



## Freshman Stem

FALL SEMESTER 2018

INSTRUCTOR: Mrs. Mary Albrecht

Project Lead the Way Certified Instructor - Design and Modeling

Malbrecht@bishopnoll.org

### **COURSE DESCRIPTION**

We will use the Project Lead the Way Design and Modeling Curriculum in addition to Lego Robotics. Students will discover the design process and develop an understanding of the influence of creativity and innovation in their lives. They are then challenged and empowered to use and apply what they've learned throughout the unit to design a therapeutic toy for a child who has cerebral palsy. This course is a Project Lead the Way course. Project Lead the Way (PLTW) Gateway is a program designed to help students explore math, science and technology. By engaging in hands on, real-world projects, students understand how the skills they are learning can be applied in everyday life. Students will work cooperatively as a class or in small groups as they integrate mathematics, science, technology, and English language arts skills to solve complex problems.

### **Units Covered**

We will cover the following main units during Design & Modeling

- What is Engineering?
- Design Process
- Measurement
- Sketching and Dimensioning Techniques
- Designing for Production PLTW Gateway Notebook and Classroom Binder

The PLTW Gateway Notebook (provided by BNI) and classroom binder (Notability) are tools to organize your work in a meaningful way. For the purpose of consistency within this curriculum, the description of the content of each tool is shown below. It is recommended that you adhere to these descriptions when referring to these tools in the classroom.

### **PLTW Gateway Notebook**

- A chronological documentation of all tasks completed during a design process, including correspondence, ideas, sketches, journal entries related to design, calculations, photographs, class notes, meeting notes, test procedures and data, and other related information.
- In PLTW courses, you may use a single PLTW Gateway Notebook to document design work for multiple projects. However, it is recommended that each project have a separate designated section within the notebook that includes pertinent information for that project only.
- It is important to know that there are many formats used to document work within an engineering notebook.
- The notebook format introduced in PLTW accumulates best practices and presents a standard for the purpose of consistency in the curriculum.
- As you gain experience or are employed in a professional capacity, you will improve and enhance their practice and procedures for the engineering notebook to match preference and company policies which vary widely.
- An engineering notebook, as kept by a professional engineer, is a bound text with quadrille ruled pages. Loose leaf writing paper is generally not acceptable.
- You will be required to keep the bound engineering notebook in your PLTW classes. It is valuable to view a notebook with completed entries as an example.

### **The course binder (Notability)**

- Stores all course materials not included in the engineering notebook such as activities, research, reference materials, and handouts.
- You should keep all of your coursework.

### **Materials Needed**

- Students should bring their iPad, pencils, eraser, colored pencils, and their engineering notebook.
- Lab Equipment and Supplies
  - The lab equipment and supplies should only be used with permission, and should be used with respect
- Extra Classroom Needs if possible:
  - Permanent Markers / Sharpies - multiple colors
  - Kleenex
  - The STEM Department is always accepting donations of recyclable material for design projects.

### **Assessment Methods**

- Grades will be recorded in RenWeb with the following weight per category:
- Tests, Reports, Projects — 60 %
- Quizzes - 25%
- Homework - 15%

### **Classroom Expectations**

- Students are expected to participate in all curriculum activities, including collaborative group projects for problem-based learning.
- Students are to be prepared for class, which includes class supplies. The BNI discipline policy will be used in the classroom. (Please see the BNI Student Handbook)
- Bring all needed materials to class (Engineering Notebook, pen/pencil, homework, etc. )
- Treat others the way you expect to be treated.
- Follow all directions and safety procedures during laboratory activities.
  - Strict safety procedures will be taught and enforced.
  - Students choosing not to follow these procedures will be dealt with appropriate to the severity of the infraction.

### **Online Learning Management System**

- Students will use an online learning management system (LMS) to do daily tasks such as viewing assignments, turning in work, engaging in discussion, taking quizzes, and receiving feedback.
- Students will need access to this outside of class. Access is given online through my.PLTW.org and Google Classroom(classroom.google.com)

### **Food and Drink**

- The STEM Room will be a food and drink, with the exception of water, free space.
- The STEM Room has a lot of technology, equipment, and supplies.
- The technology, equipment, and supplies work best if food or drink residue is not spilled or in contact with them.

Your signature below indicates that you and your child have read the entire Freshman STEM Syllabus. I look forward to the work that your child will be engaged in this year. If you have any questions, please do not hesitate to ask.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Printed Name of Parent/Guardian

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Printed Name of Student

Date: \_\_\_\_\_