CSC299 Sophomore Lab in Applied Computing
Go Faster With WebAssembly
Syllabus for Fall 2021

Corin Pitcher

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Overview

In this course, students investigate a particular application of computing. Students learn tools, methodologies, and formalisms used in a particular computing area, and apply them to develop working systems. Courses stress student initiative in investigating the application context, learning new tools (including languages and APIs), studying algorithms and code examples, and working on projects.

In this particular section of CSC299, students will learn to write cross-platform code in WebAssembly modules and measure its performance. JavaScript, the Canvas API, and simple networking are used to allow students to build complete client-side webapps.

Topics that will be covered are the following:

- WebAssembly: stack-machine model, compilation tools, debugging, interoperability with JS
- JavaScript in the browser: basics, Canvas API, Fetch API, Promise API
- Measuring and comparing performance of code written in JavaScript and WebAssembly

Students develop a client-side webapp with a high-performance core for their final project.

Learning objectives: at the end of this course, students will be able to

- understand low-level computation based on a stack machine

- write and debug low-level code
- interoperate between WebAssembly and JavaScript code running client-side
- measure performance of client-side code

Instructor Information

- **Instructor** Dr. Corin Pitcher
- **Loop Office** ~~835, CDM Building, 243 S. Wabash Avenue~~ **Zoom meetings only this quarter**
- **Email** `cpitcher@cs.depaul.edu`
- **Discord Server** `https://discord.gg/re7tXDptnk`
- **Tel** ~~+1 312 362 5248~~ **use email/Discord/Zoom this quarter**
- **Instructor's Homepage**
  `https://fpl.cs.depaul.edu/cpitcher/`
- **Course's Homepage**
  `https://fpl.cs.depaul.edu/cpitcher/courses/csc299/`
  (for lectures slides, links to lecture videos, assignments, reading schedules, examples, learning outcomes)
- **LMS Homepage**
  `http://d2l.depaul.edu`
  (for grades and quizzes
- **Lecture Videos**
  See D2L (supplementary videos may be made available on Panopto reached via course homepage and/or D2L)
- **Office Hours** : See Bluestar

Prerequisites

If you are not sure that you have satisfied the prerequisites, speak to the instructor before the second lecture.

Prerequisite Courses

- **Introduction to Computer Science II** (CSC242); OR
- **Python for Programmers** (CSC243)

Prerequisites

- You must have programmed with Python (or Java or C++) before this course.
- ~~You do need a laptop to bring to class.~~ You need a computer to work from home!

Textbooks

There is one required textbook:

- Required: The Art of WebAssembly: Build Secure, Portable, High-Performance Applications by Rick Battagline, first edition. Published by No Starch. ISBN-13: 978-1718501447

Assessment

The course grade will be based on:

Item	Weight
Homework	50%
Coding test	15%
Project	35%

Homework assignments—typically involving programming and some reading online materials or following tutorials—will be assigned most weeks until the final project starts.

You must attend the coding test in class to work on a coding problem. You will need a laptop with you to complete the work. The date/time of the coding test is shown on the schedule on the course homepage. No make ups will be offered for the coding test.

Late homework will only be accepted as follows: the number of hours that the assignment is late will be deducted as a late penalty from the score percentage. I.e., if an assignment is graded at 90% but is 24 hours late, then there is a penalty of 24% and the grade received will be 66%. In

order to submit late homework you must submit it in the usual way for the assignment **and** send the work as an email attachment to the instructor `cpitcher@cs.depaul.edu`. The timestamp on the email when it is received will be used to determine the late penalty.

Classroom Instruction

This class will have 30 hours of classroom instruction.

Policies I

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via the class Discord server.

Attendance

1. Students are expected to attend every class. Students who miss class are responsible for catching up on missed material by asking for notes from their peers.

2. Students are expected to subscribe to the class Discord server, and read messages in a timely fashion.

Work

1. Students must keep backup copies of all submitted work.

2. Homework submissions must be submitted as specified in homework assignments. **Other forms of submission will not be accepted.**

3. Submitted work must be worked on individually. You must not use or look at anyone else's solution, and you must clearly acknowledge any code that you obtain from other sources (such as books, magazines, or the Internet). If you are in any doubt, contact the instructor well before the submission date for advice. You may use as much code as you like (without acknowledgement) from the examples discussed in class. **Plagiarism will result in penalties up to and including failing the course.**

Expectations

1. The course requires that students actively engage the material on your own. Students should not only read the notes and example programs, but also do self-tests, modify code, and run it. As always, figure out what you can definitely code, code it, try it, and then consider extending the boundaries.

2. Students must keep up with assigned reading.

3. Students are strongly encouraged to ask questions and offer comments relevant to the topics covered in class.

4. All electronic interactions are an extension of the classroom and should be treated as such. While disagreement can be part of the discourse, online communication should remain respectful and appropriate rather than demeaning and/or unprofessional.

5. Classroom use of a laptop or tablet must normally be restricted to class-related tasks such as note taking, checking references, testing code examples, etc.

Policies II

Retro-Active Withdrawal

CDM understands certain extenuating circumstances can hinder one's ability for academic success and completion of course work. Please see http://www.cdm.depaul.edu/Current%20Students/Pages/Enrollment-Policies.aspx for additional information.

Absence Notifications

In order to petition for an excused absence, students who miss class due to illness or significant personal circumstances should complete the Absence Notification process through the Dean of Students office. The form can be accessed at http://studentaffairs.depaul.edu/dos/academicprocesses.html. Students must submit supporting documentation alongside the form. The professor reserves the sole right whether to offer an excused absence and/or academic accommodations for an excused absence.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/. If you have any questions be sure to consult with your professor.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: http://cdm.depaul.edu/enrollment

Incomplete Grades

An incomplete grade is defined in the Student Handbook as follows (note that the policy in the undergraduate student handbook applies to both undergraduate and graduate students): A temporary grade indicating that the student has a satisfactory record in work completed, but for unusual or unforeseeable circumstances not encountered by other students in the class and acceptable to the instructor is prevented from completing the course requirements by the end of the term. Please see http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx for additional information.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu

- Lewis Center 1420, 25 East Jackson Blvd.
- Phone number: 312 362 8002
- Fax: 312 362 6544
- TTY: 773 325 7296

Dean of Students' Office

The Dean of Students' Office (DOS) helps students navigate the college experience, particularly during difficulty situations such as personal, financial, medical, and/or family crises. For a list of support services and advocacy information, please visit http://studentaffairs.depaul.edu/dos/.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.