North Carolina CTE

Drafting II - Engineering (2016): Grades 9, 10, 11, 12

Adopted 2016

Understand Basic Engineering Design and Industry Terms 1.00	**01.** Understand the concept of Engineering Design 1.01
	02. Understand Career Opportunities related to Engineering Design - Engineering services: civil, electrical, mechanical - Machine tool designers - Marine engineering services - Petroleum engineering services - Aerospace Engineering - Industrial Design/Product Design - New and Emerging Technologies (Not to be tested on Postassessment) 1.02
	03. Understand terms related to engineering design and manufacturing - Design Iterations/design intent - Conceptual Development 3D laser scanning - Reverse Engineering - Parametric Modeling - Finite Element Analysis - Rapid Prototyping/Additive Manufacturing - Ergonomics 1.03
Understand Engineering Design Concepts and Principles to Solve Problems 2.00	**01.** Understand the concepts and principles of the engineering design process 2.01
	02. Understand the concepts to create an Engineering Notebook. Maintain for all class projects (Refer to Powerpoint and Curriculum Guide) 2.02
Understand Manufacturing Processes 3.00	**01.** Understand the various manufacturing processes that can be used to produce a part 3.01
	02. Understand Rough Forming: Casting, Forging, and Welding 3.02
	03. Understand Finishing: Drilling, Machining, and Surfacing 3.03
	04. Understand Assembly techniques 3.04
	05. Understand various manufacturing materials: metal, plastic, and inorganic materials 3.05
Apply Parametric-Solid Modeling Techniques to cre	**01.** Apply the techniques to complete 2D sketches using the appropriate draw tools 4.01
	Apply the techniques of Adding Constraints; Geometric and Dimensional 4.02

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	03. Apply the techniques of Creating 3D Parts from constrained sketches using; Extrude, Revolve, Sweep and Loft 4.03
	04. Apply the techniques of adding Placed Features: Hole, Fillet, Chamfer, Shell, Threads, and Pattern Features 4.04
	05. Apply Adaptive Feature parts and subassemblies 4.05
Understand Conventional Dimensioning & Tolerancing 5.00	01. Understand intermediate dimensioning techniques 5.01
	02. Understand basic concepts of determining and creating tolerances 5.02
	03. Understand drawings with intermediate &/or tolerance dimensions 5.03
Understand Procedures to Create Working Drawings of a 3D Model 6.00	01. Understand the concepts and techniques of creating working drawings of single parts 6.01
	02. Understand the concepts and techniques of creating multi-view projection and the various views that are needed to document a 3D model including: Base Views and Projected Views 6.02
	03. Understand concepts of Section views 6.03
	04. Understand concepts of Auxiliary views 6.04
Apply Procedures to Create Working Drawings of a 3D Model 7.00	01. Apply the concepts and techniques of creating working drawings of single parts 7.01
	02. Apply the concepts and techniques of creating multi-view projection and the various views that are needed to document a 3D model including: Base Views and Projected Views 7.02
	03. Apply concepts of Section views 7.03
	04. Apply concepts of Auxiliary views 7.04
	05. Apply the techniques of adding Annotations, Dimensions and Tolerances, using ANSI Standards that best describes manufacturing processes 7.05