

CS 142: Introduction to Computer Science and Programming

Term: Spring 2023
Credits: 3
Meets: MW, 10:20 AM – 11:20 AM in HS 208,
F, 10:20 AM – 11:20 AM in HS101C.
Prerequisites: Mathematics 103 with a grade of C or better, or qualifying for either Mathematics 104 or Mathematics 171 via Math Placement Test.

Instructor

Instructor: Scott Summers
Email: summerss@uwosh.edu
Phone: 920-424-1324
Office: Halsey 220
Office hours: Indicated by the cells shaded in GRAY in the following table and subject to change. The BLACK cells are times at which I'm not available because I'm either teaching, doing research, in a meeting, or eating lunch.

	Mon	Tues	Wed	Thu	Fri
8:30 AM					
9:00					
9:30					
10:00					
10:30					
11:00					
11:30					
12:00 PM					
12:30					
1:00					
1:30					
2:00					
2:30					
3:00					

As indicated above, I hold five total scheduled office hours per week. You don't need to schedule an appointment with me if you want to stop by during my scheduled office hours. If you want to meet virtually, via Microsoft Teams, then send me an email a few minutes before you'd like to meet, simply asking if I'm available to meet virtually. I'll respond as soon as I'm available. If you'd like to meet with me outside of my scheduled office hours, then please email me and we'll work out a time that works for both of us. If my office hours ever change, even for a single day, then I'll send the class updates via the course webpage.

Course description

In this course, students will be introduced to the science of computing. The history of Computer Science, El-

elementary computer organization, big ideas in computing, algorithmic problem solving, and introductory programming concepts will be discussed. Programming concepts include data types, expressions, input/output, conditional statements, repetition, data processing, procedures and basic object-oriented principles. Programming concepts will be taught through the use of a specific programming language. The course assumes no previous programming experience.

Learning outcomes

At conclusion of the course, students will be able to:

1. Identify the core areas and big ideas in computer science.
2. Describe the difference between an algorithm and a computer program.
3. Identify the main components of the “von Neumann architecture”.
4. Describe the architecture and major components of a web application in a client server environment.
5. Given a description of a problem, apply the problem-solving steps used in computer programming to create a solution design.
6. Working from a solution design, implement a solution to a problem as a JavaScript program that runs in a web browser such as Firefox or Chrome.
7. Select the appropriate data types when implementing a solution to a problem using JavaScript.
8. Identify and implement selection control structures using if, if-else, and if-else-if statements in JavaScript.
9. Identify and implement repetition control structures using loops in JavaScript.
10. Identify and implement functions in JavaScript.
11. Design an HTML form for collecting user input with validation in JavaScript.
12. Process an array or collection of items in JavaScript.

Course website

The course website is: <https://uwosh.edu/canvas/>. You should check Canvas on a regular basis, perhaps two or three times per day.

REQUIRED Textbook

A Balanced Introduction to Computer Science, Third Edition, David Reed, Prentice Hall.

Course grade

Your final course grade will be based on the following types of assessment items.

5% QUIZZES

You will be given a quiz roughly every week. Quizzes will be taken at the end of class. Each quiz is equally-weighted. Calculators will not be allowed for any of the quizzes. Each quiz will test your knowledge of the material from the prior week.

10% PROGRAMMING PROJECT

You will have one final programming project involving JavaScript and HTML.

25% LABS

There will be weekly labs on Friday in HS 101C. Attendance is strongly encouraged. Associated with each lab will be a lab assignment due before the start of the following lab. Each lab assignment will be comprised of writing a short program. Each lab assignment is equally-weighted.

60% EXAMS

There will be three, equally-weighted, in-class exams. Calculators will not be allowed for any of the exams but you may use a note sheet. Your note sheet must be 8.5" by 11", hand-written and can utilize both sides of the paper. Note sheets must be turned in with your exam, otherwise you may not receive full credit for your exam. The actual exam dates will be announced in class at least one week before the exam. All exams will be taken during the regular class period.

Grading scale

Grading will be on a plus/minus system. Grading may be done on a curve depending on the overall performance of the class. If no curve is used, then your grade will be computed based on the following:

Percentage	Grade
> 91	A
> 89 and \leq 91	A-
> 87 and \leq 89	B+
> 81 and \leq 87	B
> 79 and \leq 81	B-
> 77 and \leq 79	C+
> 71 and \leq 77	C
> 69 and \leq 71	C-
> 67 and \leq 69	D+
> 61 and \leq 67	D
> 55 and \leq 61	D-
\leq 55	F

Re-grading

If you believe an assessment item (e.g., exam, etc.) was graded incorrectly or unfairly and would like to have it re-graded, please let me know about it in writing within one day of receiving the assessment item back. I will re-grade the entire assessment item and you may gain or lose points accordingly.

