Unit 7: JavaScript Functions and Parameters

Content Area: **Technology**
Course(s):
Time Period: **Marking Period 4**
Length: **8 blocks**
Status: **Published**

Course Description & Instructional Notes

Course Description

Learn to write reusable code with functions and parameters.

Prior Knowledge:

Retained knowledge from previous units

Instructional Notes:

The course utilizes a blended classroom approach. The content is fully web-based, with students writing and running code in the browser. Teachers utilize tools and resources provided by CodeHS to leverage time in the classroom and give focused 1-on-1 attention to students. Each unit of the course is broken down into lessons. Lessons consist of video tutorials, short quizzes, example programs to explore, and written programming exercises.

Technology Integration:

Computer Science naturally integrates technology on a daily basis.

Enduring Understandings

Some objects are so frequently represented that programmers can draw upon existing code that enables them to write solutions more quickly.

To find solutions to generalizable problems, programmers include functions in their code so that the same algorithm runs using different input values.

Essential Questions

How can we use previously written code to augment our programs?

How can algorithms be reused under different conditions?

Student Learning Objectives

Students will be able to:

- Explain the purpose of functions
- Create JavaScript functions
- Utilize JavaScript functions to solve simple problems
- Create functions that take in parameters as input
- Explain the purpose of functions
- Create JavaScript functions
- Utilize JavaScript functions to solve simple problems
- Create functions that take in multiple parameters as input, and use print statements for output
- Explain the purpose of functions
- Create JavaScript functions
- Utilize JavaScript functions to simplify graphics programs
- Identify repeated code that can be simplified with functions and parameters
- Create functions that take in multiple parameters as input, and create graphics as output
- Explain the purpose of returning a value from a function.
- Create functions that return values.
- Create programs that call functions with return values and store the result for later use.
- Explain the purpose of returning a value from a function.
- Create functions that return values.
- Create programs that call functions with return values and use the return values to solve a higher order problem.
- Identify the scope of a variable
- Identify which variables are in scope at a given point in a programStufe

Vocabulary & Learning Experiences

Essential Academic Vocabulary

Define a Function, Call a Function, Argument, Function body, Parameter, DRY Principle, Return, Return Value, Indentation, Variable, Scope, Global variable, Local variable

Planned Learning Experiences

Challenges: Functions and Parameters

Students will synthesize all of the skills and concepts learned in the Functions and Parameters unit to solve increasingly challenging puzzles.

Resources

CodeHS

Code.org

Blown to Bits

Assessments

Formative Assessments

Think like a Computer Scientist Journal:

Students complete at least five journal entries based on teacher provided prompts that could include major topics, key points, vocabulary, syntax, and/or flowcharts/programming planning.

Quizzes embedded in CodeHS Modules and Code Review

Summative Assessments

Unit Quizzes (multiple choice only)

Student Choice Unit Project

NJSLS Standards

NJSLS Standards Copied and Pasted as well as linked.

NJSLS Computer Science and Design Thinking

8.2.12.ED.1: Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.

8.2.12.ED.4: Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs, and aesthetic and ethical considerations and share this information with an appropriate audience.

8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g.,

materials, energy, tools, capital, labor).

8.2.12.NT.2: Redesign an existing product to improve form or function.

Additional NJSLS Standards

NJSLS Standards Copied and Pasted as well as linked.

Interdisciplinary Connections

NJSLS Career Readiness, Life Literacies, and Key Skills

NJSLS Companion Standards Grades 9-12 (Reading & Writing in Science & Technical Subjects)

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.

Modifications/Accommodations

GENERAL CONSIDERATIONS FOR DIVERSE LEARNERS

English Language Learners	Students Receiving Special Education Services	Advanced Learners
- Personal glossary	- Small group/One to one	- Use of high level academic vocabulary/texts
- Text-to-speech	- Additional time	- Problem-based learning
- Extended time	- Review of directions	- Pre assess to condense
- Simplified / verbal	- Student restates information	

instructions	- Space for movement or breaks	curriculum
- Frequent breaks	- Extra visual and verbal cues and prompts	- Interest-based research
	- Preferential seating	- Authentic problem-solving
WIDA Can Do Descriptors for Grade 9-12	- Follow a routine/schedule	- Homogeneous grouping opportunities
	- Rest breaks	
WIDA Essential Actions Handbook	- Verbal and visual cues regarding directions and staying on task	Knowledge and Skill Standards in Gifted Education for All Teachers
FABRIC Paradigm	- Checklists	
Wall Township ESL Grading Protocol	- Immediate feedback	Pre-K-Grade 12 Gifted Programming Standards
		Gifted Programming Glossary of Terms
*Use WIDA Can Do Descriptors in coordination with Student Language Portraits (SLPs).	Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.	Students with 504 Plan
	Considerations for Special Education Students 6-12	Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
	National Center on Universal Design for Learning - About UDL	
	UDL Checklist	
	UDL Key Terms	

At Risk Learners / Differentiation Strategies

Alternative Assessments	Independent Research & Projects	Jigsaw
Choice Boards	Multiple Intelligence Options	Think-Tac-Toe
Games and Tournaments	Project-Based Learning	Cubing Activities
Group Investigations	Varied Supplemental Activities	Exploration by Interest

Learning Contracts

Leveled Rubrics

Literature Circles

Multiple Texts

Personal Agendas

Homogeneous Grouping

Varied Journal Prompts

Tiered Activities/Assignments

Tiered Products

Graphic Organizers

Choice of Activities

Mini-Workshops to Reteach or Extend

Think-Pair-Share by readiness or interest

Use of Collaboration of Various Activities

Flexible Grouping

Goal-Setting with Students

Homework Options

Open-Ended Activities

Varied Product Choices

Stations/Centers

Work Alone/Together