Elizabethtown Area School District
Scope & Sequence - Quick Reference

Department: Applied Engineering & Technology Education, 18 Weeks

Course: Design and Fabrication / Honors

Grade Level(s): 11 - 12

Unit Title	*General Topic(s)*	*Pacing*
1. Intro to Graphics and Output Preparation	● Vector and Raster Graphics ● Vector Graphics Creation Tools and Methods ● Graphics preparation for printing ● Graphics preparation for laser fabrication ● Product: Laser Fabrication Acrylic Product	3 Weeks
2. Creativity & Problem Solving	● Creative Mindset ○ Adaptive ○ Innovative ○ Convergent ○ Divergent ● Technology and Engineering Design Processes ● Product: Website Portfolio	2 Weeks
3. Vinyl Sticker Design and Fabrication	● History of Vinyl ● Units and Dimensions ● Vinyl Cutter Parts and Configuration ● Positive and Negative Space Design	3 Weeks

	● Post-processing: Weeding, Weeding Tools, Masking Tape, Application ● Product: Custom Vinyl Stickers	
4. Edge Lit Acrylic Design and Fabrication	● LED Light Strips ○ SMD Types ○ Controllers ○ Power Supply ● 3D Printing ○ Servo Motors ○ STL Files ○ GCODE ○ Materials: PLA, ABS, PETG ○ Slicer Options: Filament, Filament Diameter, Nozzle Diameter, Support Material, Brim, Shells, Infill ● Edgelit Acrylic ○ Light Refraction ○ Hot Spots ○ Calculating for Hot Spot Avoidance ● Laser Engraving ○ Cast Acrylic ○ Reverse Engraving ○ Epilog Dashboard Settings ○ Safety ● 3D CAD ○ Orthographic Projection ○ Intro to Sketching ○ Tessellation ○ Intro to Part Design ○ Basic Part Features	4 Weeks

	○ Assembly Drawing Basics ● Product: Edgelit Acrylic Design Project	
5. Coaster Set Design and Fabrication	● Wood Joinery ● Ergonomic Product Design ● Dye Sublimation Printing ● Product: Coaster Set Project	3 Weeks
6. Independent Research and Development	● Applying the Engineering Design Process ● Project Proposal ● Functional Product Design ● Form versus Function ● Material and Output Technology Selection ● Research Question Development ● Conducting Research ● Product: Student Selected Research and Development Project	3 Weeks