

8th Grade –Design/Engineering/Coding

Mr. Harrington

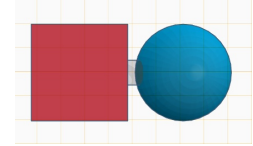
Course Description:

Over the course of one trimester, the 8th Graders will design and engineer a vehicle/robot that will incorporate motors, a computer chip and sensors so that they can program it to successfully complete a range of tasks.

Course Content

Phase #1: Learn How to Use Computer Aided Design & 3D Printing (Recreate a Model)

1. Students will learn how to use the online CAD program “Tinkercad.”
2. Students will apply their new skills in the recreation of a model “Peg,Cube, Sphere.”
3. Students will print their “Peg,Cube, Sphere” on a 3d printer.



Phase #2: Learn How To Draft / Computer Aided Design / 3D Printing (Recreate a Model)

1. Students will learn how to draft a detailed drawing of a model car.
2. Students will build this model car in a CAD program.
3. Students will print their cars on a 3d printer.
4. Students will race their cars.



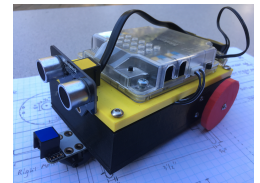
Phase #3: Apply Skills: Draft / CAD / 3D Print / Motor / Program (Custom)

1. Students will design their own custom vehicle.
2. Students will manually draft this vehicle.
3. Students will build their personal vehicle with an online Computer Aided Design program.
4. Students will form their custom cars with a 3d printer.
5. Students will add motors and power supplies.
6. Students will add a computer chip and manually drive their computer.



Phase #4: Build Robot: Draft / CAD / 3D Print / Assemble / Add Motors & Chip

1. Students will design their robot chassis.
2. Students will manually draft their robot chassis.
3. Students will build their robot chassis with an online Computer Aided Design program.
4. Students will form their robot chassis with a 3d printer.
5. Students assemble their robot by adding motors and power supplies.



Phase #5: Programming with Sensors.

Students will design and write programs so that their vehicle can compete in a number of activities. Eventually they will add and program sensors to perform more advanced tasks.

Partners

Although I may be guiding the classes, a tremendous amount of the learning and support comes from the students themselves. Students will be partnering with other students through most of the course.

Class Conduct

- The moment the bell rings be in your seat.
- Have fun, but please don't be a distraction.

Also:

- Bathroom (Bladder Control) – Just ask.
- Roaming the Room – The only students who should be out of their seats are those who are helping others. If you want to help someone, just ask.
- Food & Drink – Nope...can't damage the computers.
- Other Class Assignments – Other class assignments are not to be done during class time.

Missed Assignment Guidelines

- You are responsible for all missed work due the day following your return. Much of the work can be done outside of class time.
- Late work will not be accepted unless previously authorized by the instructor.

Availability:

I will always make myself available to assist you...just ask.

Class Materials: Earbuds and Tech Folder.

Grading Scale

C-: Peg, Cube and Spere.
C: Draft & Print “Fastest Car.”
B-: Draft & Print “Cool Car.”
B: Draft, Print and Assemble Robot with motors, computer chip and sensors.
B+: Program Robot Motion.
A-: Program Robot Line Sensor.
A: Program Robot Ultrasonic Sensor;.