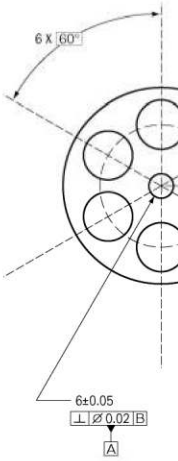
More Lessons Coming Soon – See Next Page for Details

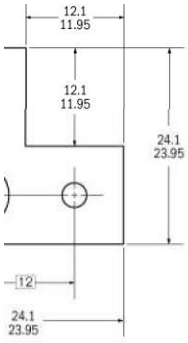




Additional Lessons Coming Soon

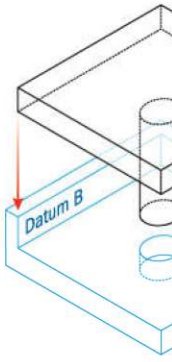


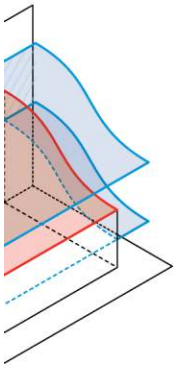


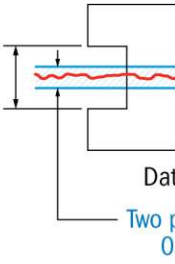


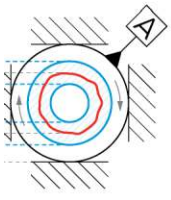
*Estimated: August 30, 2020***

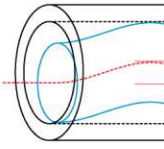
- *Roughness and Hardness Callouts*
- *Fundamental Welding Symbols*
- *General Drawing Symbols & Callouts*
- *Polar & Coordinate Tolerancing Methods*
  - *Drawing Requirements & Symbols – Examples*

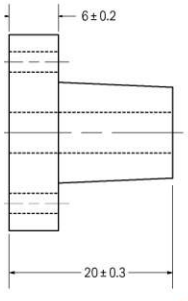


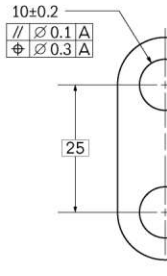


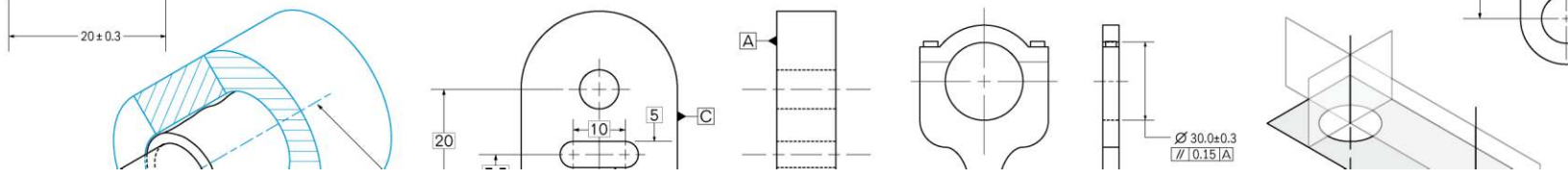


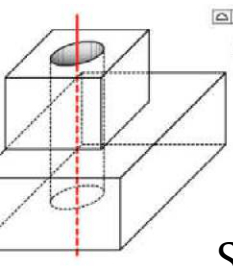
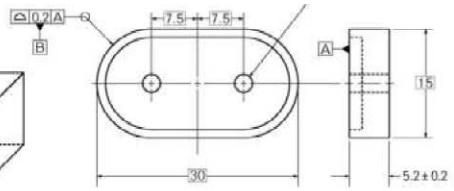
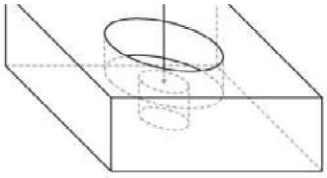
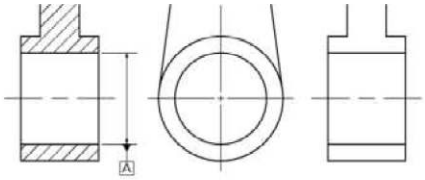
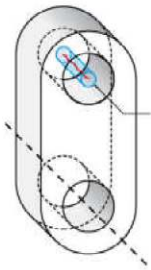




