



Journey Middle School

217 Celtic Drive, Madison, Alabama 35758

Automation + Robotics - 7th and 8th Grade

Thomas

Teacher Contact Information	Email: lethomas@madisoncity.k12.al.us Classroom Phone: Ext. 84303
Classroom Digital Platforms	Webpage Link: https://www.madisoncity.k12.al.us/Domain/2880 Schoology Link: <u>Semester 1</u> and <u>Semester 2</u>
Textbook Information	<ul style="list-style-type: none"> • Curriculum is through myPLTW.org. • There is no required textbook for this class • There is no required reading for this class
Writing Projects	Any writing assignment will be created in the student's Madison City Schools Google Drive using the Google Platform, which includes Google Docs, Google Slides, and Google Sheets.
Course Description	18 Weeks Course 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	PLTW Automation and Robotics is a 18-week, STEM unit of study. The focus of this unit is the development of automation and robotics and their use to improve daily life. Students investigate mechanical systems, motion transfer, machine automation, and computer control systems. Using the VEX® Robotics platform, students design, build, and program real-world devices, such as food dispensers, robot pet companions, and transport systems.
Course Goals	By the time the course is finished, students will be able to: <ul style="list-style-type: none"> - Describe the purpose of automation and robotics and their effect on society. - Use the characteristics of a specific mechanism to evaluate its purpose and applications. - Apply knowledge of mechanisms to solve a unique problem for speed, torque, force, or type of motion. - Know how to use ratio reasoning to solve mechanical advantage problems. - Design, build, wire, and program both open- and closed-loop systems. - Use motors and sensors appropriately to solve robotic problems. - Troubleshoot a malfunctioning system using a methodical approach

Instructional Delivery Plan, Course Outline, and Culminating Project	<p>Unit 1: Automated Systems (Project 1.9 Design Challenge) Students explore how gear trains and other mechanisms transfer movement in mechanical systems and design, build, and program automated systems to meet the needs of clients. In the end-of-lesson project, students can choose to design an interactive device to keep pets physically and mentally active, a spinning street sign to warn drivers to slow down and stop, or a high-speed dragster.</p> <p>Unit 2: Sensors and Systems (Project 2.5: Helping Hand) Students investigate the versatility of an optical sensor as a programmed input device. Students extend their knowledge of mechanisms as they design increasingly complex prototypes to serve the needs of users. In the end-of-lesson project, students connect inputs to outputs through programming to create effective solutions that help their communities.</p> <p>Unit 3: Create and Automate (Problem 3.1 Show Your Skills) Students design solutions using an automated mechanical system and the programming necessary for communication between the sensors, motors, and building components. Students pick their own problems or select problems that highlight their creativity and are of service to others. Throughout the unit students reflect on their growing skills and interests and explore careers in the field.</p>
Course Outline	<p>Week 1 - Lesson 1: Automated Systems Week 2 - Lesson 1: Automated Systems Week 3 - Lesson 1: Automated Systems Week 4 - Lesson 1: Automated Systems Week 5 - Lesson 1: Automated Systems Week 6 - Lesson 1: Project Design Challenge Week 7 - Lesson 2: Sensors and Systems Week 8 - Lesson 2: Sensors and Systems Week 9 - Lesson 2: Sensors and Systems Week 10 - Lesson 2: Sensors and Systems Week 11 - Lesson 2: Sensors and Systems Week 12 - Lesson 2: Project Helping Hand Week 13 - Lesson 3: Create and Automate Week 14 - Lesson 3: Create and Automate Week 15 - Lesson 3: Create and Automate Week 16 - Lesson 3: Create and Automate Week 17 - Lesson 3: Create and Automate Week 18 - Lesson 3: Create and Automate</p> <p><i>*This is subject to change.</i></p>
Credentials	<p>None</p>
CTSO Integration (JMS Career Technical Student Organization is TSA)	<p>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. <i>TSA Based Activities relevant to CSIM include but are not limited to: Lab Safety Posters, Coding Challenges, Career Prep, Cyber Security, Essays on Technology, Challenging Tech Issues</i></p>

