Blackhawk School District

CURRICULUM

Course Title:	**Technology Education**
Grade Level(s):	**8th**
Periods Per Week:	**5**
Length of Course:	**7 weeks**
Credits:	**N/A**
Faculty Author(s):	**Matthew J. Foley**
Date:	**MAY 2017**

COURSE DESCRIPTION: This course is a science, technology, engineering and math *(STEM)* driven course. Eighth grade students may explore manufacturing technology, electrical engineering technology, computer aided drafting and 3D printing/rapid prototyping techniques during a seven week related arts cycle. Each student will design, produce and evaluate several projects of varied difficulty. Components of transportation technology, communication technology, energy and power technology, bio-related technology, construction technology and medical technology may also be incorporated. Students will also utilize creative problem solving methods, engineering practices, coupled with state of the art manufacturing processes and software applications to develop prototypes of solutions to various design challenges.

COURSE OUTLINE	OBJECTIVES (PA standard)	PROPOSED TIME / ACTUAL TIME	RESOURCES	LESSON REFLECTION (for future revisions)
1. Course overview A. Goals B. Room Orientation	**3.4.8.C3** Analyze how a multidisciplinary (STEM) approach to problem solving will yield greater results	1pd	Course Syllabus Physical Lab tour.	
2. Safety A. General lab safety B. Hand tool safety C. Machine safety D. Electrical safety	**3.4.8.D2** Operate and maintain systems in order to achieve a given purpose.	4pds	PDE safety guide and instructor led demonstrations with study guides	
3. Demonstrate Laser engraver and 3D printer. 4. Introduce CADD A. Engineering design challenge introduction	**3.4.8.C3** Analyze how a multidisciplinary (STEM) approach to problem solving will yield greater results. **3.4.8.E3** Examine power systems are used to drive and provide propulsion to other technological products or systems. **3.4.8.E4** Describe how the design of the message is influenced by such factors as the intended audience, medium, purpose, and nature of the message. **3.4.8.C1** Evaluate the criteria and constraints of a design. **3.4.8.D1** Test and evaluate the solutions for a design problem. **3.4.8.C2** Explore the design process as a collaborative endeavor in which each person in the group presents his or her ideas in an open forum.	1pd 1pd	Instructor led demonstration and discussion on the capabilities of CADD and Electrical engineering/maker mentality. Introduction to http://www.thingiverse.com/	
5. Introduce programmable micro controllers and Electrical engineering technology A. Arduino B. Custom manufacturing	**3.4.8.B3** Explain how throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies. **3.4.8.B2** Compare and contrast decisions to develop and use technologies as related to environmental and economic concerns.	1pd	Promethean lesson power point and videos	

6. Introduce the 8th grade class Flow and discuss what is required 7. Split class, ½ will use lab to work on electrical , the remaining ½ works on CADD assignment(s) 8. Wrap up all projects; and or assignments.	**3.4.8.E6** Analyze the steps involved in the manufacturing process(e.g., design ,development, production, marketing and servicing of products and systems). **3.4.8.D2** Operate and maintain systems in order to achieve a given purpose.	1pd 21pds 10/10 (1pd ramp up) 4pd + or – Some may need additional time	Instructor led lesson showing all the materials, machines and processes involved in making the items. Tools, materials, self directed CADD lessons instructor help in modeling the techniques. Instructor produced guides and plans. Instructor intervention and additional help as needed. LAB cleanup/reset	