



SCHOOL DISTRICT OF MONROE

Preparing for the Future, One Child at a Time

Game Design

Course Description:

The curriculum for this course is developed from the [Wisconsin Standards for Business and Information Technology](#), [Wisconsin Standards for Computer Science](#), and [ISTE Standards](#). This is an elective course that meets every day for a semester. In this class, students will explore coding, designing, and digital arts through technology and problem-based learning. Grades are determined by projects and daily work. The information in this course overview outlines what students should understand and be able to do by the end of the semester/year.

Mastery Standards:

Demonstrate knowledge of the programming or application development process. (BIT.PR1.a)

Analyze and design information systems and/or games using appropriate development tools. (BIT. PR1.b)

Perform quality assurance tasks to produce a quality product. (BIT.PR1.c)

Empowered Learner: Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. (ISTE 1)

Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. (ISTE 4)

Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. (ISTE 6)

Integrate information presented in different media or formats as well as in words to develop a coherent understanding of a topic or issue. (WI CCSS.ELA-Literacy.RI.6.7)

Students will test and refine computational solutions. (CS.AP6)

Unit	Description of Unit and Learning Targets
<p>Unit Title: Google Slides</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> What are some good techniques to follow when presenting using multimedia presentations? Besides presentations, what else can you do with Google Slides? 	<p>Students will.....</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Interact, collaborate, and publish with peers, experts or others employing a variety of digital environments and media. Plan and manage activities to develop a solution or complete a project. Use multiple processes and diverse perspectives to explore alternative solutions.
<p>Unit Title: Tech Fridays</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> What is new and exciting in technology? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Publish or present content that customizes the message and medium for their intended audiences. Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices.
<p>Unit Title: SketchUp</p>	<p>Students will...</p>

<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How important is the planning stage when building a new structure? 	<p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks. • Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. • Develop, test and refine prototypes as part of a cyclical design process.
<p>Unit Title: Caine’s Arcade</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How do engineers use the design process to solve problems? • Why is it important to have multiple solutions to a single problem? • How are tests used to improve solutions? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. • develop, test and refine prototypes as part of a cyclical design process. • exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.
<p>Unit Title: Code.org</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How is code written to control behaviors of characters and objects in a computer game? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Analyze and debug (fix) an algorithm, which includes sequencing, events, loops, conditionals, parallelism, and variables. • Modify existing code to change its functionality, and discuss the variety of ways in which to do this.
<p>Unit Title: CS First/Scratch</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How do engineers use the design process to solve problems? • Why is it important to have multiple solutions to a single problem? • How are tests used to improve solutions? • What are the similarities between creating a computer game and computer programming? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Understand the concept of computational creation, in the context of Scratch • Become familiar with resources that support their computational creation • Become familiar with a wider range of Scratch blocks • Be able to create a Scratch project that is an interactive digital representation of their interests • Develop greater fluency with computational concepts (i.e. sequence, loops, events) and practices (i.e. iterative and incremental development, testing and debugging, reusing and remixing, abstracting and modularizing) by working on a self-directed project • Understand the benefits of remixing while designing • Be able to create a Scratch project that tells a story by building on the work of others • Develop greater fluency with computational concepts (i.e. parallelism, events) and practices (i.e. iterative and incremental development, testing and debugging, reusing and remixing, abstracting and modularizing) by working on a self-directed project • Be able to identify some common design elements of games • To describe what a variable is and why variables are useful • Identify areas where they need support • Provide guidance and support to peers • Use computational concepts and practices to further develop a

	<p>Scratch project of their choosing</p> <ul style="list-style-type: none"> ● Present their design work to others ● Analyze and debug (fix) an algorithm, which includes sequencing, events, loops, conditionals, parallelism, and variables. ● Modify existing code to change its functionality, and discuss the variety of ways in which to do this.
<p>Unit Title: Makerspace Rotations</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● Why are exploration and creation an important part of learning? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Identify possible solutions to a design problem by considering its criteria and constraints including relevant scientific principles and environmental impact. ● Use a systematic process evaluate multiple possible solutions to a problem. ● Design, create, and test a prototype or model of my solution. ● Analyze and compare data from tests of my prototype or model and existing research. Improve my prototype or model based on the results of my tests and research. ● Seek feedback and share the results of investigations/tests in a creative way.