# 2025-2026
# Discovery Middle School
*1304 Hughes Road, Madison, Alabama 35758*
# Mrs. Laura Collins
# PLTW Computer Science Innovators & Makers (CSIM)

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| **Teacher Contact Information** | **Email:** lecollins@madisoncity.k12.al.us<br>**Phone:** 256- 837-3735 |
| **Course Digital Platforms** | **Webpage Link:** https://www.madisoncity.k12.al.us/Page/2021<br>**Schoology:** https://madisoncity.schoology.com/home<br>**Coding:** https://makecode.microbit.org/ www.tynker.com<br>**Curriculum:** www.pltw.org<br>**Typing:** https://www.typing.com/<br>**Parent Communication:** https://madisoncs.powerschool.com/public/<br>***PowerSchools will be used for parent contact. Please make sure all contact information is up to date in PowerSchools.*** |
| **Textbook Information** | *Online PLTW curriculum (no textbook) www.pltw.org (login usernames provided in class)* |
| **Course Description** | Computer Science for Innovators and Makers teaches students that programming goes beyond the virtual world into the physical world. Students are challenged to creatively use sensors and actuators to develop systems that interact with their environment. Designing algorithms and using computational thinking practices, they code and upload programs to microcontrollers that perform a variety of authentic tasks. The unit broadens students' understanding of computer science concepts through meaningful applications. Teams select and solve a personally relevant problem related to wearable technology, interactive art, or mechanical devices. |
| **Course Prerequisites** | None |
| **Course Objectives** | *Apply computational thinking to solve problems. Recognize that computational thinking can be applied in multiple disciplines. Choose appropriate computational practices when solving a problem. Analyze and create algorithms. Analyze the structure and functionality of a program. Create programs by developing and testing code in a modular, incremental approach. Adapt or improve existing code. Describe the hardware components of an electronic device and how they interact with software and the environment. Analyze the implications of computing in society. Consider accessibility and equity when designing products, creating solutions,and collaborating with others. Describe the role, connections between disciplines, and impact of engineering and computer science on society.* |
| **Course Goals** | **Students Will:**<br>**1. Be able to follow the engineering design process**<br>**2. Learn and use standard safety practices**<br>**3. Create algorithms and document the planning process for code**<br>**4. Demonstrate proper troubleshooting and code tracing techniques**<br>**5. Design projects that meet consumer needs in today's world**<br>**6. Create code and download programs to the micro:bit microcontroller**<br>**7. Type 35+ words per minute using proper typing techniques.** |
| **Instructional Delivery Plan, Course Outline & Culminating Project** | **Daily Bellwork:** *Each day for the first 10 minutes of class students will use typing.com to learn and practice proper typing skills.*<br><br>**Unit 1: DIGITAL CITIZENSHIP** *Students learn about proper digital citizenship: how to interact safely online, how to avoid scams (such as phishing), how to communicate properly online, how to safely use social media and how to engage in online etiquette (netiquette).* |

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| | **Unit 2: BLINK/THE INS & OUTS** *Students explore the capabilities of physical computing systems. They learn to use algorithmic thinking as they prepare to code. Students use block-based coding on Tynker and the Makecode micro bit website to create and download programs to the micro bit microcontroller. They learn processes and gain skills to debug programs starting with pre-bugged programs. They apply these skills to their own project where they code a blinking message. Students explore a variety of sensors and actuators to use as inputs and outputs in physical computing projects. Using different materials to transfer electrical signals, such as conductive thread, alligator clips, conductive paint, and copper tape. Students create their own input device - a sensor to switch - to interact with a program they develop on the microcontroller.*<br><br>**Unit 3: PROGRAMMING THE PHYSICAL WORLD** *Students become innovators and makers. They apply their physical computing knowledge and skills and design one of three problem options: A wearable safety device, an engaging art installation, or a useful mechanical dispenser. Students will collaborate to create a design plan, code and final project.* |
| **Credentialing** | None |
| **CTSO Integration**<br>***(DMS Career Technical Student Organization is TSA)*** | 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 CSIM include but are not limited to: Lab Safety Posters, Coding Challenges, Career Prep, Cyber Security, Essays on Technology, Challenging Tech Issues.* |
| **Embedded Numeracy** | ● Make sense of problems and persevere in solving them. These students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. These students consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary.<br>● Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and the tools' limitations.<br>● Attend to precision. These students try to communicate mathematical ideas and concepts precisely. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. Mathematically proficient students are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context.<br>● Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies.<br>● Solve real-world and mathematical problems involving area, volume, and surface area of two- and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right rectangular prisms. |

