

SHORE REGIONAL HIGH SCHOOL DISTRICT

A Regional Collaborative of the Communities Served by the Monmouth Beach, Oceanport, Shore Regional, and West Long Branch School Districts

Aligned to Common Core State Standards/New Jersey Core Curriculum Content Standards as Applicable

Course Title: Coding
Content Area: Technology
Grade Level(s): 7-8
Course Description: Coding
Curriculum Writer(s): Megan Heslin
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Pacing Guide

Unit 1 Blockly
Unit 2 Scratch
Unit 3 HTML and Web Design
Unit 4 Animation and 3D Modeling

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Unit 1

Unit Summary: This unit will provide students with a visual interface that will enable them to understand the concept of programming. In Blockly: Maze, students are introduced to concepts behind simple computer programming with a graphical editing tool that uses blocks instead of typed characters. Students will learn to drag blocks together to build a simple web application. Running the app, students must instruct a character to move properly through a maze in order to reach a specified target. As they succeed in early levels, they will advance to more and more complicated tasks. Blockly: Maze is a tool to use as a primer for basic coding.

Interdisciplinary Connections/Content Area Integrations Including Technology:

Critical Thinking, Problem Solving, Communication Skills, Reading, Writing, Mathematics, and Technology

CCSS/NJCCCS	CCSS/NJCCCS Content
8.1.8.A.1	Understand and use technology systems.
8.1.8.A.3	Select and use applications effectively and productively.
8.2.8.E.3	Utilize computational thinking and computer programming to develop an algorithm to solve an assigned problem.
8.2.8.E.4	Use appropriate computer programming terms in conversation.

Summative Assessments:

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Complete all ten levels in Blockly.



Formative Assessments:

May include but is not limited to: Teacher Observations, Homework, Quizzes, Open-Ended Questions, Class Discussion and Assignments, Performance, and Participation



Enduring Understandings:

Identify and use the elements in the Blockly interface, understand and explain how Blockly uses positions such as up, down, left, and right, debug a program that is not responding correctly, and introduced to concepts behind simple computer programming with a graphical editing tool that uses blocks.



Essential Questions:

- What are the fundamentals of computer programming?
- How do you create a program?
- How are algorithms used in coding?
- How can you use computer programming to complete a task?
- How is computer programming useful in real life?
- How might you use computer programming in your future career?



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Instructional Outcomes:

Students will understand and utilize the Blockly program. In this hands-on, movement-based unit, students will use resources as they are introduced to the concept of coding and programming. In this program, students are introduced to concepts behind simple computer programming with a graphical editing tool that uses blocks instead of typed characters. Students will learn to drag blocks together to build a simple web application. Blockly covers simple directional commands, simple loops, while loops, and if-then-else statements.



Suggested Learning Activities:

May include but is not limited to:

- Identify and use the elements in the Blockly interface and how to: add a sprite, choose functions/blocks for programming and controlling objects on the screen, change the size of the display screen, etc.
- Understand and explain how Blockly uses positions such as up, down, left, right
- Use blocks to add motion, timing, duplication
- Debug a program that is not responding correctly
- Introduced to concepts behind simple computer programming with a graphical editing tool that uses blocks
- As students complete each maze, they will:
 - a. Add motion
 - b. Add repeating actions (loops)
 - c. Create a new block of their own
 - d. Add thinking to their characters
 - e. Create animations
 - f. Use conditional actions
 - g. Use logic operations
 - h. Use simple directional commands, simple loops, while loops, if-then-else statements

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Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Work with a partner
- Provide written notes and/or resources for the student to utilize
- Video tutorials
- Allow extra time to complete assignments



Curriculum Development Resources: Plumsted Township School District, Technology Elective



Notes/Comments:

Unit 2

Unit Summary: This unit will provide students with a visual interface that will enable them to understand the concept of programming, including loops and xy coordinates, using provided written and online resources to aid in their learning and collaborate with others to problem-solve and think creatively.

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Interdisciplinary Connections/Content Area Integrations Including Technology:
Critical Thinking, Problem Solving, Communication Skills, Reading, Writing, Mathematics, and Technology

CCSS/NJCCCS	CCSS/NJCCCS Content
8.1.8.A.1	Understand and use technology systems.
8.1.8.A.3	Select and use applications effectively and productively.
8.2.8.E.3	Utilize computational thinking and computer programming to develop an algorithm to solve an assigned problem.
8.2.8.E.4	Use appropriate computer programming terms in conversation.

