Instructor

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Room 505

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Office Hours: 9:30-10:30am Mon-Fri

Course Description

The 6th grade PLTW curriculum is comprised of two areas of study: 1) Design and Modeling (DM) and 2) Automation and Robotics (AR). Students will be involved in a variety of individual assignments and team projects throughout the school year. Below is a brief description of each section.

**DM – Aug through Dec**

Students apply the design process to solve problems and understand the influence of creativity and innovation in their lives. They work in teams to design a playground, capturing research and ideas in their engineering notebooks. Using Autodesk® design software, students create a virtual image of their designs and produce a portfolio to showcase their innovative solutions.

**AR – Jan through Jun**

Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and assembly line robots.

Grading

A minimum of 2 grades will be entered weekly in our eSchool gradebook. **Note:** Not all activities are graded, but it is important that students approach each activity as if they are receiving a grade for their efforts.

A standard grading scale will be used:

90 – 100% A High Performing

80 – 89% B Performing at Expected Level

70 – 79% C Low Performing

60 – 69% D Under Performing

Below 60% is not passing

Grading will be based several different types of assignments:

Engineering Journal and Electronic Portfolio entries 10-20 pts

Lab Activities 10-20 pts

Projects 50 – 200 pts

Course Materials

Pencils (stock up)

Markers (commonly used but not required)

Graphing Journal

Metal Ruler

Flash drive

Common Procedures

* Students must have a pass when leaving class (bathroom breaks, counselor, etc.).
* Students must store their backpacks under computer desks or in other spaces that do not interfere with walking lanes in the classroom.
* Students must ask the teacher before opening a class door to an unknown person.
* Students must have a written excuse if their tardiness is caused by another teacher.
* Line up quietly and stay in an orderly line during emergecy drills.
* Students should be seated at their assigned seat and begin “Do Now” activities at the beginning of each class session.
* Place all found items in the lost and found bin. This includes pencils and pens.
* Save all digital work using cloud storage or a flash drive. All work that is saved on LRSD lab computers will be deleted overnight.

classroom rules

all LRSD rules will be strictly enforced based on guidelines in the student handbook. Our PLTW classroom rules are as follows:

* Respect others
* Be on time
* Be in your assigned seat when the bell rings
* Refrain from eating in the 500 building
* You may consume water, if it is stored and used appropriately
* Clean and organize your work area before leaving class
* Ask permission to leave the room during class sessions

Projects

The official title of this class is Project Lead The Way. Students are expected to work with diverse groups of teammates throughout the school year. Projects involving decision making, conflict resolution, and leadership will add to the challenge of working on a design team. In the fall, the projects are based on topics involving unit rates, measurement, conversions, sketching, dimensioning, part modeling, and product assemblies. Students will make a floor skimmer and test its performance against all other 6th graders. This project is the beginning of a unit on sketching techniques for brainstorming and prototyping. Students will produce several CAD models as they learn some of the common practices that are used with professional-grade engineering software. They will design a child’s play toy, The PegBoard, and then progress to a more complicated problem called The Playground. We start the Automation and Robotics curriculum in the spring semester with a month long overview of various mechanisms that are commonly used in robotics. Students learn to build motion systems involving combinations of mechanisms. Robotics projects start with The Pulltoy, whereby students demonstrate an ability to run two or more output mechanisms from one input/power source. Students then build a toy dragster to see if they can break the school record before moving on to models of robots that move widgets down a simulated factory assembly line. Extracurricular projects are welcome and usually require fundraising. I encourage all 6th grade students to think outside the box and come up with the next idea that will make our lives better. See Mr. Diffey about special-projects approval.

This year I expect the following student outcomes:

* Students will treat others with respect by using appropriate tone and mannerism
* Students will evaluate work through reflection and peer evaluation
* Students will participate in group activities with diverse teams
* Develop a personal design process that is based on engineering standards
* Document work through a systematic approach to journaling and online submissions
* Apply measurement and conversion techniques with extreme accuracy and precision
* Learn how to produce orthographic, perspective, and isometric sketches by hand
* Learn how to annotate and dimension orthographic and isometric sketches by hand
* Learn how to use engineering software to create 3D models for product development
* Know how to build mechanisms that work in conjunction to form a machine
* Learn how to program automated robotic systems using sensors
* Learn how to troubleshoot hardware and software issues as it applies to robotic systems

Classroom Communication Tools

* Google Classroom will be used for day-to-day instructions and materials. Join our classroom by using the code: m2osk0n
* Access general information about FHSA PLTW at <http://forestheightsstemengineering.weebly.com/>
* Download and use Remind to receive periodic information about projects and deadlines. Once the app has been downloaded, text to 81010 and include the message @ac8geh

Room 505 at FHSA is community of learners; the culture of our classroom must be rooted in optimism and positive team dynamics. I expect that students will always be polite toward peers and staff members. However, I also know that sometimes students come to school upset, hungry, or tired. Human beings must learn to be resourceful and overcome difficulties when in a social setting geared toward performance. All issues that are deemed unfavorable to the learning community will be corrected using a progressive plan that is meant to modify behaviors that impede academic achievement. The progressive discipline plan in Room 505 is as follows:

* 1st Private verbal warning
* 2nd Documentation via written and/or electronic means
* 3rd Call to parent
* If behavior modifications are not successful, refer to school administration – Referral

My advice to students is to strive to handle every situation with respect to the classroom as a whole.

I have read and understand the basic rules and expectations of the PLTW Lab.

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