

## **Robotics and Engineering Technology Canyon Crest Academy**

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**Location:** F101

**Materials:** DropBox Account

### **Course Description:**

Robotics and Engineering Technology is built around the fundamental understanding of the systems that make up robots and the development of workplace competencies. The main focus of the class involves solving engineering design problems.

### **Course Objectives and Competencies:**

The following objectives will guide the curriculum:

Students will...

- a) Identify, formulate solutions for, and solve engineering technology problems using engineering design processes
- b) Apply knowledge of mathematics, science and technology to solve robotic engineering technology problems
- c) Function on multi-disciplinary teams
- d) Communicate effectively using various forms of communications
- e) Describe various methods used to manage and schedule projects
- f) Participate in and/or conduct design reviews
- g) Collect, analyze and interpret data
- h) Create 3D CAD models with SolidWorks software

### **Expectations:**

We can't predict what the hot new technology will be in five years, but we can confidently predict that it will include computer programming, electronic embedded systems, engineering design, and mathematics. If you believe these things, then you need to know that robotics has the ability to teach these concepts. At the same time, robotics teaches 21<sup>st</sup> century skill sets like time management, resource allocation, teamwork, problem solving, and communications.

#### **Think about this...**

- Approximately 98% of all the 32-bit microprocessors currently in use worldwide are used in embedded systems; in other words they are being used in robotic smart technologies.
- Robotics Technology is a hundred billion dollar emerging industry that has moved from being an industry that could potentially employ thousands of people to an *integral part of all industries*. Robotics will impact the economy the same way that mass production impacted the industrial revolution and the computer impacted the information age.

### **FIRST – FTC:**

Students in this class will be part of 2 school based FTC robotics teams and should expect to attend at least two local events. <http://www.usfirst.org/roboticsprograms/ftc>

**Grading:**

Scale: {A(100-90), B(89-80), C(79-70), D(69-60), F(59-0)}

Round-Up for Quarter Grade Only: {A(90-89.5), B(80-79.5), C(70-69.5), D(60-59.5)}

Incomplete quarter grades will not be given. Students are expected to follow the Late Assignment policy listed below.

Grades should be available online through Aries. Grades evaluated in the following categories and weights; **Projects** (30%), **Participation** {Engineering Note Book Entries & Equipment organization}, (25%), and **Lab Assignments & Explorations** (30%), **Final Design Project** (15%). Rubrics will be provided in class and on Blackboard

**Academic Honesty:**

Students must complete their own work for all assignments. If a student is found to have copied or turned in work that is not theirs a grade of Zero will be given.

**Late Assignment Policies:**

Any assignment not turned in during your class period on the due date will be considered late.

- Students must complete and turn in a Late Assignment Grade Request Form in order for that assignment to be graded.
- A grade of 0(zero) will be given for assignments not turned in or attempted.
- Partial credit may be given for Late Assignments turned in within a week of the due date.
- Full credit may be given for Late Assignments due to an **Excused Absence** within a week of the due date.

**ATTENDANCE:**

You are responsible for making up work missed due to excused absences. You must make arrangements with me immediately upon returning to class. I will not remind you to make up missed assignments.

Regular on time attendance and active positive participation are essential in order to understand and appreciate the topics covered in this class. It is also a critical life-long work skill. Irregular attendance and/or excessive tardiness will seriously affect your achievement in this class and consequently your grade.

**TARDIES: {Over the duration of the class – 2 Quarters}**

- 1 tardy: Verbal Warning
- 2 tardies: Conference with student and phone call home
- 3 tardies: Referral to Saturday School

School related tardies are not to be counted as tardies for this policy

**Class Rules:**

- No Food or Drinks
  - Bottled water is okay
- Get to class On-Time
  - In your seat logging in
  - Equipment Ready to go
- No Disrespectful Behavior
  - Do not be mean or insulting
  - Do not alter or break the equipment

**Lab Computer Policies:**

Not following the policies listed will result in disciplinary action listed below

- Students are not allowed to unplug cables and move the computers and/or monitors
- Removing and/or rearranging the keys on any keyboard is not allowed
- Students will be held responsible for any equipment that they damage and the right to use the equipment may be revoked as a result
- All students must follow the district Acceptable Use policies

**Tool Use Policies:**

- Before a student is allowed to use any type of tool they must pass a general safety quiz with a score of 100%
- Tools must be used for their intended purpose not as toys or weapons
- All tools must be checked out and returned before the end of the class period

**DISCIPLINARY ACTION:**

- A sequence of steps will be followed for any circumstance or situation that interrupts or interferes with the learning/teaching atmosphere in the classroom or any other learning/teaching environment.
  1. Visual warning
  2. Student moved from computer and given written assignment
  3. Phone call home and/or referral

## Class Procedures

### Beginning of class:

- Students will be working in teams of 3,4, or 6.
- Sit with your team, Be in your seat and start logging in before the bell rings. The computers will take a few minutes to boot so the sooner you get to class the better.
- Log in to Blackboard and Read the daily agenda (Also posted on the whiteboard)
- Gather all equipment and check out tools.

### Instruction Time:

- Each day there will be a short lesson to introduce new topics and demonstrate how the assignments need to be completed.
- If we are working on a long-term project the teacher will review where you should be and check your progress

### Lab Time:

- Follow safety procedures at all times.
- Work quietly with your team and respect the space of others.
- Always cleanup your work space before the end of the period.

### Turning In Assignments and Projects:

- Most assignments and projects will be graded at your desk; others will be collected from Google Drive or DropBox <http://www.dropitto.me/mremington>.

### Leaving the Classroom:

- If you need to use the bathroom just let the teacher know before you leave.
- If you have a pass to leave early or you are playing a sport, it is your responsibility to let the teacher before you leave. Please do not expect the teacher to remind you that you have an appointment.

### 10 minutes Prior to the end of Class:

- Gather all equipment and return to specified storage location in the class
- Return and Check-in all tools and supplies
- Save all work in progress on the computer and log off (please do not shut down the computers)

### Safety:

All Students will need to pass a safety quiz before handling tools and working with Tetrix and other raw Robotics materials.

Welcome to the class! I look forward to working with you