

## TRACK 2 STEM ELECTIVE OPTIONS

**This document is for Track 2 students only!!!**

Have you ever considered a career as an inventor, scientist, architect or astronaut? The foundation of learning for these and other high-tech jobs of tomorrow begin with four letters - **S.T.E.M.** (Science, Technology, Engineering and Mathematics). As a member of the WCPSS STEM Schools Collaborative Network, we are excited about the many STEM learning opportunities that ECMS students will participate in for the 2016-17 academic year.

You have the opportunity to select and participate in a STEM elective this year! STEM electives are sessions that provide project-based, hands-on activities focused on STEM topics. These electives will occur once every three weeks and the ECMS staff will utilize their knowledge and talents to provide a great experience to all students. STEM Electives will be offered per track. You can only sign up for STEM Elective sessions for your track only (for scheduling purposes).

**As you read the STEM elective options, please make note of the electives that interest you. Please be prepared to rank your elective choices in order of preference. We will try our best to assign you to one of your top preferences as space is available.**

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### **OPTION 1:**

**Topic :** Eco-Art

**Instructors:** A. Rehm & M. Schneider

**Location :** Room 204

**STEM Focus :** Science

#### **Learning Goals/Objectives:**

- Explain why the use of recycled and reused materials is better for the environment.
- Create at least one piece of art using natural materials.
- Create art pieces using recycled or reused materials.



#### **Essential/Driving Question(s):**

How can we reduce our carbon footprint? How can we reuse other people's trash to make something out of it?

#### **Description:**

The students will gain an understanding of how humans impact the environment. They will understand how they can reduce their carbon footprint. They will be able to recognize how they can use recycled and natural materials to create something new. They will create many pieces of artwork to display but they will also be able to present to an audience about what they used in their creations and why using those materials is a benefit to the environment.

## **OPTION 2:**

**Topic:** Electronic Music

**Instructors:** C. Branam & L. Jones

**Location:** Media Center

**STEM Focus:** Technology

### **Learning Goals/Objectives:**

Using technology students will compose and perform their own original musical compositions.



### **Essential/Driving Question(s):**

How Can I Use Technology to Create Music?

### **Description:**

Using iPads students will learn how to compose and perform musical compositions through the Garage Band software. Students will be able to arrange instruments and desired sounds to create their musical compositions. As a final product, students will burn a cd with their compositions.

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## **OPTION 3:**

**Topic:** Stability in Structures

**Instructors:** Courtney Rudder & Haley Abene

**Location:** 808

**STEM Focus:** Science, Technology, Engineering, & Mathematics



### **Learning Goals/Objectives:**

- Students will understand the different types of structures and their engineering that makes them stable.
- Students will build prototypes of structures that hold weight, evaluating the stability as they problem solve in the building.
- Students will gain knowledge in the stability of structures and the importance of stability of structures in our society based on their inquiry, research and guest speakers.
- Students will compete in a structural competition, building structures according to criteria that hold weight.

### **Essential/Driving Question(s):**

- What types of structures are essential in our society?
- What makes a structure stable and able to hold weight?
- How does geometry drive the engineering of a structure?
- How does building a prototype contribute to an engineer's understanding of the "most stable structure"?
- Why is it important for structures in our society to be stable?
- What constitutes "stability?"

### **Description:**

"Stability in Structures" will involve students investigating types of structures in our society and the importance of stability. Included with that would be the discovery of what types of geometrical shapes provide the best stability. Students will investigate bridge structures along with other structures and build prototypes that will hold weight using a variety of different materials.

#### **OPTION 4:**

**Topic:** Underwriter's Lab Engineering & Technology

**Instructors:** Sahar El Shafie/Keith Gouge

**Location:** 313

**STEM Focus:** Engineering

#### **Learning Goals/Objectives:**

- Students will learn various ways UL sets standards for different products they support.
- Students will learn expectations of UL employees.
- Students will learn brand integrity of products.



#### **Essential/Driving Question(s):**

What standards does UL set for different products?

What are the expectations of employees at UL?

What is brand integrity and how does this relate to UL?

#### **Description:**

This STEM elective will provide students with knowledge of various ways engineering can be utilized in real world situations. Students will have an opportunity to connect to the future job world by interacting with industry professionals. They will participate in group activities allowing them to develop collaboration skills and higher level thinking/problem solving skills!