

## Mastering JavaScript and jQuery

### Course Summary

#### Description

Mastering JavaScript and jQuery provides an introduction to and experience working with the JavaScript programming language in the environment it's used in the most: the browser. JavaScript is simple and elegant, but is often difficult to work with because it's so different from the programming languages most developers are used to working with.

This course also covers jQuery and provides practical and hands-on experience with the preferred JavaScript library for building rich web applications. If you are building for the web, learning jQuery will change the way you write JavaScript, working across multiple browsers and platforms.

#### Objectives

At the end of this course, students will be able to:

- Become both familiar with the language and confident enough to work with it in any context
- Learn enough of the DOM API to bend it to your will
- Make communication between the browser and your server possible
- Understand and effectively leverage closures
- Understand how JavaScript's object model differs from the model classical object-oriented programming languages
- Learn what jQuery is and how to add it to your applications
- Use jQuery to select complex sets of elements from the DOM
- Develop rich web pages that respond to user interaction
- Interact with your server-side code using Ajax
- Explore a wide variety of plugins and learn how to write your own
- Test your applications to make sure your JavaScript is as solid as the rest of your code

#### Topics

- JavaScript
- jQuery
- Working with jQuery
- jQuery Plugins and Enhancements
- JavaScript Object Notation (JSON)
- Advanced Topics
- Web Design

#### Audience

This is an introductory and beyond-level web development course, designed for experienced developers who need to extend their knowledge of web design and development.

#### Prerequisites

This is a hands-on programming class. Attendees should have previous experience or working knowledge of developing software applications. Real world programming experience is a must.

Students should have working knowledge of basic HTML or should attend this training as a prerequisite

- Understanding Internet Architectures
- HTML Essentials

#### Duration

Five days

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### Course Outline

- I. **JavaScript**
    - A. JavaScript Basics
      - 1. Identifiers and literals
      - 2. Loop Structures
      - 3. Iteration
      - 4. Conditional Structures
    - B. Debugging Tools
      - 1. Internet Explorer Developer Tool
      - 2. FireBug & FireBug Lite
      - 3. Fiddler
    - C. JavaScript Functions
      - 1. Functions in JavaScript
      - 2. Invoking Functions
      - 3. Function Constructor
      - 4. Function Scope and Closures
    - D. JavaScript Arrays
      - 1. JavaScript Object
      - 2. JavaScript Literals
      - 3. JavaScript Arrays
    - E. JavaScript Strings and Regular Expressions
      - 1. String Objects
      - 2. JavaScript and Regular Expressions
      - 3. Regex Content
      - 4. Working with the RegEx Object
    - F. Object-Oriented JavaScript
      - 1. Classes as Functions or Functions as Classes
      - 2. Prototypes
      - 3. Extending Classes With Prototype
      - 4. Reusable, Flexible Classes
    - G. JavaScript Event Handling
      - 1. Basic Event Handling
      - 2. Handling HTML Events
      - 3. DOM 2 Event Propagation: Three Phases
      - 4. InnerHTML
    - H. Advanced JavaScript
      - 1. Same Origin Policy
      - 2. Scheduling in JavaScript
      - 3. Opening And Manipulating Windows
      - 4. JavaScript Execution Context
      - 5. Manipulating Document During Loading
  - II. **jQuery**
    - A. Why jQuery?
      - 1. JavaScript Evolution
      - 2. Why jQuery?
      - 3. jQuery Usage
      - 4. Downloading jQuery
  - B. Basic jQuery
    - 1. jQuery: Operational Overview
    - 2. jQuery Capability Overview
    - 3. Basic Selectors
    - 4. Multiple Selector
    - 5. Selecting by Order
  - C. Manipulating the DOM
    - 1. Attributes vs. Properties
    - 2. CSS Box Model Properties
    - 3. Element Content
    - 4. Manipulating Children
    - 5. Wrapping and Unwrapping
    - 6. Effects (Basic Animation)
    - 7. Effects Queues
  - D. More On Element Selection
    - 1. Hierarchical Selectors (Combinators)
    - 2. Attribute Selectors
    - 3. Basic vs. Child Filters
    - 4. Filtering Methods
    - 5. Traversing Methods
- III. **Working with jQuery**
  - A. Attributes, Forms, and DOM
    - 1. Selecting From Forms
    - 2. Selecting Parent and Children
    - 3. Automatic DOM Traversal
    - 4. Manipulating DOM Elements
    - 5. Getting and Setting Attribute Values
    - 6. Removing Attributes
  - B. More jQuery!
    - 1. The jQuery Function
    - 2. The jQuery Object
    - 3. Some jQuery "Static" Methods
    - 4. Utility Methods
  - C. Event Handling
    - 1. Binding Multiple Events to Same Handler
    - 2. Multiple Events to Different Handlers
    - 3. Event Targets
    - 4. Triggering Events
    - 5. Custom Events
    - 6. Live Events
  - D. More On Elements!
    - 1. Changing HTML Content
    - 2. Changing Text Content
    - 3. Managing Elements
    - 4. Introduction to Animations
  - E. Ajax
    - 1. Posting Data
    - 2. Global Ajax Handlers
    - 3. JSONP
    - 4. Serialization

