



Lebanon Community Schools

High School Course Syllabus

Lebanon High School

Mr. Tim Helland

2018-2019

Course Number and Title:

Robotics Exploration

Subject Area:

Computer Technology

Credits:

Semester 1 0.5 CT or Elective Credit

Graduation Requirements:

The following Oregon Essential Skills will be addressed throughout this course:

| | | | |
|---|--|---|---|
| x | Read and comprehend a variety of text | x | Use technology to learn, live, and work |
| | Write clearly and accurately | | Demonstrate civic and community engagement |
| x | Apply mathematics in a variety of settings | | Demonstrate global literacy |
| x | Listen actively and speak clearly and coherently | x | Demonstrate personal management and teamwork skills |
| x | Think critically and analytically | | |

Prerequisites:

Introduction to Computer Science *or* teacher approval

Course Overview:

In this course you will:

- Apply the Engineering Process
- Maintain a safe and organized work environment
- Collaborate in teams to design, build, and program robots
- Use RobotC to program a robot that completes tasks autonomously
- Build a robot that can be controlled via remote control
- Use a variety of components (such as gears, motors, sprockets, wheels, sensors, etc) to build robots that perform specific tasks.
- Understand fundamental electrical and mechanical principles related to robotics
- Design and build a robot that completes a variety of tasks in competition with other robots



Semester 1 Topics of Study:

Unit 1: Introduction to Robotics

About 2 weeks

- Engineering process
- Prototyping
- Teamwork
- Safety and organization
- Intro to VEX Systems

Unit 2: Programming Movement

About 3 weeks

- RobotC
- Statements
- Loops
- Testing

Unit 3: Remote Control

About 2 weeks

- The ClawBot
- VEXnet system setup
- Downloading a program
- Operating safely
- Modifying existing code

Unit 4: Sensors and Logic

About 2 weeks

- Touch
- Ultrasonic
- Optical
- Decision-making

Unit 5: Drivetrain and Actuators

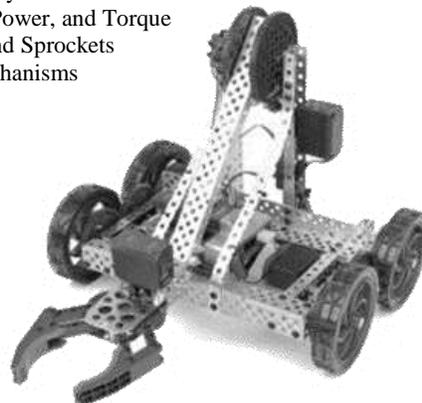
About 3 weeks

- Electricity
- Speed, Power, and Torque
- Gears and Sprockets
- Lift mechanisms

Unit 6: The Game!

About 3 weeks

- Planning
- Design
- Testing and Iteration
- Problem Solving



TAG/ELL/Special Education Considerations:

Students will receive appropriate accommodations consistent with their IEP and/or TAG plan. Students are encouraged to self-advocate and communicate with their teacher if they have questions or concerns about their accommodations. You may be pre-assessed on the knowledge and skills that you bring with you to this course. The purpose of the pre-assessment is to determine what you already know, guide instruction, and give you access to advanced and/or accelerated content when appropriate.

Formal or informal pre-assessments may include quizzes, student input and self-evaluation, placement tests, teacher observation, work samples, fist of five, thumbs up/thumbs down, and other forms of assessment. The following differentiation strategies will be used during instruction when appropriate: Enrichment, Multiple Intelligences, Acceleration, Compacting, Independent Projects, Critical Thinking, Assignment Modification, Flexible Grouping, and Student Contracts.

Supplemental Resources:



A variety of resources will be available on the following website:
<http://robotics.timhelland.com>

If you don't have access to a reliable internet connection, please see the teacher for an alternate method of access.

Academic Honesty Policy:

Plagiarism and cheating are unacceptable in any classroom. Students who submit work that is not their own may receive a score of zero and/or be referred to the administration for disciplinary action.

You are encouraged to help your peers understand and make progress. But, don't just give them your work. If multiple students submit work that is not sufficiently unique, the points for that work will be divided equally amongst them.

Homework Policy:

The majority of learning activities in this course are designed so that most students will complete them during the class period. If you do not complete a task during the class period you may find it necessary to complete work at home or schedule time to complete the task in the lab before or after school.

Late assignments are accepted, but will incur a 10% deduction for the first week and an additional 10% deduction thereafter. No late assignments will be accepted during the last week of the term.

Behavioral Expectations:

To maintain a positive and productive learning environment each member of our classroom agrees to:

- ❖ Respect others with words and actions.
- ❖ Be seated and ready to begin when the bell rings.
- ❖ Use spill-proof containers for beverages and leave food at the door.
- ❖ Turn off and put away cell phones and entertainment devices unless otherwise directed by the teacher.
- ❖ Clean up before leaving the classroom.
- ❖ Follow the LHS Student Handbook and Network & Internet Use policies.

