**Technology of Robotic Design**

Osbourn High School

2019-2020 Course Syllabus

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# Course Description:

Technology of Robotic Design is a year-long course that uses project based, hands-on activities to introduce students to the technology of robotics.

The course provides an overview of robots and their uses, how to program robots in the computer language C within the RobotC environment, basic electronics, operation and use of robot sensors and actuators, mechanical design, and advanced control systems.

Students will learn through guided robot projects and student designed robot projects.

Students will explore careers in robotics and the workplace readiness habits to get a position in the robotics field.

Developing software in RobotC is learned on sensor/actuator practice boards and virtual environments.

# Course Format:

* DoNow activities at the start of each class
* Stand-up Lecture
* Hands-on hardware and virtual programming activities
* Classroom presentations and discussions
* Homework assignments

# Course of Study:

* Robot Overview
* Careers/Workplace Readiness
* Robotic Software Development
* Basic Electronics
* Sensors / Actuators
* Guided Robot Project
* Mechanical Design
* Advanced Control Systems
* Designing Robot Assemblies in CAD (Inventor)
* Robot Project – Student Design
* Fabrication - 3D Printing
* Real World Factories and Robotics

# Classroom Expectations

* Keep cell phones silenced and put **away** to prevent classroom distraction.
* Attend class daily, on time and ready to work.
* Respect everyone in the classroom.
* Take responsibility for your own actions.
* Actively participate and contribute to group assignments and projects.
* Complete and submit assignments by their due dates.
* Exercise safety and common sense at all times.

# Attendance

You are expected to attend every class. If you are absent for any reason it is your responsibility to follow up. If you must miss class for a school activity, your work is due as the rest of the class.

# Grading

Grades are based on tests, hands-on activities and homework.

We will have the following tests:

* Pre-test Initial evaluation of robotics knowledge. Not graded for content.
* Unit tests Knowledge and skill will be assessed at the end of each unit.
* Mid-term Exam Cumulative exam on first semester content.
* Final Exam Cumulative exam.

Hands-on activities and homework are graded for effort and accuracy

# Grading Policy

Your grades in this class will be determined by the following weighted system:

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| --- | --- |
| 40% | **Tests and Projects (Gradebook Category: Major Assessments)** – Robot engineering uses a number of technical concepts and terms which the students must learn. Tests assess the student’s knowledge of technical concepts and terms. We will have tests at the end of each unit. Projects are hands-on activities that require the students to link together a collection of engineering processes and tasks. |
| 30% | **Activities (Gradebook Category: Quizzes) –** Robot engineering uses a number processes and tasks to protect information. Students will be assessed on their skills in performing these tasks in structured activities. |
| 20% | **Exams and Quizzes (Gradebook Category: Classwork) –** Quizzes are also used to verify students are learning the technical concepts and terms. |
| 10% | **Homework** **(Gradebook Category: Homework)** - Consists of technical reading and writing assignments with an emphasis on technical and procedural descriptions. |

# Homework

Homework tasks will consist of technical reading and writing. Technical writing can fall into two categories. First, technical writing explains how something works in simplifying terms or second, details a process to do a task.

# Required Class Material

* Three ring binder to hold notes and returned DoNow activities
* Pen or pencil
* Headset or Earbuds to listen to video tutorials in class

# Malicious Use of Computers/Equipment

* The classroom computer workstations are shared by all classes.
* It is expected that you will use the workstations in an appropriate manner.
* It is unacceptable to use or modify the workstations in a malicious or inappropriate manner whether jokingly or otherwise which causes inconvenience to other students.

# After School Tutoring

Throughout the year, I will be available to assist students during Eagle Block and most days between 3:30 and 5:00.