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| **Embedded Literacy** | • R1. Utilize active listening skills during discussion and conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.<br>• R3. Use digital and electronic tools appropriately, safely, and ethically when researching and writing, both individually and collaboratively.<br>• Expression: 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.<br>• b. Write informative or explanatory texts with an organized structure and a formal style, incorporating a focused point of view, a clear purpose, credible evidence, and technical word meanings.<br>• 29. Use academic vocabulary in writing to communicate effectively. |
| **Embedded Science** | • Utilize the Scientific Method to problem solve.<br>• Utilize the horizontal (x-axis) and vertical (y-axis lines on a graph as it relates to a computer screen and coding activities..<br>• Analyzing and interpreting data.<br>• Constructing explanations and designing solutions.<br>• Obtaining, evaluating, and communicating information.<br>• Utilize mathematics, science, and computational thinking. |
| **CTE Lab Safety Guidelines** | 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. |
| **Classroom Expectations** | 1. Be seated and ready for class when the bell rings. *Detention for tardies will be assigned as per DMS policy.*<br>2. Come prepared for class and ready to learn.<br>3. Respect your teacher, your classmates, and yourself.<br>4. Listen and follow directions.<br>5. If it's not yours, don't touch it. Keep your hands and feet to yourself.<br>6. Follow all school rules.<br>7. The teacher dismisses the class, not the bell.<br>8. No food or drink around the computers and equipment.<br>9. Do not visit gaming websites during class. Remain on our curriculum websites at all times. |
| **Progressive Discipline** ***(DMS Policy)*** | **Step 1:** Verbal warning<br>**Step 2:** Student/teacher conference<br>**Step 3:** Parent contact<br>**Step 4:** Referral to school administration<br>DMS Classroom Management Plan |
| **Grading Policy & Scale** ***(MCS Policy)*** | **60%** = Assessments (Tests, Mini-Assessment, Projects)<br>**40%** = Daily Grades (Homework, Classwork, and Participation)<br>**Grade Scale:** 90-100 = A; 80-89 = B; 70-79 = C; 65-69 = D; < 64 = F |
| **Late Work Policy** | For work turned in late, the following policy will apply:<br>• The assignment will drop one LETTER grade for each school day that passes. For example, if an assignment is turned in one school day late, the highest a student can receive is 89%; two days late, 79%, etc.<br>1 day late = maximum credit 89%<br>2 days late = maximum credit 79%<br>3 days late = maximum credit 69%<br>4 days late = maximum credit 59%<br>5-10 days late = maximum credit 50%<br>• Half credit is always better than no credit! Until work has been made up, "Missing" (which counts as a zero) will be put in the grade book. This will be updated once work is completed and turned in. |

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| **Make-up Work/Test Policy** | Students with excused absences will be allowed to make-up all work within three days of returning to school. It is the student's responsibility to look in Schoology for assignments.. Students can confer with a classmate or ask the teacher for help. Work that is not made up will become a zero (including tests). |
| **Technology Policy** | 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. |
| **Accomodations** | Requests for accommodations for this course or any school event are welcomed from students and parents. |
| **Materials & Supplies** | School issued Chromebook |
| **Homework** | All assignments and projects will be completed during class time. |
| **Assignments** | ***All Student assignments will be posted in Schoology; however, all grades will be posted in PowerSchool.*** |