SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Innovation Workshop 8	**Length of Course:** ½ marking period (22 days)
Grade Level(s): 8	**Periods Per Cycle:** 6
Units of Credit: 0.125	**Length of Period**: 47 minutes
Classification: Required	**Total Instructional Time:** 17 hours

Course Description

Innovation Workshop 8 is a continuation of activities from Innovation Workshop 7 that challenge the students to utilize problem-solving skills and design thinking in an inquiry-focused setting. Students will have the opportunity to explore topics that will support the curriculum in their core classes and raise their awareness regarding future academic and career pursuits. By the end of 8th grade, the students will be able to independently synthesize multi-disciplinary content to answer complex questions, investigate global issues, and develop solutions for challenges and real-world problems.

Instructional Strategies, Learning Practices, Activities, and Experiences

Critical Thinking	Building	Class Discussion
Problem Solving	Testing and Redesigning	Flexible Groups
Researching	Bell Ringers	Teacher Demonstration
Planning and Prototyping		

Assessments

Unit Projects	Reflective Writing	Online Discussion Posts
Design/Project Rubrics	Observation	

Materials/Resources

Spheros	Online Resources/Journals	Measurement Tools
Makerspace Equipment and Supplies		

Adopted: 5/20/2019
Revised:

Design Process	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Design Thinking Process • Define Problem • Research • Brainstorm • Prototype • Test • Modify and Retest	**3.4.8.C1** – Evaluate the criteria and constraints of a design. **3.4.8.C2** – Explore the design process as a collaborative endeavor. **3.4.8.C3** – Analyze how a multi-disciplinary approach to problem-solving will yield greater results. **3.4.8.D1** – Test and evaluate the solutions for a design problem.

Structures	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
• Shape • Form and Function • Strength • Characteristics of Materials • Cost Design Analysis • Design Process	**3.4.8.C1** – Evaluate the criteria and constraints of a design. **3.4.8.C2** – Explore the design process as a collaborative endeavor. **3.4.8.C3** – Analyze how a multi-disciplinary approach to problem-solving will yield greater results. **3.4.8.D1** – Test and evaluate the solutions for a design problem. **13.1.8.B** – Relate careers to personal interests, abilities, and aptitudes. **13.1.8.C** – Explain how both traditional and nontraditional careers offer or hinder career opportunities. **13.1.8.F** – Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation. **13.3.8.E** – Identify and apply time management strategies as they relate to both personal and work situations.

Energy	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
• Forms of Energy • Energy Transformation • Alternative Energy • Work • Efficiency	**3.4.8.C1** – Evaluate the criteria and constraints of a design. **3.4.8.C2** – Explore the design process as a collaborative endeavor. **3.4.8.C3** – Analyze how a multi-disciplinary approach to problem-solving will yield greater results **3.4.8.D1** – Test and evaluate the solutions for a design problem. **13.1.8.B** – Relate careers to personal interests, abilities, and aptitudes. **13.1.8.C** – Explain how both traditional and nontraditional careers offer or hinder career opportunities. **13.1.8.F** – Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation. **13.3.8.E** – Identify and apply time management strategies as they relate to both personal and work situations.

Robotics	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
• Command • Variable • Nested Loop • Condition • Debug • Sequence • Comparator • Events	**3.4.8.D1** – Test and evaluate the solutions for a design problem. **13.1.8.B** – Relate careers to personal interests, abilities, and aptitudes. **1B.AP.10** – Create programs that include sequences, events, loops, and conditionals. **2.AP.14** – Create procedures with parameters to organize code and make it easier to reuse. **2.AP.12** – Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.