Liberty Middle School

281 Dock Murphy Drive, Madison, Alabama 35758

Career Technical Education- Automation and Robotics

Mrs. Robinson, Room 114, Purple Pod

Teacher Contact Information	**Email:** dvrobinson@madisoncity.k12.al.us **Classroom Phone:** 256-430-0001 ext. 83114 **This syllabus is subject to change. Please initial each page, sign the last page, and return asap. The digital syllabus in Schoology and on my LMS teacher webpage is for your future reference.**
Classroom Digital Platforms	**Curriculum Link: www.pltw.org (Access via Clever)** **Schoology Link:** Can be accessed through MCS account **Parent Square:** Can be accessed through MCS account **Distribution List Link:** PowerSchool will be used for parent contact info
Textbook Information	**Please ensure your students bring their MCS Chromebook charged and ready for class each day.** • Students will access the curriculum via CLEVER from PLTW. • Students will complete daily assignments and assessments in Schoology and their engineering notebooks (provided by the teacher and stored in the classroom at all times).
Course Description	Students will apply the design process to solve problems and understand the influence of creativity and innovation in their lives. By working in teams, students will work on designs of various projects from local businesses and learn how to create ideas for their engineering notebooks. Students will create designs in their engineering notebooks and learn how to build and program real-world objects such as traffic lights, toll booths, and robotic arms. Students will be using VEX Robotics equipment to build their designs.
Course Prerequisites	None
Course Objectives	Automation and Robotics (AR) allows students to trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and assembly lines
Course Goals	- Understand the impact of engineering solutions in a global, economic, environmental, and societal context. - Function on a multidisciplinary team. - Apply the engineering design process to design a system, component, or process to meet desired needs within realistic constraints. - Understand the role and impact of engineering and engineering solutions within a global, economic, environmental, and societal context. - Automation is the use of technology to ease human labor or to extend the mental or physical capabilities of humans. - Robotics is the specialized field of engineering and computer science that deals with the design, construction, and application of robots. - The use of automation and robotics affects humans in various ways, both positively and negatively, including their safety, comfort, choices, and attitudes about a technology's

	development and use. - Automation and robotics have had an influence on society in the past and present and will influence society in the future. - Energy is the capacity to do work; the use of mechanisms is necessary to transfer energy. - Engineers and technologists design mechanisms to change energy by transferring direction, speed, type of movement, and force or torque. - Mechanisms can be used individually, in pairs, or in systems. - Automated systems require minimal human intervention. - An open-loop system has no feedback path and requires human intervention, while a closed-loop system uses feedback. - Troubleshooting is a problem-solving method used to identify the cause of a malfunction in a technological system. - Comments do not change the way a robot behaves, but they do allow the programmer to remember the function that the code performs. - Invention is a process of turning ideas and imagination into devices and systems
Instructional Delivery Plan, Course Outline, and Culminating Project	**Lesson 1: What Is Automation and Robotics?** In this unit students will learn how automation and robotics affect everyday life both positively and negatively, including safety, comfort, choices, and attitudes about a technology's development and use. **Lesson 2: Mechanical Systems** The activities in this lesson will introduce the students to several mechanisms that are used to change speed, torque, force, type of movement, and direction of movement. These mechanisms have been developed over time to address the need for changes in machine tools, robots, automobiles, airplanes, etc. **Lesson 3: Automated Systems** Upon completion of this lesson, students will have a better understanding of the necessary components of a flexible manufacturing system and the programming necessary for communication between the sensors, motors and building components. **Culminating Project** Assembly line construction and coding.
Credentialing	None
CTSO Integration (LMS Career Technical Student Association)	Technology Student Association, TSA, is a **career technical student organization** and a fundamental part of this course. It is a national career and technical student organization of students engaged in science, technology, engineering, and mathematics (STEM). TSA is integrated into the program which includes competitions and leadership opportunities. TSA provides students with activities during their class time and after school with our local TSA Chapter. *TSA Based Activities relevant to Robotics include but are not limited to: Inventions and Innovations, Technical Design, and Problem Solving.*
Embedded Numeracy Anchor Assignment (Introduction to Gear Ratios Assignment) **100 Points**	**Students will Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions. This is done by calculating gear ratios.**

Embedded Literacy Anchor Assignment (Hobby Locker Design) **100 Points**	**Students will** Create and edit digital products that are appropriate in subject, occasion, audience, purpose, and tone. This will be done by creating a digital design brief.
CTE Lab Safety Guidelines	Each student in a CTE/PLTW course will be required to complete a lab safety exam and score a 100% correct before being allowed to use any tools on projects. We expect students to responsibly and safely use the CTE equipment. Examples of equipment used in CTE courses may include and are not limited to the following: scissors, hot glue guns, box cutters, power tools, hand tools, measuring tools, electronic equipment, computers, medical supplies, robotics equipment, food items (consumable and non-consumable).
Classroom Rules **Progressive Discipline** ***(LMS Policy)***	1. **Listen carefully and follow directions.** 2. **Refrain from distracting others** by: a. entering and leaving the room quietly b. sitting appropriately in your assigned seat. c. obtaining teacher permission to leave your seat. d. keeping hands, feet and objects to yourself. e. raising your hand to speak and waiting to be called upon. f. not teasing others. 3. **Be prepared** for class having pencils and your **charged laptop.** 4. Use class time for working on Automation and Robotics assignments only. 5. Keep the area around your desk clean. 6. "Clock in" on time. Students should be seated when the tardy bell rings. **Students tardy to class will receive a detention per LMS policy.** 7. Be honest. Avoid cheating and sharing work. (See Code of Conduct for definition of cheating.) 8. Stay awake and attentive. 9. **Refrain from chewing gum, eating and drinking in class.** Water bottles are permitted. 10. **Cell phones and all other bluetooth capable devices must be powered down and in a backpack from 8:15 am - 3:20 pm.** **All students must follow the Madison City Schools Code of Conduct.** **Liberty Middle School Classroom Management Plan:** **Step 1:** Verbal warning **Step 2:** Student/teacher conference with parent notification **Step 3:** Parent contact/conference **Step 4:** Detention **Step 5:** Referral to administration for repeat Class I violations and initial Class II and Class III offenses **Note that per the Madison City Schools Code of Conduct, some offenses result in immediate detention of referral to administrator's office.** (**Madison City Schools Code of Conduct**)

Classroom Expectations	- Have a great attitude - Be a good teammate - Be respectful - Self Advocate
Grading Policy ***(MCS Policy)***	**60% =** Assessments (Tests, Projects, Mini-Assessments) **40% =** Daily Grades (Quizzes, Exit Slips, Progress Checks, Classwork, Daily Activities, Participation)
Late Work Policy	**Late assignments will be reviewed and considered on an individual basis. As CTE/STEM courses simulate real-world work environments and emphasizes project-based learning, timely completion of tasks is essential. However, if circumstances arise, students are responsible for communicating with the teacher emulating positive employability traits; each situation will be assessed fairly and thoughtfully.**
Make-up Work/Test Policy	Students with excused absences will be allowed to make-up all work within three days of returning to school. Make-up assignments are the student's responsibility. Work that is not made up will become a zero (including quizzes/tests). Students will not receive credit for and will not be allowed to make up any assignments, tests, work, activities, etc., missed during unexcused absences. (Madison City Schools Code of Conduct)
Technology	Student laptops should not be hard-wired to the network or have print capabilities. Use of discs, flash drives, jump drives, or other USB devices will not be allowed on Madison City computers. Neither the teacher, nor the school is responsible for broken, stolen, or lost laptops. Laptops and other electronic devices will be used at the individual discretion of the teacher.
Materials & Supplies	**Students should come to class daily prepared with a fully charged Chromebook, pencils, and black pens. All other materials for the class will be provided.** Students should have all materials listed on the LMS Website.
Homework	All work is designed to be done in class. Any work at home is usually due to an illness, incompletion, or extenuating circumstances.

This syllabus is subject to change.

PLEASE SIGN AND RETURN THE NEXT PAGE.

Acknowledgment Statement of the updated syllabus for Atomation and Robotics.

After reading this syllabus and reviewing it in detail with your scholar, please detach and return this page only.

We, the undersigned, acknowledge that we have read and understood the syllabus for this class. We agree to support our student's learning and abide by the policies outlined.

Student Name: _____ Student Signature: _____
Date: _____ Block: _____

Parent/Guardian Name: _____ Phone Number _____

Parent/Guardian Signature: _____ Date: _____ Email_____

Parent/Guardian Name: _____ Phone Number _____

Parent/Guardian Signature: _____ Date: _____ Email_____

- ☐ I can receive emails to the address(es) listed above regarding my child's grades/behavior.
- ☐ I cannot receive emails to the address(es) listed above regarding my child's grades/behavior.

If you work in a career field or own a business related to any of the course objectives/goals listed above (or any aspects of STEM), and would enjoy sharing your expertise with the class, please complete the following so I can schedule you for a virtual interview with the class.

Your Name _____

Company Name_____

Job Title _____

Phone _____

Email _____

Your Name _____

Company Name_____

Job Title _____

Phone _____

Email _____