



Tools and Software

- Microsoft Office (Excel, Word, PowerPoint)
- 3D solid modeling software - Autodesk Inventor
- Dial calipers

Core Knowledge

- Careers
 - Engineering disciplines
 - STEM careers related to engineering
 - Professional ethics
- Design Process
 - Define the problem – design brief
 - Generate concepts – brainstorming and decision matrices
 - Develop a solution – technical drawing
 - Construct and test a prototype
 - Evaluate a solution
 - Present a solution
 - Product life cycle
 - Design teams
- Technical Sketching and Drawing
 - Isometric views
 - Perspective views
 - Orthographic projections
 - Section views
- Measurement
 - Linear measurement
 - Unit conversion
 - Precision and Accuracy
 - Dimensioning
 - Tolerance, fit and allowance
 - Physical property analysis
- Statistics
 - Measures of central tendency
 - Measures of variation
 - Histograms
 - Normal Distribution
 - Sample versus population statistics
 - The Empirical Rule (65-95-99 Rule)
- Modeling in Engineering
 - Graphical modeling
 - Mathematical modeling
 - Computer 3D solid modeling
 - Physical modeling and prototyping