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5. Deferred Objects
  6. Promises and Piping
  7. Chaining Tasks
- IV. jQuery Plugins and Enhancements**
- A. jQuery Plugins
    1. jQuery Validation Plugin
    2. jQuery Form plugin
    3. jQuery BBQ (Back Button & Query) Plugin
    4. jQuery Hotkeys Plugin
    5. jQuery Color Plugin
  - B. jQuery UI
    1. jQuery UI Effects
    2. Advanced Easing
    3. Interactions
    4. Position Utility
    5. Widgets
    6. Icons
  - C. Templates
    1. Micro Templates
    2. jQuery Template Plugin
    3. Compiling Templates Template Items
- V. JavaScript Object Notation (JSON)**
- A. JSON Objects
    1. Arrays
    2. Objects
    3. Arrays in Objects
    4. Objects in Arrays
  - B. JSON Syntax and Processing
    1. JSON Parsers
    2. Sending Data
    3. JSON vs XML
  - C. jQuery, JSON, and AJAX
    1. jQuery AJAX Utility Method
    2. jQuery and JSON
    3. jQuery and Other Data Types
    4. Serialization
    5. Deferred Objects
    6. Promises and Piping
    7. Chaining Tasks
- VI. Advanced Topics**
- A. JavaScript Best Practices
    1. JavaScript Code Conventions
    2. Formatting and Structure
    3. Variable and Function Declarations
    4. Statement Conventions
    5. Best Practices and Principles
- B. Performance and Optimization**
1. Code Optimization
  2. JavaScript Verbosity Tradeoffs
  3. Memory Considerations
  4. Cyclic References
- C. Download Options**
1. User Experience on Page Load
  2. Multi-Stage Downloading
  3. Predictive Fetching
  4. On-Demand Downloading
  5. JavaScript and CSS Minification
- D. Security**
1. Security: The Complete Picture
  2. Unvalidated Input
  3. Injection Flaws
  4. XSS
  5. Spoofing
  6. How Attackers See JavaScript Applications
  7. OWASP Top Ten for 2013
- VII. Web Design**
- A. Responsive Web Design
    1. Adapting to Varying Screen Sizes
    2. Scaling Page and Text Content
    3. Scaling and Adapting for Media
    4. Options for Adjusting Media
  - B. User Interface Principles
    1. Design Principles
    2. Improving Interactions with Users
    3. Matching Web Flow to User Expectations
  - C. Layout Techniques
    1. Page Layout Consideration
    2. Stacking Content
    3. Handling Excessive Content
    4. Providing Consistency Across Web Presence
  - D. Navigation Techniques
    1. Handling Excessive Content
    2. Providing Context and State Feedback
    3. Navigation Placement and Techniques
  - E. Selection Techniques
    1. Improving Text Input
    2. Improving Enumerated Input Accessibility Considerations