Grading Policy:

Your overall letter grade is weighted as follows:

| | |
|--|------|
| Tests and Quizzes | 30% |
| Labs & Assignments Notebooks Safety & Organization Teamwork | 60% |
| Final | 10% |
| Total | 100% |

Your letter grade will be determined as follows:

- A.....90% or above
- B.....80% to 89%
- C.....70% to 79%
- D.....60% to 69%
- FBelow 60%



You are encouraged to attempt any/all of the extra credit opportunities provided. However, extra credit may only affect your overall grade by up to 3% per district policy.

Assessments:



Unit Tests are worth 100 points each and are announced in advance. You may use your own handwritten notebook during a test. You may retake each test once after successfully completing a review activity. Your original score and retake score will be averaged.

Quizzes worth more than 10 points are announced in advance.

The *final exam* is 10% of the final grade and may include both a written and performance component.

Unless permission is granted by the teacher *in advance*, using personal electronic devices during an assessment will result in a score of 0.

Excused Absences:

When you return to school, be prepared to make up any missing work within the number of days you were absent + 1 day. For one week following this deadline there will be a 10% late penalty and 20% thereafter.

Special consideration can be made for extended absence or verified emergencies. Be sure to contact the teacher as soon as possible.



Labs & Assignments:

Most labs will be scored based on a detailed rubric or set of grading criteria. All other assignments will earn a percentage of the total points possible.

Late assignments will lose 10% of their earned value (20% if more than a week late).

Notebook:

A notebook is required for this course. It should include all of the following:

- ❖ Cornell notes
- ❖ In-class activities
- ❖ Unit vocabulary
- ❖ Weekly reflection
- ❖ Other course materials



You will be allowed to use your written notebook on tests and quizzes. This includes the final exam. Be sure to take accurate, organized, and readable notes.

Each unannounced notebook check is worth a possible 20 points. Your score is based on possession, organization, and completeness on the day of the notebook check.

Late notebooks will lose 10% of their earned value (20% if more than a week late).

Unexcused Absences:

If you have an unexcused absence, you will not be able to make up in-class activities. Projects or unit tests that reflect many days of learning can be made up, but will lose a portion of their value based on the number of unexcused absences affecting that unit or project.

If you are present but choose not to take a test or quiz with the class, your future score will be reduced by 10% (20% if more than a week has passed).

| | |
|--|------|
| Complete & carefully attempted | 100% |
| More than half carefully attempted | 60% |
| Less than half carefully attempted | 20% |
| Far from complete or insufficient effort | 0% |

Safety and Equipment:

A variety of lab procedures will be posted, discussed, reviewed and assessed. These procedures are designed to maintain a safe work environment and keep equipment in working order. Violations of the procedures may result in removal from the lab for the class period. Repeated violations will necessitate removal from the course.



Robotics Contract 2018-2019:

I agree to use all robotics tools, parts, and equipment in a responsible manner. I understand that the responsibility for maintaining a complete, organized and fully functional robotics kit is shared by all members of my team. I agree to report lost or damaged parts as soon as possible. I understand that items that are missing or broken from improper or irresponsible use will result in a fee for the replacement cost of the items.

I agree to abide by all safety procedures when working with equipment or tools. I understand that consistently following safety procedures is necessary to remain enrolled in Robotics Exploration. One pair of safety glasses will be issued to me at no cost, but I agree to purchase replacement glasses if they become lost or damaged.

Please detach on the dotted line and sign the back!

Contact Mr. Helland:

| | |
|---|---|
|  | Lebanon High School – Room 721 |
|  | (541) 451-8555 ext 1090 |
|  | tim.helland@lebanon.k12.or.us |
|  | https://www.timhelland.com |

Mr. Helland’s Schedule:

| | |
|---|-------------------------|
| 1 | Introduction to CS |
| 2 | 3D Design and Animation |
| 3 | 3D Game Programming |
| 4 | <i>Planning</i> |
| 5 | Game Programming |
| 6 | Game Programming |
| 7 | Robotics Exploration |

Materials:

In addition to basic school materials, the following materials are strongly suggested for this course:



3-ring or spiral notebook

It will be turned in to the teacher at the end of each unit.

Portable or Online Storage

A USB Storage device or Google Drive account may prove useful and convenient in this course.

Home Computer

A computer running a modern operating system such as Windows 7 or Mac OS X may be useful if you get behind or want to explore deeper into the course.

I Need Help!

There are many resources available to you if you get stuck or don’t understand. Some of them are:

- ❖ Your teacher
- ❖ Peer study groups
- ❖ Your teacher’s website
- ❖ Online videos
- ❖ Online tutorials
- ❖ Tutoring



With advance notice, the teacher reserves the right to adjust these guidelines to provide a safe and productive learning environment for all students.



I agree to follow the guidelines listed in the Robotics Exploration course syllabus (including but not limited to the Robotics Contract on this sheet). Any questions or concerns about the policy have been addressed by contacting the teacher at tim.helland@lebanon.k12.or.us or 541-451-8555 x1090.

Today’s Date: _____

Student: Printed Name: _____ Signature: _____

Parent: Printed Name: _____ Signature: _____