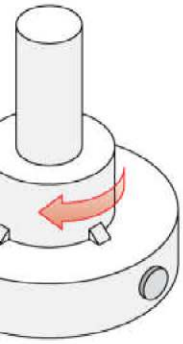






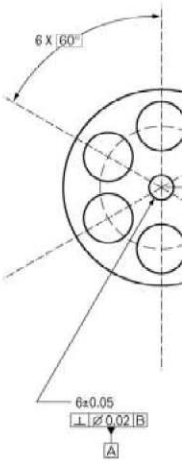






Syllabus for the GD&T Basics Fundamentals Course



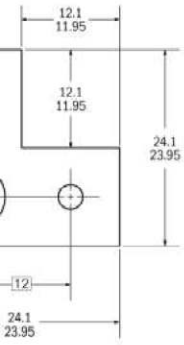
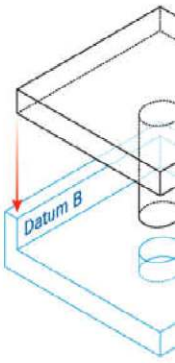
Section 1: Introduction

- Course Introduction – Why This Course is Different
- What is GD&T?
- Terminology & Basic Rules



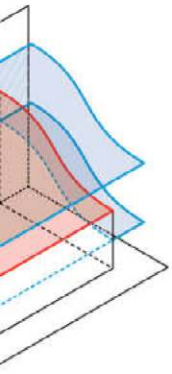
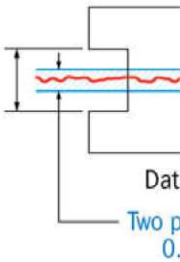
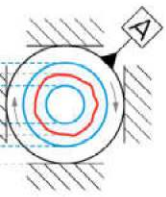
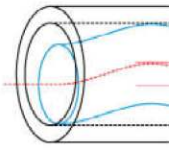
Section 2: Features and Rules of GD&T

- Intro to Features and Material Conditions
- Rule #1 of GD&T (Envelope Principle)
- Maximum Material Condition Ⓜ
- Least Material Condition Ⓛ
- Regardless of Feature's Size & Rule #2
- The Feature Control Frame ⊥ | Ø 0.2 | A | B

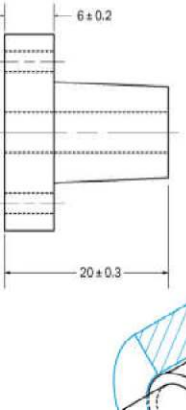
Section 3: Datums Control

- Intro to Datums
- Datum Reference Frame
- Primary Datum Controls
- Datum Targets
- Intro to MMB and LMB

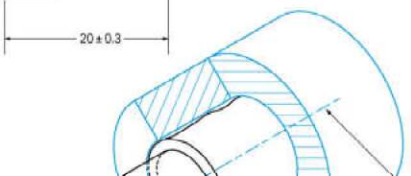
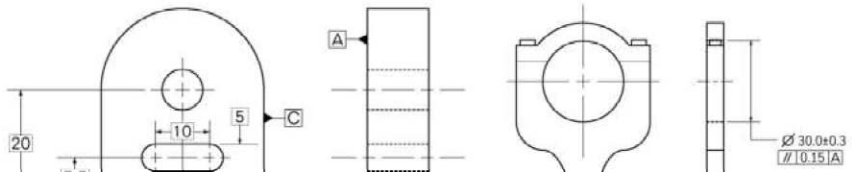
Section 4: Adding GD&T to a Design

