SAN DIEGO COMMUNITY COLLEGE DISTRICT
CONTINUING EDUCATION
COURSE OUTLINE

SECTION I

SUBJECT AREA AND COURSE NUMBER

COMP 648

COURSE TITLE

Programming With Javascript I

TYPE COURSE

Non-fee

CATALOG COURSE DESCRIPTION

This course is an introduction to the JavaScript language for students without prior programming experience. JavaScript is a ubiquitous language with a simple syntax and broad support. While it is easy for beginners to learn, it is widely used in web and server applications, gaming, smart watches, mobile applications, robotics, and more. We cover the spectrum of JavaScript ranging from the essentials of the language to control statements, functions, modules, and exception handling. Examples and labs used in this course are drawn from diverse areas such as financial data processing, gaming applications, and more. (FT)

LECTURE/LABORATORY HOURS

50 - 60

ADVISORIES

None

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
   SDCCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
   SDCCE students demonstrate effective communication skills.
3. Critical Thinking
   SDCCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
   SDCCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.

CEISO Approval: 05/01/24
CIC Approval: 08/29/24
BOT Approval: 10/10/24

5. Diversity, Equity, Inclusion, Anti-racism, and Access
   SDCCE students critically and ethically engage with local and global issues using principles of equity, civility, and compassion as they apply their knowledge and skills: exhibiting awareness, appreciation, respect, and advocacy for diverse individuals, groups, and cultures.

COURSE GOALS

1. Introduce JavaScript and understand the role of JavaScript in the modern web architecture model
2. Introduce the fundamentals of the JavaScript programming language
3. Introduce JavaScript control statements including conditionals and loops
4. Introduce the concept of componentizing code using functions and modules
5. Introduce debugging, error handling, and testing concepts in JavaScript

COURSE OBJECTIVES

Upon successful completion, the student will be able to:

1. Describe the role of JavaScript and how the language ties into the modern web architecture model
2. Use fundamental programming concepts to build a simple program in the web browser
3. Use advanced programming concepts to build complex programs in the web browser
4. Properly debug and gracefully handle errors within a web page

SECTION II

COURSE CONTENT AND SCOPE

1. Introduction to Programming with JavaScript
   - 1.1. Introduction to web architecture
   - 1.2. Core 3: Hypertext Markup Language (HTML) 5, Cascading Style Sheets (CSS) 3, and JavaScript
   - 1.3. ECMAScript
   - 1.4. Mozilla Foundation
   - 1.5. Basic web page structure
   - 1.6. Document Object Model (DOM)
   - 1.7. Using Visual Studio Code
   - 1.8. JavaScript in a web page
   - 1.9. Commenting code
   - 1.10. Working with GitHub
   - 1.11. GitHub within Visual Studio Code
2. JavaScript Essentials
   - 2.1. Helpful JavaScript functions
   - 2.2. JavaScript Syntax
     - 2.2.1. Expressions
     - 2.2.2. Punctuation
     - 2.2.3. Case sensitivity

- 2.2.4. Camel case
- 2.2.5. Hungarian notation
- 2.2.6. Keywords
- 2.2.7. Reserved keywords

2.3. Variables
- 2.3.1. Declaration
- 2.3.2. Assignment
- 2.3.3. Dynamic vs. strong typing
- 2.3.4. Coercion

2.4. Data Types
- 2.4.1. String
- 2.4.2. String escape sequences
- 2.4.3. Template literal syntax
- 2.4.4. Number
- 2.4.5. Boolean
- 2.4.6. Null and undefined
- 2.4.7. Object
- 2.4.8. typeof operator
- 2.4.9. Explicit data type conversion

2.5. Operators

3. Control Statements

3.1. Block statements

3.2. Conditional statements
- 3.2.1. if
- 3.2.2. if else
- 3.2.3. else if
- 3.2.4. Single-statement suites
- 3.2.5. Nested if statements
- 3.2.6. switch

3.3. Looping Statements
- 3.3.1. for
- 3.3.2. while
- 3.3.3. do while
- 3.3.4. Loop control statements: break and continue
- 3.3.5. Nested loops
- 3.3.6. for in
- 3.3.7. for of

4. Functions and Modules

4.1. Basic JavaScript Functions
- 4.1.1. Global functions
- 4.1.2. Function declarations
- 4.1.3. Creating and calling a function
- 4.1.4. Passing parameters to functions
- 4.1.5. By value vs by reference
- 4.1.6. Arguments object
- 4.1.7. Returning values
- 4.1.8. Scope and hoisting
- 4.1.9. Strict mode

4.2. Function expressions
- 4.2.1. Creating an anonymous function

4.2.2. Anonymous functions to return a DOM element
4.3. Arrow functions
4.4. Modules
5. Debugging and Error Handling
5.1. Language
5.2. Strict mode
5.3. Types
5.4. Testing
5.5. Debugging
5.6. Error propagation
5.7. Exceptions
5.8. Cleaning up after exceptions
5.9. Selective catching
5.10. Assertions

APPROPRIATE READINGS

Reading assignments may be drawn from textbooks, supplemental reading assignments, industry-related periodicals or magazines, manuals, online help pages, articles posted on the Internet, and information from web sites, online libraries, and databases. Topics are related to web programming techniques with JavaScript and include topics that introduce fundamental concepts in JavaScript including variables, data types, operators, control statements, and functions.

WRITING ASSIGNMENTS

Typical writing assignments may include completing assigned reports, providing written answers to assigned questions, performing internet research, and reporting on that research. An example could include a case study of how JavaScript functions and loops can be used to make a financial application more efficient.

OUTSIDE ASSIGNMENTS

Assignments may include, but are not limited to appropriate internet research, reading, preparing reports, and studying as needed to perform successfully in class. For example, creating a web browser console-based mortgage calculator application written in JavaScript.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments which demonstrate critical thinking may include but are not limited to building a mortgage calculator web application written in JavaScript that uses control statements, functions, and modules. Students may also participate in online class discussion posts, in-class discussions, and project reviews.

EVALUATION

Evaluation that a student has met the course competencies will include multiple measures of performance related to the course objectives. Evaluation methods may include but are not limited to performance in a variety of activities and assignments, such as completing a research project individually or in a group, hands-on projects, demonstrating the use of the internet,

quizzes, class participation, written and practical tests, attendance, and punctuality.

Upon successful completion of all program courses, a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Methods of instruction may include, but are not limited to, lectures, in-class and online discussions, hands-on demonstrations, computer-assisted instruction, field trips, and laboratory assignments. This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

Textbooks:

Murach's JavaScript, Mary Delamater, Murach Books, current edition
Murach's JavaScript and jQuery, Mary Delamater and Zak Ruvalcaba, Murach Books, current edition

Web Resources:

Udemy: Programming with JavaScript, https://www.udemy.com/course/programming-with-javascript/

Supplies:

A pen, journal (composition book), notebook paper and a soft 3-ring binder, or a one-subject 110 sheet college ruled notebook, and appropriate storage media such as a USB Drive, external hard drive, or cloud-based storage.

PREPARED BY Zak Ruvalcaba DATE March 18, 2024

Instructors must meet all requirements stated in Policy 5500 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 5500
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog