COMP 1130 Programming Fundamentals (Javascript Rocks)

Class Website URL	http://online.projectsocrates.org
Teacher Contact Information	Mr. Roggenkamp jroggenkamp@mnscsc.org
High School Credits	0.5 high school credits
Concurrent Enrollment	South Central College COMP 1130 Programming Fundamentals 4 college credits
Course Description	This course is an introduction to programming using JavaScript. It covers all the essential programming concepts including variables, data types, control statements, debugging, loops, functions, arrays, and frameworks such as jQuery. The learning activities and project work emphasize time management, problem solving, and professional communications.

Welcome to SourceCode Academy!

Course Description and Goals

This course will help you discover the field of information technology.

The learning activities and project work emphasize time management, problem solving, and professional communications.

Course Goals:

- **Think like a programmer.** Algorithmic thinking: being able to read and write a formal language.
- **Solve problems.** Learning how to communicate complex ideas and how to break down problems into logical pieces.
- **Communicate as a professional.** Speaking with precision, writing in a professional manner, and being able to listen.
- **Demonstrate successful time management.** Complete projects early or on time based on client specifications.
- **Improve your typing speed** by 50% or more by the end of the course.

What's Different About Online Classes?

Online classes require more self-discipline than traditional classes for a couple of reasons:

- If you are having trouble with an assignment, it is your responsibility to be **proactive** and reach out to me. If you don't tell me you're having trouble with something, I won't know!
- I won't be standing in front of the class and giving you step-by-step instructions on how to complete projects. Instead, all of the content will be delivered through the course website. It is your responsibility to **become familiar with all assigned readings, videos, exercises, and other learning materials.**
- There won't be a teacher reminding you every day when assignments are due. Instead, due dates are clearly posted on the website. It is your responsibility to **check the website for assignment due dates** because commonly, this is the only reminder you will have.
- Communications are **asynchronous**. This means that when you send a message to the teacher, there might not be an immediate response - it can sometimes take a full day. Therefore, you need to **plan ahead**. Make sure you're communicating any concerns with the teacher **before** they become urgent.

Course Dates	September 5 - December 19
Teacher On Site	Weekly
Weekly Schedule	**Monday** Unit introduction; review required readings and practice exercises **Wednesday** Teacher on site for in-person help. **Following Monday** Project from the previous unit is due

Student Learning Outcomes

Write algorithms and following an organized design process.
• Define an algorithm.
• Write an algorithm in English describing the steps a program follows.
• Describe the strengths and weaknesses of different design processes.
• Demonstrate the difference between how our minds work and how a computer program works.

Create a web page and view the file in a browser.
• Create an HTML document using the essential HTML commands in the correct order.
• Display the web page in a browser without accessing the Internet.
• Incorporate effective commenting as part of the web page code.
• Incorporate a header comment block to self-document every page of code.
• Create an HTML template to speed up web page development.
• Utilize at least three different heading tags in a web page to establish an information hierarchy.
• Establish a workflow developing HTML code, alternating between editing the HTML code and viewing the results in a browser.

Use variables to remember things for the browser.
• Use at least three different data types in a program.
• Demonstrate the difference between declaring a variable and initializing it.
Use debugging techniques stepping through a program and observing the objects and their values.
• Write special print statements to display contents of variables.
• Use selective commenting to determine where bugs are located in code.

• Use developer tools set breakpoints, step through a program, and view the variables as they change.

Write functions that the browser can use to do things
• Declare a function in the <head> element of a web page.
• Call the function from the <body> element of the web page.
• Write a function uses parameters to customize the results.
• Call a function passing parameters into it.
• Write a function that returns information to the calling line of code.
• Call a function that returns information, capturing it in a variable using the assignment operator "=".

Utilize operators and expressions.
• Describe the difference between equality operator "==" and the assignment operator "="
• Demonstrate use of the relational operators
• Demonstrate an overloaded operator such as "+" showing when it concatenates and when it will do addition.

Demonstrate the use of control statements.
• Make decisions in your program using an if/else statement
• Demonstrate the proper use of the switch statement in a program.
• Demonstrate use of a counting loop using a for loop in a program.
• Demonstrate use of an indefinite loop using a while loop in a program.
• Demonstrate use of the foreach loop in a program.
• Demonstrate the scope of variables both local and global.