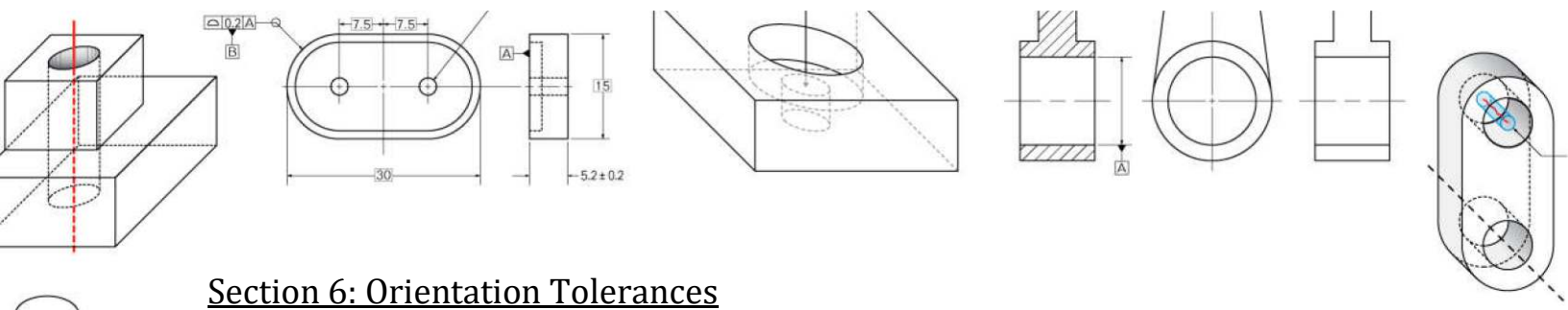
- SLOF for Drawings (Size, Location, Orientation & Form)
- Choosing Datums
- Virtual Condition Calculations




Section 5: Form Tolerances

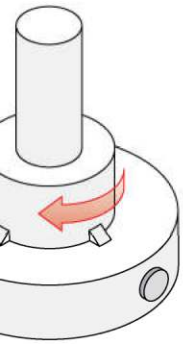
- Straightness (Surface) ⏤
- Straightness (Derived Median Line)
- Flatness (Surface) ▱
- Flatness (Derived Median Plane)
- Circularity ○
- Cylindricity ⌭

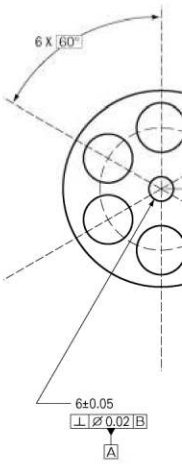



Section 6: Orientation Tolerances

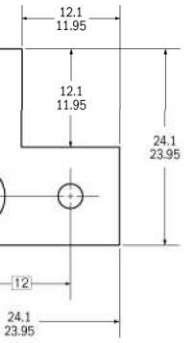
- Parallelism (Surface) //
- Parallelism (Axis)
- Perpendicularity (Surface) ⊥
- Perpendicularity (Axis)
- Angularity (Surface and Axis) ∠

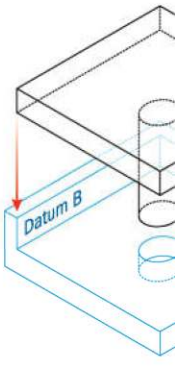




Section 7: Profile Tolerances

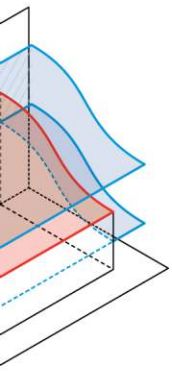
- Profile of a Surface - Basics ⌓
- Profile In-Depth (Modifiers)
- Profile of a Line ⌒

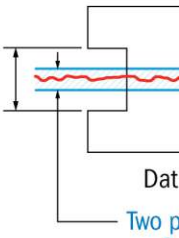




Section 8: Location Tolerances

- True Position – Basics ⌖
- Position – In-Depth
- Intro to Functional Position Gauging
- Why Use Position Over Coordinate Dimensions
- Concentricity ◎
- Symmetry ⌯





Section 9: Runout Tolerances

- Runout/Circular Runout ↗
- Total Runout ⌰