Course Syllabus for Automation and Robotics

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What is Automation and Robotics

- Automation and Robotics is a rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education program.

- STEM education is at the heart of today’s high-tech, high-skill global economy. For America to remain economically competitive, our next generation of leaders -- the students of today -- must develop the critical-reasoning and problem-solving skills that will help make them the most productive in the world.

- STEM education programs engage students in activities, projects, and problem-based learning which provides hands-on classroom experiences. Students create, design, build, discover, collaborate, and solve problems while applying what they learn in math and science.
Instructional Units:
- Classroom/Lab Expectations
- Robot Construction Using Exploded Assembly Diagrams
- EV3 Programming
- EV3 Lego Robot And The Maze Challenge
- Extended Learning Advanced Programming Projects

How students will be graded:
- Letter grades will continue to be assigned for all courses at the secondary level based on the 0-100 percent scale.
- Rubrics will be used to evaluate a student’s performance on an assigned task.
- When utilizing a rubric with four levels of proficiency (Beginning, Making Progress, Meeting the Standard, Exceeding), teachers will show the connection between a student’s performance on the rubric to the assigned grade within the 0-100 percent scale. This connection will be communicated at the onset of its use and throughout the learning progression for the purpose of providing feedback.
- Daily Work (10% of the grade) and Assessments (90% of the grade) will be the categories used in Infinite Campus.

Grading Scale:

<table>
<thead>
<tr>
<th>Percentages - Upper</th>
<th>Percentages - Lower</th>
<th>Classification</th>
<th>Letter Grade</th>
<th>Equivalent Grade Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>90%</td>
<td>Outstanding</td>
<td>(O)</td>
<td>“A” Range</td>
</tr>
<tr>
<td>89.9%</td>
<td>70%</td>
<td>Satisfactory</td>
<td>(S)</td>
<td>“B” and “C” Range</td>
</tr>
<tr>
<td>69.9%</td>
<td>60%</td>
<td>Needs Improvement</td>
<td>(N)</td>
<td>“D” Range</td>
</tr>
<tr>
<td>59.9%</td>
<td></td>
<td>Unsatisfactory</td>
<td>(U)</td>
<td>“F” Range</td>
</tr>
</tbody>
</table>
Board-Approved Standards:

Automation and Robotics
Standards for Technological Literacy (STL)

STL Standard 2: Students will develop an understanding of the core concepts of technology.

2.Q- Malfunctions of any part of a system may affect the function and quality of the system.

STL Standard 9: Students will develop an understanding of engineering design.

9.F- Design involves a set of steps, which can be performed in different sequences and repeated as needed.

9.G- Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.

9.H- Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.

STL Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

10.F- Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system.

10.H- Some technological problems are best solved through experimentation,

STL Standard 12: Students will develop the abilities to use and maintain technological products and systems.

12.J- Use computers and calculators in various applications.

Guiding Practices
Multiple and Varied Assessment Opportunities (including Retakes)
All students should have multiple assessment opportunities to demonstrate higher levels of achievement. The opportunities may be initiated by the instructor or the student, but always at the instructor’s discretion. Additional opportunities may include retakes of an alternate form of an assessment (e.g., Form B instead of Form A), student revisions of work products based on descriptive feedback, or alternative methods of assessments (e.g., an oral response rather than a written test).
Guidelines for retakes include the following:
- Students will be provided the opportunity to be reassessed (i.e., retakes and homework).
- Teachers determine appropriateness and authentic need for reassessments.
- If a student scores below 75% on the initial assessment, he/she is required to retake the assessment.
- If a student scores above 75%, he/she must initiate communication with the teacher.
- Students will receive the highest score of the retakes taken.
- Students are allowed to re-take after proof of further learning and preparation.
- Generally, reassessments will be limited to one retake per assessment. Additional reassessments will be provided at the discretion of the teacher. However, students will retake alternative forms of the original assessment until the 75% level has been attained.
- Retakes will be taken within a reasonable time frame that the teacher determines and informs students of in advance.

Homework / Independent Practice
Homework is an opportunity for students to practice skills, apply knowledge, review and build on past learning, and extend learning. Homework is individualized and based on each student’s progress towards established standards. The purpose of the assignment will determine whether or not a grade is given and will be clearly articulated to students. Through independent learning tasks (homework), students assume more responsibility for their learning and are given opportunities to apply what they have learned to new situations or experiences.

Extra Credit and Bonus Points
To ensure that grades reflect progress toward and achievement of the standards, giving extra credit points or bonus points will not occur in this class.

Behavioral Expectations
The vision of the Ankeny Community Schools is that behavior will be reported separately from academic achievement.

Some things for the students to know about for this class:
1. You are responsible for learning just as I am responsible for leading that learning and being your partner in that learning.
2. You will need to provide quality evidence of your learning; I will help you know what quality evidence looks like. You may have good ideas on this too.
3. If you do not do well on a test or assessment in this class, you will need to demonstrate relearning before you are allowed to be reassessed.
4. Doing your practice work (either in-class or homework) on time is the only way that I will be able to give you accurate and timely feedback on how you’re doing in relation to the standards.

5. What’s really important to me is that you LEARN in this class. This means we are not going to be so focused on looking for points or wondering if certain work “counts.” This also means I am not going to let you take the easy way out of being satisfied with a zero and moving on; the important thing is that you learn the material and show that you understand that material.

6. Your behaviors in this class definitely do matter--make no mistake about that. It’s just that they will be reported separately from your academic achievement. It’s much clearer to you (and your parents) how you are really understanding your learning standards if behaviors are not mixed into your academic grades.

Behavior expectations for this course:

1. **Teamwork!** Everyone participates, putting forth their best effort, helping others, and working toward making a positive contribution to the success of their team.

2. **Be courteous and share!** Take turns and help each other with learning activities, lab equipment, and using the computer.

3. **Follow directions!** This will help you become successful in this class and prevent you from becoming lost or confused when completing all the various learning activities.

4. **Be a good problem solver!** You are going to face frustrations and problems in life. So, stay in control, be calm, and think through the directions given to you. If everything else fails, then ask for help.

5. **Be Respectful and Responsible!** These are good life-long expectations. Your actions, behaviors, and character say a lot about you. You may not remember everything in school, but people will always remember the kind of person you are!

6. **E-Devices!** The only devices needed in this class are the desk-top computer and lab equipment provided for you. All other personal “E-Devices” must be stored away and out of sight, including Chromebooks.

7. **Computers and Lab Equipment!** These items are school property and for you to use and NOT abuse. Changing computer settings, writing on desks, or damaging equipment is vandalism and will lead to detention and office referral.
8. Clean up! The next class is depending on you to leave your area clean and in good shape. Before you leave class always remember to do the following:

- Save your work.
- Exit out of programs and re-start your computer.
- When using robots and lab equipment, return them to their proper location and make sure all parts and cables are plugged in.
- Pick up debris on and around your work area.
- Slide in your chair and wait quietly to be dismissed.

Formative and Summative Assessment Definitions:

- **Formative Assessment:** Formal and informal processes teachers and students use to gather evidence for the purpose of improving learning. Anything graded in this area will comprise only 10% of the students’ overall grade. Examples may include daily lab activities and assigned homework.

- **Summative Assessment:** Assessments that provide evidence of student achievement for the purpose of making a judgment about student competence or program effectiveness. Anything graded in this area will comprise the remaining 90% of the students’ overall grade. Examples include performance tests and research presentations.