University of Montana

ScholarWorks at University of Montana

Fall 9-1-2021

CSCI 591.01: Software Optimization

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CSCI 491(CRN74811) / CSCI 591(CRN74812) Software Optimization

<u>Brief course description:</u>
This course introduces various ways to optimize code for greater performance and to do important tasks fast in practice. It is the complement to the Algorithms course in that it focuses on practical runtime over theoretical big-oh runtime.

<u>Instructor:</u>
Oliver Serang, Social Science 408.
Office hours 12:00pm – 1:00pm over Zoom: https://umontana.zoom.us/j/8349087851

<u>Time and place of lecture:</u>
Tue/Thu 2:00pm - 3:20pm in SS344

<u>Textbook:</u> Code Optimization in C++11, Serang (2017), available free:
https://alg.cs.umt.edu/media/serang-code-optimization-in-c++11.pdf

<u>Learning goals:</u>
1. Understand challenges to making a fast C++ program.
2. Learn and use techniques to improve software performance.

<u>Learning outcomes:</u>
Students will learn to make use of bit twiddling, cache awareness, memory allocation, compiler optimizations, template recursion, optimizing out expensive mathematical functions, and more in the same vein to achieve higher performance C++ code.

<u>COVID policy:</u>
For the latest information on campus COVID policies, please visit https://www.umt.edu/coronavirus

Assigned seats will be required by university policy for contact tracing in case of infection.

<u>Graduate increment:</u>
Graduate students will have assignments and projects with greater difficulty.

<u>Attendance policy:</u>
Attendance is recommended but not required.

<u>Homework:</u>
Homework will consist of discussion questions and coding assignments.

<u>Quiz schedule:</u>
Quizzes and material will be announced in advance.

Missed quizzes / exam will be excused only by a doctor's note, attendance to an academic conference, or university-recognized student athletics. These excused absences are no trouble! If a quiz is missed from such an excused absence, the student's quiz grade will be calculated using the average of quizzes where the student did not have an excused absence.

<u>Grading:</u>
Final grades will be curved at the instructor's discretion. The pre-curved grades will combine grades with the following weight:

      25% quizzes
      75% homework and projects

<u>Final exam:</u>
There will be no final exam.

Academic honesty and plagiarism:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code: (http://www.umt.edu/vpsa/policies/student_conduct.php). Students **can** discuss homework together, but should take care not to blatantly copy and paste large blocks of code. We will not police you strictly on this, but be mindful as part of the honor code for your education.

Disability policy:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154. Please provide the instructor notification of your disability in the first two weeks of the semester so that the best accommodation can be provided.