Utilize Arrays to keep track of lists of things
• Explore data structures by building a list of things.
• Use a for loop to display the contents of any single-dimensional array
• Utilize the built-in mutator methods to dynamically change the contents of an array.
• Declare and populate a two-dimensional array.
• Display the contents of a two-dimensional array using the HTML <table> element and nested for loops.
• Use parallel arrays.

Incorporate Events and Event Handling
• onclick( ) - Write an event handler that responds to user input such as a tap or click.
• onfocus( ) - Write an event handler that validates user input as the user tabs out of a text box.
• onblure( ) -Write an event handler that runs as soon as the user tabs into a specific form element such as a text box.
• Use the onLoad event to run JavaScript code only after the entire page has loaded into the browser's memory.
• Describe the difference between loop processing and event processing.

Demonstrate the Prototype/Object model used in JavaScript.
• Create a JavaScript object having properties and functions.
• Utilize the JavaScript object in a program using the keyword "new."
• Demonstrate use of String objects in a program.
• Demonstrate at least five string methods to parse data input by the user.
• Demonstrate the use of Math objects in a program.
• Create random numbers within a certain range
• Demonstrate the use of Date/Time objects in a program.

Demonstrate creating interactive forms using JavaScript.
• Create a web page that includes all the HTML form elements.
• Validate user input for a form textbox.

Demonstrate using the built-in DOM functions.
• Use the DOM function getElementById( ) to locate any element on the page by its unique id attribute.
• Build an array of similar objects on a page using the DOM function getElementsByTagname( ).
• Create a hyperlink on a page using DOM functions.
• Change the attribute of a HTML element using the DOM.

Utilize a JavaScript library such as jQuery.
• Decide which process to use, local library file or a CDN link.
• Use a library function to determine if the DOM is completely loaded in memory.
• Use a library function to select any element on the page by tag or id.
• Handle events using library functions and callbacks.
• Animate objects on the page using library functions.

Expected Workload

You are expected to work on this class **every day** during the designated time for your school. Plan to spend at least five hours per week in the classroom; some projects may require additional time outside of class.

Do not try to do all of the work the day before the project is due!!!! You will not have time to complete them if you “cram”. Also, remember that the teacher may take up to a full day to respond to emails. If you start the project too late in the week and need any help, you probably will not get a response back in time to finish.

The key to this class is consistency. Be the tortoise, not the hare. Do a little bit, every day, and you will be successful.

Grading

Assignments will be scored according to the provided rubric each week. Grade assignments are standard:

A	[100% - 90%)
B	[80% - 90%)
C	[70% - 80%)
D	[60% - 70%)
F	< 60%

Late Work

All assignments are due on the date posted to the class website. Late assignments are accepted for up to one week with an automatic 10% deduction. **No late work will be accepted after one week** past the due date.

South Central College Student Policies

Click on the link below to view student policies, including such items as disability rights, student conduct, academic integrity, and privacy statements.
http://www.southcentral.edu/Student-Academic-Policies/academic-dishonesty-policy.html

South Central College Academic Dishonesty Policy

It is important that students are held to standards that uphold concepts of academic honor, integrity, and honesty. That is the best way to ensure that learning can effectively take place in this, or any, course. South Central College has crafted the following policy:

Academic Dishonesty includes misconduct associated with the classroom, laboratory or clinical learning process. Some examples of academic misconduct are *cheating* and *plagiarism*.

Cheating includes, but is not limited to
(a) use of any unauthorized assistance in taking quizzes, tests or examinations;
(b) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems or carrying out other assignments or
(c) the acquisition, without permission, of tests or other academic material belonging to a member of the college faculty or staff.

Plagiarism is intellectual theft and includes, but is not limited to, the undocumented use of information—paraphrase or direct quotation—from the published or unpublished work of another person or source; plagiarism also includes using papers/writings from an agency engaged in the selling of term papers or other academic materials.

Academic Dishonesty will not be tolerated in this course. For more information about the penalties involved in violation of this policy, please consult the Student Handbook.

South Central College Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations.

North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-5847.

Additional information and forms can be found at www.southcentral.edu/disability. This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222

South Central College Concurrent Enrollment Program Dates

Student applications and registrations due	5 days from the start of the course
Last date for student to drop from course	15 days from the start of course
Last date for student to withdraw from course	80% of course