CS 50C Course Outline as of Fall 2017

CATALOG INFORMATION

Dept and Nbr: CS 50C Title: WEB DEVELOPMENT 3
Full Title: Web Development 3- JavaScript
Last Reviewed: 10/24/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	4	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	CS 50.12

Catalog Description:
This course focuses on JavaScript programming for client-side Web development. Students learn to create advanced interactive projects including games, data visualizations, generative art, and other browser-based interactive experiences. Students gain experience working with open source JavaScript libraries such as jQuery, the Google Maps API, D3.js and many others. Project-based assignments lead to a comprehensive portfolio Web site of all class projects.

Prerequisites/Corequisites:
Course Completion or Current Enrollment in CS 50B

Recommended Preparation:
Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: This course focuses on JavaScript programming for client-side Web development. Students learn to create advanced interactive projects including games, data visualizations, generative art, and other browser-based interactive experiences. Students gain experience working with open source JavaScript libraries such as jQuery, the Google Maps API, D3.js and

many others. Project-based assignments lead to a comprehensive portfolio Web site of all class projects. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion or Current Enrollment in CS 50B
Recommended: Eligibility for ENGL 1A or equivalent
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 2011	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Code and deploy basic and intermediate JavaScript, jQuery, and AJAX programs.
2. Demonstrate and apply the Document Object Model (DOM) and other fundamental Internet technologies accessible through JavaScript.
3. Integrate HTML5, CSS, and JavaScript to create interactive web content that adhere to current design and accessibility standards.

Objectives:
Upon completion of course, students will be able to:
1. Develop interactive web pages using HTML5 canvas, and media tags.
2. Utilize a current industry-standard Framework, HTML5, and CSS to create responsive designs which work well with mobile devices.
3. Analyze and customize JavaScript code.
4. Write JavaScript, jQuery, and AJAX code that selects and manages document elements, validates form data, creates interactive elements, accesses server data.
5. Apply appropriate user experience and interactive design concepts to custom websites.
6. Demonstrate HTML5 integration with JavaScript scripting skills in a variety of student-designed projects.

Topics and Scope:

I. HTML5 Application Program Interface (API) Support
   A. Canvas overview
   B. Adding canvas content

C. Drawing in the canvas environment
D. Charts with canvas
E. Drag-and-drop API overview
F. Offline applications overview
G. Video overview
H. Encoding video
I. Adding video
J. Utilizing a jQuery media player

II. Responsive Web Design
A. Responsive vs. adaptive web design
B. Media queries
C. Introduction to grid-based frameworks
D. Bootstrap
E. Progressive enhancement vs. graceful degradation

III. Accessibility
A. Accessible Rich Internet Applications (ARIA)
B. Accessible forms
C. Accessible tables
D. Testing for accessibility
E. Features and considerations for making accessible web sites

IV. Introduction to JavaScript
A. SCRIPT and NOSCRIPT tags
B. Placing JavaScript on a webpage
C. Using variables

V. JavaScript Fundamentals
A. Using functions
B. Operators
C. Conditionals and loops

VI. Putting JavaScript to Work
A. Events
B. The navigator object
C. Cookies and local data
D. JavaScript timers: SetTimeout and SetInterval

VII. The Document and Window Objects
A. Properties and methods of the DOM (Document Object Model)
B. Uses and best practices

VIII. Arrays
A. JavaScript arrays
B. Properties and methods of arrays
C. Associative arrays

IX. Working with Numbers, Dates, and Strings
A. The math object
B. The number object
C. The date object

X. Working with Forms
A. Accessing the form element
B. The form object
C. Accessibility
D. Validation
E. Using form-based navigation
F. Form widgets in libraries and HTML5 (Hypertext Markup Language 5)

XI. Working with Dynamic Data

A. Asynchronous JavaScript and Extensible Markup Language (AJAX), Extensible Markup Language (XML) and JavaScript Object Notation (JSON)
B. Dynamic data using jQuery

XII. Introduction to jQuery
A. What is jQuery
B. Downloading data using jQuery

XIII. jQuery: Styling Elements
A. Selecting elements
B. Reading and setting Cascading Style Sheets (CSS) properties
C. Classes
D. Adding and removing elements
E. Modifying content

XIV. jQuery: Animating Elements
A. Easing
B. Animated navigation
C. Scrolling
D. Resizing

XV. jQuery: Images and Slideshows
A. Simple custom lightbox
B. jCrop
C. Crossfading

XVI. jQuery: Navigation
A. Collapsible menus
B. Accordions
C. Tabs
D. Panels

Assignment:

1. Textbook reading (25 - 60 pages per week)
2. Critique and analyze existing websites that use client-side technology
3. Create original JavaScripts and incorporate them into a website (6 - 8)
4. Download, customize and integrate existing JavaScript components into a website (3 - 4)
5. Download and deploy the jQuery library in webpage features (2 - 3)
6. Create a unified website incorporating all class projects and materials
7. Unit exams (6 - 10)

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Critique and analysis	Writing 5 - 20%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

JavaScript programming assignments and website projects	Problem solving 25 - 55%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams	Exams 20 - 40%

Other: Includes any assessment tools that do not logically fit into the above categories.

Participation, attendance	Other Category 10 - 20%

Representative Textbooks and Materials:
Pro JavaScript Techniques. 2nd ed. Paxton, John and Resig, John and Ferguson, Russ. Apress. 2015
JavaScript: A Beginner's Guide. 4th ed. Pollock, John. McGraw-Hill. 2013
jQuery: Novice to Ninja. 2nd ed. Castledine, Earle and Sharkie, Craig. Sitepoint. 2012