Embedded Numeracy Anchor Assignment (Lesson 1 Project: Purposeful Design)	<p>MA19.6.23 - Calculate, interpret, and compare measures of center (mean, median, mode) and variability (range and interquartile range) in real-world data sets.</p> <p>MA19.6.23a - Determine which measure of center best represents a real-world data set.</p> <p>MA19.6.23b - Interpret the measures of center and variability in the context of a problem.</p>
Embedded Literacy Anchor Assignment (Lesson 2 Project: Helping Hand)	<p>ELA21.6.7 - Produce clear, coherent narrative, argument, and informative/explanatory writing in which the development, organization, style, and tone are relevant to task, purpose, and audience, using an appropriate command of language.</p> <p>ELA21.7.7b - Write informative or explanatory texts with an organized structure and a formal style to examine ideas or processes effectively while developing the topic and utilizing appropriate transitions, precise vocabulary, and credible information or data when relevant.</p>
Embedded Science Anchor Assignment (Lesson 2 Project: Helping Hand)	<p>SC15.8.8 Use Newton’s first law to demonstrate and explain that an object is either at rest or moves at a constant velocity unless acted upon by an external force (e.g., model car on a table remaining at rest until pushed).</p>
CTE Lab Safety Guidelines	<p>Each student in a CTE/PLTW course will be required to complete a lab safety exam and score 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, adhesives, robotics equipment, food items (consumable and non-consumable).</p>
Classroom Expectations	<ol style="list-style-type: none"> 1. Be prepared to learn each day. 2. Bring necessary materials to class each day. 3. Treat yourself and others with respect. 4. Respect the belongings and personal space of others. 5. Be responsible for all technology and supplies. 6. Set high expectations for yourself. 7. Follow all district-level, school-level, and classroom-level policies and procedures.
Progressive Discipline Procedures <i>(JMS Policy)</i>	<p>All progressive discipline will correspond with the Madison City Schools Code of Conduct regarding Class I and II offenses. Class III offenses are a direct office referral.</p> <ul style="list-style-type: none"> • Warning • Conference with student with parent notification • Parent Contact • Detention • Referral to administration for repeat Class I violations and initial Class II and III offenses—Consequences determined to be reasonable and appropriate by the school administration.
Electronic Communication Device Policy	<p>Wireless Communication Devices</p> <p>A. Definitions</p> <ol style="list-style-type: none"> 1. Instructional Day – <ul style="list-style-type: none"> • When school is open and in session:

	<ul style="list-style-type: none"> • During class time, lunch, transitions between classes, and any non-instructional periods; • Any time that students are required to store their Wireless Communication Devices under the Student Code of Conduct, or other school rules; or • Any other time, students are instructed to store their devices by school staff. <p>2. Wireless Communication Devices – Any portable electronic device that has the capability of exchanging voice, messaging, or other data communication with another electronic device, including, without limitation:</p> <ul style="list-style-type: none"> • cellular telephones • tablet computers • laptop computers • pagers • gaming devices • smart watches • earphones or headphones (Air Pods, ear buds, over the ear headphones, etc., whether wireless or not) <p>B. Possession of Wireless Communication Devices – Students are prohibited from bringing Wireless Communication Devices into school buildings and onto school grounds, except in compliance with this policy. The Board is not responsible for the theft, loss, or damage to any Wireless Communication Device brought onto campus by a student.</p> <p>C. Storage of Devices– At all times during the Instructional Day, students who possess a Wireless Communication Device on any campus or in any school must turn the device off and store the Wireless Communication Device off their person in a locker, car, backpack, purse, gym bag, or other storage location approved by school administrators. This storage requirement is subject to the exceptions set out in subsection D below.</p> <p>D. Prohibition on Use; Exceptions – Students are prohibited from using, operating, or possessing a Wireless Communication Device during the Instructional Day, except under the following limited circumstances:</p> <ul style="list-style-type: none"> • The use, operation, and/or possession of the device is specifically included in the student’s Individualized Education Plan (IEP), 504 Plan, or an Individualized Health Plan; • The use, operation, and/or possession of the device is for educational or learning purposes under the supervision of school personnel; and • The use, operation, and/or possession occur during an emergency threatening the life or safety of the student or another person. <p>The Superintendent or designee is authorized to develop additional guidelines for implementation of these exceptions.</p> <p>E. Searches – School officials may read, examine, or inspect the contents of any wireless communication device upon reasonable suspicion that the device contains evidence of a violation of Board policy, the Code of Conduct, or other school rules, provided that the nature and extent of such reading, examination, and inspection shall be reasonably related and limited to the suspected violation.</p> <p>F. Disciplinary Action – Any violations of this policy may result in disciplinary action under the Student Code of Conduct.</p> <p>G. Additional Procedures Authorized – The Superintendent or designee is authorized to develop any additional rules necessary to carry out this policy.</p>
Grading Policy (MCS Policy)	60% = Assessments (Tests, Essays, Projects) 40% = Daily Grades (Quizzes, Homework, Classwork, and Participation) Testing Days: Mondays and Thursdays