Late work

If you are unable to take a scheduled exam at its normal time, then it may be possible to take a make-up exam provided that you do both of the following, which are then subject to my approval:

1. Make arrangements prior to the scheduled exam (for last minute emergencies, call me at 920-424-1324 or leave a message at the Computer Science office, 920-424-2068. **No after-the-fact notifications will be accepted.**
2. Have a written medical excuse signed by the attending physician OR have a note of justification from the Dean of Students Office.

In some cases, only one make-up exam will be given. It will be a comprehensive exam given at an arranged time during the last week of the semester.

Late work will NOT be accepted. Late work is worth 0 points. Extensions may be granted at the discretion of the instructor if you provide a valid justification.

In general, the following are the only valid excuses for not completing or submitting an assessment item on time:

- Medical illness – provide to me an official note from a medical provider (or the Dean of Students) supporting your claim of a medical illness and describing its severity.
- Family death – provide to me the name of the deceased, the name of the funeral home, and your parent’s address, to which I can send my condolences.
- Religious holiday – provide to me before the third week of the semester a list of all the dates of conflict.
- University-sanctioned events, e.g., athletic competition, student organization event, conference attendance, career fair, etc. – provide to me before the third week of the semester a list of all the dates of conflict, along with corresponding supporting documentation on official university letter head.

Work is not a valid excuse to miss class. Your job must work around school, and not the other way around.

If you have four or more unexcused absences, then I reserve the right to automatically fail you.

If you have six or more medical absences, then you must medically withdraw from the course.

University policy on academic integrity

The University of Wisconsin Oshkosh is committed to a standard of academic integrity for all students. The system guidelines state: “Students are responsible for the honest completion and representation of their work, for the appropriate citation of source, and for respect of others’ academic endeavors” (UWS 14.01, Wisconsin Administrative Code).

Often, students are not aware of the ways to identify and avoid plagiarism. Therefore, it is important to educate yourself about how to give proper credit to sources that you use in your assignments. For writing assignments, you can consult the Purdue Owl website on how to identify and avoid plagiarism: <https://owl.english.purdue.edu/owl/resource/589/02/> and <https://owl.english.purdue.edu/owl/resource/589/03/>. This website outlines the strategies for avoiding plagiarism in this course. However, other courses may demand knowing other ways to identify and avoid plagiarism. Therefore, I encourage you to consult with me if it is unclear to you how you give proper credit to your sources of information.

According to the Dean of Students (see <https://uwosh.edu/deanofstudents/student-conduct/academic-misconduct/>), examples of academic misconduct include, but are not limited to:

- plagiarism (turning in work of another person and not giving them credit),
- stealing an exam or course materials,
- copying another student’s homework, paper, or exam,
- cheating on an exam (copying from another student, turning in an exam for re-grading after making changes, working on an exam after the designated time allowance),
- providing solutions on online forums (e.g., Discord, etc.), and
- falsifying academic documents.

In sum, all material turned in for this course must be original. In this course, you may not re-use papers or projects from other sections of this course, from other courses you have completed, or other courses you are currently completing. This class is a specific event in your learning process. To learn, you must engage in the material and complete the work. Thus, work from other experiences is not acceptable. All work turned in that is plagiarized will receive a “0” in the course.

Accommodations

UW Oshkosh supports the right of all enrolled students to a full and equal educational opportunity. It is the University’s policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements.

Students are expected to inform instructors of the need for accommodations as soon as possible by presenting an Accommodation Plan from either the Accessibility Center, Project Success, or both. Reasonable accommodations for students with disabilities is a shared instructor and student responsibility.

The Accessibility Center is part of the Dean of Students Office and is located in 125 Dempsey Hall. For more information, email accessibilitycenter@uwosh.edu, call 920-424-3100, or visit the Accessibility Center’s website at <https://uwosh.edu/deanofstudents/accessibility-center/>.

Statement regarding diversity, equity & inclusion

Diversity drives innovation, creativity, and progress. At the University of Wisconsin Oshkosh, the culture, identities, life experiences, unique abilities, and talents of every individual contribute to the foundation of our success. Creating and maintaining an inclusive and equitable environment is of paramount importance to us. This pursuit prepares all of us to be global citizens who will contribute to the betterment of the world. We are committed to a university culture that provides everyone with the opportunity to thrive.