Summative Assessments:
Create a simple game



Formative Assessments:
May include but is not limited to: Teacher Observations, Homework, Quizzes, Open-Ended Questions, Class Discussion and Assignments, Performance, and Participation



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Enduring Understandings:

Identify and use the elements in the Scratch interface, understand and explain how Scratch positions objects using coordinate grid, use scripts to add motion, timing, duplication, and draw a pentagram puzzle, and de-bug a program that is not responding correctly.



Essential Questions:

- How do you use blocks/functions to program?
- How are objects placed on a “stage”?
- What is the purpose of looping?
- Why is “debugging” a program important?
- Where can a person studying almost anything find assistance, if needed?



Instructional Outcomes:

Students will understand and utilize the Scratch interface to create/modify sprites and understand both placement and movement in a simple program. The concepts of repetition or looping will be explored, as students move through self-guided lessons to create their first projects. They will use xy coordinates to place objects on a stage, program the movement, and debug a program they have written.



Suggested Learning Activities:

May include but is not limited to:

- Identify and use the elements in the Scratch interface and how to: add a sprite, choose functions/blocks for programming and controlling objects on the screen, change the size of the display screen, etc.
- Understand and explain how Scratch positions objects using coordinate grid
- Use scripts to add motion, timing, duplication, and draw a pentagram puzzle
- Debug a program that is not responding correctly

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- As students create their first project, “Scratch and Cassie Dancing”, they will learn to:
 - a. Add motion and sound
 - b. Add repeating actions (loops)
 - c. Play with color
 - d. Create a new sprite of their own
 - e. Add thinking to their characters
 - f. Add sounds, voices, and music
 - g. Create animations
 - h. Change costumes
 - i. Use the pen control and change colors
 - j. About conditional actions
 - k. About logic operations



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Work with a partner
- Provide written notes and/or resources for the student to utilize
- Video tutorials
- Allow extra time to complete assignments



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Curriculum Development Resources: Plumsted Township School District, Technology Elective



Notes/Comments:

<https://www.madewithcode.com/>

Unit 3

Unit Summary: Students will explore the usage of basic XHTML and tags. They will then graduate to using a web development tool to create websites. They will complete a series of activities reinforcing skills presented to them. In addition, they will complete website projects independently and with a partner.

Interdisciplinary Connections/Content Area Integrations Including Technology:

Critical Thinking, Problem Solving, Communication Skills, Art, Reading, Writing, Mathematics, and Technology

CCSS/NJCCCS	CCSS/NJCCCS Content
8.1.8.A.1	Understand and use technology systems.
8.1.8.A.3	Select and use applications effectively and productively.

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8.2.8.E.3	Utilize computational thinking and computer programming to develop an algorithm to solve an assigned problem.
8.2.8.E.4	Use appropriate computer programming terms in conversation.

Summative Assessments: Unit Project



Formative Assessments:

May include but is not limited to: Teacher Observations, Homework, Quizzes, Open-Ended Questions, Class Discussion and Assignments, Performance, and Participation



Enduring Understandings: Students will use basic XHTML and tags. They will then apply the skills they have learned to create a website of their own.



Essential Questions:

- What is the World Wide Web Consortium (W3C)? What role does W3C play in website development? Who started this? And why?
- What are HTML, XML, and XHTML? What is the difference between each? Which is currently used for website development?
- What is a web designer? What is a web developer? What is a graphics designer? How are they different? Compare and contrast each occupation.

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- Depending on the type of site you are creating, text is likely to be one of the most important elements on your page. Do you agree with this? Why? Why not?
- What features in Dreamweaver can you use to ensure the text items are easy to read and attractive? What feature can you utilize to make sure it is correct and accurate?
- What are CSS? How are they used?
- What is the difference between the ID, Class, and Tag selectors?
- What are hyperlinks? What types of hyperlinks can you add to your webpage?
- How do the page colors and styles make the website "stand out"? Do you see a "theme" associated with each website? What "other" design elements do you notice?
- Take a look at the background colors that are used on websites. Which ones look great with the text on the page? Which ones are too loud? Which ones could use some livening up?
- What is a table? What are rows, columns, cells?



Instructional Outcomes:

- Compare and contrast markup languages.
- Explain guidelines for using XHTML.
- Compare and contrast text editors.
- Organize files and folders into a hierarchy.
- Create a webpage with word processors and text editors.
- Use tags and attributes.
- Insert lists, images, and hyperlinks into an XHTML page.
- Add and format tables.
- Preview and test an XHTML page.

