Programming with JavaScript and jQuery

Course Outline

**Class:** WA120 – Programming with JavaScript and jQuery

60 hours

**Instructor:**

**Text:**  JavaScript: The Web Warrior Series, 6th Edition

CENGAGE Learning

**Prerequisite:** WA110 - Web Design with HTML and CSS

**Equipment:** Each student shall be equipped with a desktop computer with the technical characteristics configured to run the programs used throughout the program:

* 20 desktop computers (including 24” monitors and mice) minimum
* Quad Core processor with Microsoft Windows 7, 8.x, or 10,
* Minimum 16 GB Ram
* Minimum 500 GB HD
* Internet access.

**Grading System:**

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|  | | **Grading Scale** | | |
| Classwork, Homework, Participation, Attendance | 10% | 90–100 | A | I - Incomplete |
| Exams/Quizzes | 50% | 80–89 | B | T - Transfer Credit |
| Presentation/Projects | 10% | 70–79 | C | E - Exempt |
| Final Exam | 30 % | 65–69 | D | W - Withdrew |
|  | **100%** | Below 65 | F | I - Incomplete |

**Course Description:**

This course introduces the concepts of programming through web application development using the JavaScript programming language. The students learn about variable scope and program control flow with conditional statements and loops. The course builds upon the skills gained in the CSS course and expands the topic of Document Object Model using the jQuery library. Real-world programming assignments, similar to what students may encounter in a professional setting, are presented throughout the course modules.

**Overview:** This class meets for a total of 60 hours. Day classes are six hours per day, Monday through Friday.

**Objectives:** Upon successful completion of this course, the student will be able to:

1. Work with Functions, Data Types and Operators
2. Understand the importance of Arrays and Controlling Flow
3. Debug and apply Error Handling
4. Work with Document Object Model
5. Enhance and Validate Forms
6. Manipulate Data in Strings and Arrays
7. Use AJAX
8. Program using jQuery
9. Understand how to use jQuery Selectors
10. Traverse the Document Object Model with jQuery Methods
11. Use Event Handlers
12. Use jQuery Built-In Effects

**Requirements:** 1. Meet attendance and academic criteria.

2. Completion of all assignments.

3. Completion of the final exam.

**Graded Work:** The test average and quiz average each comprise 50% of the final grade point average. Quiz grades are based upon completion of the assignment in the time allotted, ability to follow instructions, observance of safety rules and neatness of work area.

**Attendance:** Daily attendance is required. If you anticipate an absence, consult with your instructor.

Be aware that each absence will require an equal amount of make-up time. Each student is required to maintain a minimum attendance of 85% for each course:

* If you miss more than 15% of the total hours in any one course, you will be required to make-up enough missed hours to meet the minimum course attendance requirement of 85%.
* If at the end of the cycle your attendance is less than 85% you will receive an incomplete (I) for the course, and will have 5 business days immediately following the end of the cycle to make-up the hours missed, otherwise your grade will change from an incomplete to an F, and you will be required to retake the course.
* If you miss more than 30% of the total hours in any one course, you will receive a W (withdrawal) and will be required to retake the course.

**Make-up Work:** All missed work is required to be completed as soon as possible. If you need extra help, it is your responsibility to make an appointment with your instructor at a mutually agreeable time.

**Supplies:** Hunter Business School provides all the necessary supplies.

### **Lesson Plan**

##### Day 1 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| --- | --- |
| **Subject:** | JavaScript |
| **Subject Topics:** | Chapter 2: Working with Functions, Data Types and Operators |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Use functions to organize your JavaScript code * Use expressions and operators * Identify the order of operator precedence in an expression |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * JavaScript Functions, slides 2-12 * Lab, slide 13   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * Variable scope, data types, slides 14 - 32   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Operators: Arithmetic, Assignment, Conditional, Logical and Special, slides 33 – 58 * Summary, slide 59 * Labs, slides 60 – 61 |
| **Review / Assessment:** | 2 Lab assignments are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 2 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | JavaScript Arrays |
| **Subject Topics:** | Chapter 3: Building Arrays and Controlling Flow  Chapter 4: Debugging and Error Handling |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Store data in arrays * Use while statements, do/while statements, and for statements to repeatedly execute code * Use continue statements to restart looping statements * Use if statements, if/else statements, and switch statements to make decisions * Nest one if statement in another * Recognize error types * Trace errors with dialog boxes and the console * Use comments to locate bugs * Trace errors with debugging tools * Write code to respond to exceptions and errors |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Arrays and Loop Statements, slides 2-28 * Lab, slide 29   10:30 AM – 10:45 AM   * Break   10:45 AM – 12 PM   * Decision Statements, slides 30-37 * Lab, slide 38   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Debugging and Error Handling, slides 39-84 * Summary, slides 85-89 * Lab, slide 90 |
| **Review / Assessment:** | 3 Labs (+ one optional homework) assignments are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 3 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Document Object Model |
| **Subject Topics:** | Chapter 5: Working with the Document Object Model (DOM) and DHTML |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Access elements by id, tag name, class, name, or selector * Access element content, CSS properties, and attributes * Add and remove document nodes * Create and close new browser tabs and windows with an app * Use the setTimeout() and setInterval() methods to specify a delay or a duration * Use the History, Location, Navigation, and Screen objects to manipulate the browser window |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * DOM and DHTML, slides 2-26 * Lab, slide 27   10:45 AM – 11 AM   * Break   11 AM – 12:30 PM   * Adding and Removing Document Nodes, slides 28-38 * Lab, slide 39   12:30 PM – 1:00 PM   * Lunch break   1:00 PM – 3 PM   * Working with the Window Object, slides 40-62 * Summary, slides 63-67 * Lab, slide 68 |
| **Review / Assessment:** | 3 Lab assignments are planned to assess students understanding of the material. Optional homework may be given to students to complete the class exercises. |

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### **Lesson Plan**

##### Day 4 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | Form Validation |
| **Subject Topics:** | Chapter 6: Enhancing and Validating Forms |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Enhance form usability with JavaScript * Customize browser-based HTML validation * Implement custom validation to check for errors and display error messages |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Working with Input Fields, slides 2-19 * Lab, slide 20   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * Browser-based Validation, slides 21-28 * Lab, slide 29   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Custom Validation, slides 30-38 * Summary, slides 39-41 * Lab, slide 42 |
| **Review / Assessment:** | 3 Lab assignments are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 5 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | JavaScript |
| **Subject Topics:** | Chapter 7: Using Object-Oriented JavaScript |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Explain basic concepts related to object-oriented programming * Use the Date, Number, and Math objects * Define your own custom JavaScript objects |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Classroom discussions |
| **Lesson Plan** | 9 AM – 10:45 AM   * Introduction to Object Oriented Programming, slide 2 * Lab, slide 3 * Encapsulation and Classes, slides 4-12 * Lab, slide 13   10:45 AM – 11:00 AM   * Break   11:00 AM – 12 PM   * Date Number and Math classes, slides 14-30 * Lab, slide 31   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Custom JavaScript Objects, slides 32-53 * Summary, slides 54-56 * Lab, slide 57 |
| **Review / Assessment:** | 4 exercises are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 6 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | HTML |
| **Subject Topics:** | Chapter 8: Manipulating Data in Strings and Arrays |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Manipulate strings with properties and methods of the String object * Create regular expressions and use them to validate user input * Manipulate arrays with properties and methods of the Array object * Convert between strings and arrays, and between strings and JSON |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * Manipulating Strings, slides 2-18 * Lab, slide 19   10:45 AM – 11 AM   * Break   11 AM – 12:00 PM   * Regular Expressions, slides 20-35 * Lab, slide 36   12:30 PM – 1:00 PM   * Lunch break   1:00 PM – 3 PM   * Manipulating Arrays, slides 37-56 * JSON, slides 57-61 * Summary, slides 62-65 * Lab, slide 66 |
| **Review / Assessment:** | 3 Lab assignments and optional homework are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 7 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | JavaScript |
| **Subject Topics:** | Chapter 9: Managing State and Information Security |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 - HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Save state information with query strings, hidden form fields, and cookies * Describe JavaScript security issues and employ coding practices designed to address them |
| **Technology:** | * Overhead projector |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:30 AM   * Understanding State Information, slides 2-9 * Lab, slide 10   10:30 AM – 10:45 AM   * Break   10:45 AM – 12 PM   * Cookies, slides 11-36 * Lab, slide 37   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Understanding Security Issues, slides 38-45 * Summary, slides 46-48 * Lab, slide 49 |
| **Review / Assessment:** | 3 Lab assignments are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 8 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | JavaScript |
| **Subject Topics:** | Chapter 10: Programming for Touchscreens and Mobile Devices |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Integrate mouse, touch, and pointer events into a web app * Obtain and work with a user's geolocation information * Optimize a mobile web app to accommodate the common constraints experienced by mobile users. |
| **Technology:** | * Overhead projector * Server hosting account |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:30 AM   * Touch Events, slides 2-16 * Lab, slide 17   10:30 AM – 10:45 AM   * Break   10:45 AM – 12 PM   * Geolocation, slides 18-32 * Lab, slide 33   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * Battery Status, Orientation and WebRTC, slides 34-40 * Summary, slide 41 * Lab, slide 42 |
| **Review / Assessment:** | 3 Lab assignments and optional homework are planned to assess students understanding of the material |

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### **Lesson Plan**

##### Day 9 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | jQuery |
| **Subject Topics:** | Chapter 12: Introduction to JQuery |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA110 – HTML & CSS |
| **Aim / Objective:** | After completion of the lesson, students will be able to:   * Select elements using jQuery syntax * Use built-in jQuery functions |
| **Technology:** | * Overhead projector * Server hosting account |
| **Materials:** | * PowerPoint presentation |
| **Teacher/Student Input:** | * Question and Answer interactions * Class exercises |
| **Lesson Plan** | 9 AM – 10:45 AM   * jQuery Selectors, Methods and Events, slides 2-16 * Lab, slide 17   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * jQuery Effects, slides 18-19 * Lab, slide 20   12 PM – 12:30 PM   * Lunch break   12:30 PM – 3 PM   * AJAX, slides 21-22 * Lab, slide 23 * Summary, slides 24-25 |
| **Review / Assessment:** | 3 Lab assignments and a homework assignment are planned to assess and expand students understanding of the material |

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### **Lesson Plan**

##### Day 10 of 10

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| **Name:** |  |
| **Date:** |  | **Department:** |  |

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| **Subject:** | JavaScript |
| **Subject Topics:** | Review of the course and final test |
| **# of Students in the Class:** |  |
| **Previous Requirements:** | WA120 – JavaScript and jQuery |
| **Aim / Objective:** | N/A |
| **Technology:** | * Overhead projector |
| **Materials:** | * Test handouts |
| **Teacher/Student Input:** | * Question and Answer interactions * Coding assignment presentation |
| **Lesson Plan** | 9 AM – 10:45 AM   * Review of the WA120 course materials   10:45 AM – 11 AM   * Break   11 AM – 12 PM   * Final Test   12:00 PM – 12:30 PM   * Lunch break   12:00 PM – 3 PM   * Final Test * Coding assignment presentation |
| **Review / Assessment:** | N/A |

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