Required disclosure statement

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990:

<https://uwosh.edu/financialaid/consumer-information/>

Tentative daily schedule

The following is a tentative daily schedule (subject to change):

Day	Date	Action items and topics to be covered
		Do all READings BEFORE that class
1	Monday, Jan 30	READ chapter 1 in Reed Take attendance Review syllabus Question - What is Computer Science?
2	Wednesday, Feb 1	READ chapter 2 in Reed Basics of HTML and CSS Writing HTML using Notepad++ (on Windows) and Visual Studio Code (on Mac)
3	Friday, Feb 3	Lab 1
4	Monday, Feb 6	READ chapter 3 in Reed Big ideas in Computer Science Client-server architecture of the World Wide Web Quiz 1 - covers content from Days 1 through 3
5	Wednesday, Feb 8	Organizing content on a webpage using tables Aligning and positioning data in tables
6	Friday, Feb 10	Lab 1 DUE at 8:00 AM Lab 2
7	Monday, Feb 13	READ chapter 4 in Reed Adding dynamic elements to a webpage using JavaScript Quiz 2 - covers content from Days 4 through 6
8	Wednesday, Feb 15	Handling mouse events in JavaScript: <code>onMouseOver</code> , <code>onMouseOut</code> , <code>onClick</code> Calling user-defined functions from a webpage
9	Friday, Feb 17	Lab 2 DUE at 8:00 AM Lab 3
10	Monday, Feb 20	READ chapter 5 in Reed Getting user input from a webpage, <code>variables</code> Quiz 3 - covers content from Days 7 through 9
11	Wednesday, Feb 22	Using expressions in JavaScript to do computation
12	Friday, Feb 24	Lab 3 DUE at 8:00 AM Lab 4
13	Monday, Feb 27	Calling built-in library functions to do computation Quiz 4 - covers content from Days 10 through 12
14	Wednesday, Mar 1	INTERESTing example: computing compound interest Computing the distance between two coordinates
15	Friday, Mar 3	Lab 4 DUE at 8:00 AM Review for Exam 1
16	Monday, Mar 6	Exam 1 - covers content from Days 1 through 15

The tentative daily schedule is continued on the next page...

Continuation of tentative daily schedule:

Day	Date	Action items and topics to be covered
17	Wednesday, Mar 8	READ chapter 7 in Reed Using random numbers in JavaScript
18	Friday, Mar 10	Lab 5
19	Monday, Mar 13	Read chapter 6 in Reed History of Computer Science Main components of the “von Neumann architecture” Quiz 5 - covers content from Days 17 through 18
20	Wednesday, Mar 15	History of Computer Science Jeopardy!
21	Friday, Mar 17	Lab 5 DUE at 8:00 AM Lab 6
	Monday, Mar 20 Wednesday, Mar 22 Friday, Mar 24	SPRING BREAK SPRING BREAK SPRING BREAK
22	Monday, Mar 27	Read chapter 11 in Reed Conditional execution in JavaScript: if, else Quiz 6 - covers content from Days 19 through 21
23	Wednesday, Mar 29	More conditional execution in JavaScript: Nesting conditional statements Leap year computation example: when is a year a leap year?
24	Friday, Mar 31	Lab 6 DUE at 8:00 AM Lab 7
25	Monday, Apr 3	Simple 2D graphics in JavaScript The 2D coordinate space in computer graphics Quiz 7 - covers content from Days 22 through 24 See also: https://www.w3schools.com/graphics/default.asp
26	Wednesday, Apr 5	Drawing to a canvas using JavaScript Simple animation in JavaScript using timers
27	Friday, Apr 7	Lab 7 DUE at 8:00 AM Lab 8
28	Monday, Apr 10	READ chapter 8 in Reed What is an algorithm? The difference between an algorithm and a computer program Quiz 8 - covers content from Days 25 through 27
29	Wednesday, Apr 12	Assessing the relative performance of algorithms Project ASSIGNED Discuss project logistics, requirements
30	Friday, Apr 14	Lab 8 DUE at 8:00 AM Review for Exam 2
31	Monday, Apr 17	Exam 2 - covers content from Days 17 through 30

The tentative daily schedule is continued on the next page...

Continuation of tentative daily schedule:

Day	Date	Action items and topics to be covered
32	Wednesday, Apr 19	READ chapter 13 in Reed Conditional repetition in JavaScript with <code>while</code> Count controlled loops using <code>for</code> The equivalence between <code>while</code> and <code>for</code> repetition
33	Friday, Apr 21	Lab 9
34	Monday, Apr 24	READ chapter 17 in Reed Organizing data with arrays in JavaScript Declaration of an array Indexing into an array Accessing and updating elements of an array Quiz 9 - covers content from Days 32 through 33
35	Wednesday, Apr 26	Creating user-defined objects in JavaScript Processing arrays of user-defined objects Example: creating a Person database
36	Friday, Apr 28	Lab 9 DUE at 8:00 AM Lab 10
37	Monday, May 1	READ chapter 15 in Reed Strings in JavaScript Declaration, length, basic string functions: <code>charAt</code> , <code>indexOf</code> , <code>substring</code> , etc. Comparing two strings for equality Quiz 10 - covers content from Days 34 through 36
38	Wednesday, May 3	String example: testing password strength
39	Friday, May 5	Lab 10 DUE at 8:00 AM NO LAB – work on Project Project DUE before midnight
40	Monday, May 8	Wrap-up Quiz 11 - covers content from Days 37 through 39
41	Wednesday, May 10	Review for Exam 3
42	Friday, May 12	Exam 3 – taken in HS 101C