<p>Late Work Policy</p>	<p>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.</p> <p>Students present in class on the day of instruction are expected to turn in all in-class and out-of-class assignments on time.</p>
<p>Make-up Work/Test Policy</p>	<p>Students are permitted to make up work, tests, and other assignments, activities, etc., when absences are excused. Under normal circumstances, it is expected that students will submit previously assigned work upon return to school after an excused absence. All work missed on the day(s) of excused absence(s) must be made up within three school days after returning to school. However, for extended excused absences when homebound services are not necessary, the teacher may grant additional time, but not to extend beyond two weeks past the return to school. It is the joint responsibility of student and parent to ensure a student makes up work following excused absences. Teachers may alter assignments, tests, work, activities, etc., as necessary to ensure an accurate evaluation of the student's performance after an excused absence.</p> <p>Students will not receive credit for and will not be allowed to make up any assignments, tests, work, activities, etc., missed during unexcused absences.</p>
<p>Technology</p>	<p>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.</p>
<p>Cheating/Plagiarism</p>	<p>A student who cheats will not receive credit for the work in question. If any other student has cooperated in cheating, that student is also considered to have cheated and will not receive credit. Cheating students will also be subject to disciplinary consequences in Section XXII of this CSC. Cheating is defined to include, but is not limited to:</p> <ul style="list-style-type: none"> (a) copying someone else's work in or out of class and identifying and submitting it as your own (b) failing to quote and/or list appropriate citations for material derived from published sources (including the Internet) and identifying and submitting it as your own (c) the use of unauthorized notes, other materials, or assistance during the accomplishment of graded work in or out of class (d) any other situation in which the student attempts to or accepts credit for work not his or her own.
<p>Artificial Intelligence Acceptable Use Policy <i>(MCS Policy)</i></p>	<p>Madison City Schools acknowledges that technology is ever-changing and has a tremendous impact on our global society, local community, and classrooms. Artificial intelligence (AI), including generative forms of AI, is becoming more a part of our everyday lives. It is our responsibility to educate and train students to utilize AI in an ethical and educational way. Therefore, Madison City Schools is not banning the student or teacher use of AI, but each student will need to be aware of the limitations and guidelines of its usage:</p> <ul style="list-style-type: none"> a. Madison City Schools student email accounts and Chromebook access to specific open AI software, such as ChatGPT, are blocked due to data and security concerns.

	<p>b. Any misuse of AI tools and applications, such as hacking or altering data, is strictly prohibited.</p> <p>c. Teachers may allow the use of AI for curriculum purposes. Access to specific websites will be granted on an as-needed basis, adhering to specific data and privacy guidelines regarding age restrictions and usage.</p> <p>d. College Board and Dual Enrollment college and university classes may have additional restrictions and limitations regarding the use of Artificial Intelligence.</p> <p>e. Students who use AI software with a personal device and/or personal credentials should do so at their own risk, acknowledging that each platform is collecting various forms of data.</p> <p>f. Students must acknowledge the use of AI in any capacity related to their schoolwork, including text, images, multimedia, etc. The use of AI could be subject to the Academic Dishonesty Policy.</p> <p>h. Students should acknowledge that AI is not always factually accurate, nor seen as a credible source, and should be able to provide evidence to support its claims.</p>
Materials & Supplies	<p>JMS Chromebook and Charger Colored Pencils/Markers Assorted Highlighters Pencils / Pens Glue Stick Individual Headphones / Earbuds with auxiliary jack cord (no wireless)</p> <p>Donations (Optional But Greatly Appreciated!): Index Cards Sticky Notes Loose-Leaf Paper Loose-Leaf Graph Paper</p>
Homework	<p>Students are allotted time in class to complete assignments. In the event that a student is absent or does not finish during class time, they will need to complete the assignment for homework.</p>
Parent & Student Acknowledgment Form	<p>Please click this link to find and complete the Parent / Guardian and Student Syllabus Acknowledgement Form for this class. This form acknowledges that you have read and understand the expectations and procedures of the class. Please contact me with any questions!</p>