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- Understand the history of WWW and the impact of websites.
- Name the different types of websites.
- Recognize the elements of a website.
- Comprehend and execute all functions of the Dreamweaver program.
- Learn terminology needed to acquire skills from posting to hypertext links, html, Java, etc.
- Understand how marketing plays an important role in creating a website.
- Incorporate, develop, and maintain the school website.
- Utilize various toolbar and menu commands in the Dreamweaver program.
- Employ the use of editing and formatting tools.
- Design and create hyperlinks.
- Launch Dreamweaver and identify Window components of application.
- Open a website in Dreamweaver.
- Arrange the Dreamweaver workspace.
- Become familiar with the menus, toolbars, and panels.
- Define a new website.
- Add pages to a website.
- Use the Files panel to view the files in the site.
- View HTML content.
- Display pages in different views in Dreamweaver.
- Add site content to a website.
- Import a text document from Word.
- Copy text to a webpage.
- Modify font formats on a webpage.

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- Insert special characters on a webpage.
- Check spelling on a webpage.
- Find and replace text on a webpage.
- Create a new webpage.
- Define what Cascading Style Sheets are.
- Differentiate between internal, external, and inline styles.
- Create, apply, and edit CSS styles for a website.
- Create formatting rules and apply them to other pages in a website.
- Create an external style sheet.
- Open an existing website.
- Define what a link is.
- Differentiate between absolute and relative links.
- Create links among the pages in a website.
- Add visual interest to a website.
- Apply a background color to a webpage.
- Use rules (horizontal lines) as a design element to a page to help organize the content.
- Use Web-safe and custom colors.
- Identify table attributes such as rows, columns, and cells.
- Add a table to a webpage.
- Change a table's structure.
- Insert text and graphics in the table cells.
- Save and close a website.



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Suggested Learning Activities:

May include but is not limited to:

- www.beeacoder.com
- Rock band website with embedded sound, business website, and/or travel website.



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Work with a partner
- Provide written notes and/or resources for the student to utilize
- Video tutorials
- Allow extra time to complete assignments



Curriculum Development Resources: Plumsted Township School District Course Curriculum (Course Title: Digital Design)



Notes/Comments:

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Unit 4

Unit Summary: Students will utilize a 3D animation program. Design animated scenes using the 3D animation program. Utilize various program functions and features. Manipulate toolbar and menu commands to create, edit, and execute their 3D animations. Students will employ the use of graphic design programs to enhance images if necessary. Learn a 3D modeling program.

Interdisciplinary Connections/Content Area Integrations Including Technology:

Critical Thinking, Problem Solving, Communication Skills, Art, Reading, Writing, Mathematics, and Technology

CCSS/NJCCCS	CCSS/NJCCCS Content
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Summative Assessments:

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Unit project



Formative Assessments:

May include but is not limited to: Teacher Observations, Homework, Quizzes, Open-Ended Questions, Class Discussion and Assignments, Performance, and Participation



Enduring Understandings:

Design 3D environments. Utilize various program functions and features. Manipulate toolbar and menu commands to create, edit, and execute their 3D models.



Essential Questions:

- What is animation?
- How can animation affect an object visually?
- How do you animate a 3D image?
- How can animated images enhance a website?
- How do you add animated objects to a webpage?
- How do you create 3D environments using a computer?
- What type of software do you think you would use to create 3D environments?

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- What is Google SketchUp?
- How do you incorporate Google Earth into your Google environment?



Instructional Outcomes:

- Students will utilize a 3D animation program (Flash and/or Pivot Stick Animator).
- Design animated scenes using the 3D animation program.
- Utilize various program functions and features.
- Manipulate toolbar and menu commands to create, edit, and execute their 3D animations.
- Students will employ the use of graphic design programs to enhance images if necessary.
- Learn a 3D modeling program (Google SketchUp).
- Use and identify terms and toolbars when using the Google SketchUp program.
- Design 3D environments.
- Utilize various program functions and features.
- Manipulate toolbar and menu commands to create, edit, and execute their 3D models.



Suggested Learning Activities:

May include but is not limited to:

- Students will create a simple house, green project creating an “environmentally correct” greenhouse from a choice of designs, Google project where students are given the choice to create a 3D object, 3D environment, our high school, or a medieval castle.
- Group based movie using Windows Movie Maker or Animoto

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- www.google.com Everything needed to get started with Google SketchUp can be accessed from within the application. Quick Start videos by clicking on "View Tutorials" in the Help Menu
- Illustrated Series: Adobe Creative Suite 6 Web Tools (Bishop, Botello, Waxer)
- Illustrated Series Adobe Flash Professional CS5 (Barbara M. Waxer)
- www.animoto.com login subscription for students to use.
- Learning Web Design With Adobe CS5 book (Katherine Murray)



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Work with a partner
- Provide written notes and/or resources for the student to utilize
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- Allow extra time to complete assignments



Curriculum Development Resources: Plumsted Township School District Course Curriculum (Course Title: Digital Design)



Notes/Comments: <http://www.schrockguide.net/3d-printing.html>

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