

Robotics Enrichment

Teacher: Mrs. Johnson
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Course Information

This is a beginning course in robotics. We will be utilizing Lego Mindstorm kits, Robolab software and various Lego Robotics materials. The objective of this course is to introduce the student to basic programming as well as problem solving strategies. This course will involve students in the development, building and programming of a LEGO Mindstorm robot. Students will work hands-on in teams to design, build, program and document their progress. Topics may include motor control, gear ratios, torque, friction, sensors, timing, program loops, logic gates, decision-making, timing sequences, propulsion systems and binary number systems.

I hope that this class will provide motivation for students to continue in computer science and engineering courses.

Course Objectives

Students will learn, understand and know the following -

- How to collaborate in groups and teams
- How to design robots for specific activities and scenarios
- How to use Robolab programming software
- Gears, pulleys, torque, friction, timing, sensors, and program loops
- To design, develop and complete robotic activities and challenges

Classroom Policies

Students are expected to follow all Kennett Middle School policies as outlined in the 2019 - 2020 Student handbook. Students will be expected to follow all computer rules including having signed an Acceptable Use Policy (AUP) for Internet access.

Student /teacher Expectations

This course is designed for the beginning to intermediate level computer user who has some experience using the computer. Students will work in-groups and teams to complete various course assignments and projects (challenges). Students will be expected to be self-motivated and stay on task with all lectures, web based instruction and activities.

Computer Hardware and Software

All students will be expected to take care of and respect all school computer hardware and software while in their use. Students will have access to a laptop computer, Robolab software and Lego Mindstorm Lego kits. Damages to any computer equipment by a student will be charged to the student.

LEGO Mindstorm Kits

Each Lego Mindstorm kit will be inventoried by each group before and after each class. You as the student are responsible for all of the Lego pieces, parts, batteries, booklets and any other materials that are needed to complete your kit. Any pieces lost or missing from your kit will be charged to you as the student. Please be very careful of your Lego kits as they are expensive and can be costly to replace missing pieces.

Student Responsibilities

1. Students are expected to walk in the classroom and be in their assigned seat ready for Mrs. Johnson to take attendance.
2. Come to class prepared and expect to work.
3. Students are expected to stay in their seats until Mrs. Johnson tells you to get in your group.
4. Students are responsible for their computer equipment. If you have any problems, please let Mrs. Johnson as soon as possible.

Classroom Rules

1. Students are expected to pay attention and stay on task while in class.
2. Respect the computers, robotics supplies and other classroom materials.
3. This classroom is not my classroom. It is used by others during the school day. We will keep it clean and pick up after ourselves.
4. Respect your peers and others property.
5. Students are to stay in the programs taught in class and are not allowed to "SURF the Net."
5. NO FOOD OR DRINK will be allowed in the Robotics classroom.

Consequences/Discipline

All school policies are followed in this classroom and enforced with the guidelines in the Kennett Middle School 2019 - 2020 Student Handbook.

FIRST DAY SURVEY

1. Select the answer that best describes why you chose to take this Robotics enrichment class.

- A. It sounded like fun.**
- B. My brother / sister participated in it and said it was fun.**
- C. My friends were in robotics.**
- D. My parents wanted me to be in it.**
- E. My teacher wanted me to be in it.**
- F. Other - Explain to me why.**

2. When working on a problem, how long do you stay focused on it?

- A. If I don't get it right away, I quit.**
- B. I keep working, but after 2 or 3 failures, I quit.**
- C. I keep working on it until I get the answer.**
- D. Other - tell me.**

3. What do you know about using robots to learn about science?

A. I know a lot about how to use robots to learn science.

B. I know a little about how to use robots to learn about science.

C. I don't know anything about how to use robots to learn about science. Question Title

4. What do you know about programming a robot using the computer?

A. I know a lot about how to program a robot.

B. I know a little about how to program a robot.

C. I don't know anything about how to program a robot.

5. What do you know about using robotics computer software?

A. I know how to use robotics software.

B. I know a little about how to use robotics software.

C. I don't know anything about how to use robotics software.

6. Do you know how to work together on a team to solve a problem?

A. I know a lot about working on a team to solve a problem.

B. I know a little about working on a team to solve a problem.

C. I don't know anything about working on a team to solve a problem.

7. What do you know about trial and error testing?

A. I know a lot about trial and error testing.

B. I know a little about trial and error testing.

C. I don't know anything about trial and error testing.

8. What do you know about working together to solve problems on a team?

A. Every time I work on a team someone always bosses someone around.

B. I know that if you listen to your teammates' ideas you will solve a problem together.

C. I have never worked on a team to solve a problem.

9. What makes you excited to participate in this robotics enrichment class?

- A. I like to build things.**
- B. I like to learn about science.**
- C. I like to be with my friends.**
- D. I like to solve problems.**

10. This Robotics enrichment class will meet on Mondays, Tuesdays, Wednesdays, and Thursdays.

Will you be able to attend all 4 days?

YES OR NO

If no, tell me when you will be able to meet.