CSE 331 Algorithms and Data Structures

Department of Computer Science and Engineering, Michigan State University  Spring 2016

Credits: 3

Course web: http://www.cse.msu.edu/~cse331/Section001/

Description: In this course, students will survey fundamental data structures and many associated algorithms. Emphasis will be placed on matching the appropriate data structures and algorithms to application problems. Analysis of algorithms is crucial to making proper selections, so analysis is important in the course. This course assumes that students are already familiar with advanced programming techniques including the definition of classes, and use of dynamic memory and linked data structures, including lists and trees. Even though the treatment of algorithms and data structures is mostly conceptual, students are expected to be able to transform these algorithms and data structures into programs with proper approaches of software module development.

Time and location: Mondays and Wednesdays 10:20 AM - 11:40 AM 223 Natural Resource Building

Instructor: Yanni Sun, e-mail: yannisun@cse.msu.edu

Web: http://www.cse.msu.edu/~yannisun/

Office: 3134 Engineering Building

Office hours: Check course website. Emails and telephone calls are not good for asking technical questions.

TA: Saptarshi Mitra, email: mitrasap@msu.edu

Office hours: Check course website.

Location: Check course website.

Prerequisites: Knowledge comparable to that taught in:

1. CSE 260 Discrete Structures in Computer Science
2. CSE 232 Introduction to Programming II


Class notes: The class notes will be posted on the course web site.
Graded work:

- 2 midterm exams, 15% each
- final exam, 25%
- homework/programs 40%
- class participation 5% (decided by the number of submitted in-class exercises, see details below)
- Grading: The final grades will be assigned based on the following scale: The instructor reserves
  \[
  \begin{array}{cccccc}
  \geq 90\% & 85\% & 75\% & 70\% & 60\% \\
  4.0 & 3.5 & 3.0 & 2.5 & 2.0 \\
  \end{array}
  \]
  the right to make changes to the grading scale. Specifically, the score required to obtain each mark may be lowered.

Homework: There will be about 8 homework assignments. Homework typically will have multiple problems and may require mathematical analysis, analysis of an existing programs or functions, or programming something new. Note that learning to program is NOT the main emphasis of this course; rather it is to program more efficiently and to solve problems by using appropriate algorithms. Your analysis of what a program does is much more important than the program code itself. You need to know how to use the CSE servers in order to finish the programming homework assignments. Students completing programs within the hour prior to submission are not taking the responsibility that the level of this course implies.

Homework deliverables: Students will submit programming homework via Handin. Non-programming homework can be submitted in class. Usually, there will be multiple files for programming homework. A .pdf/.txt file (or equivalent) outlining results is always required. If programming is required, program source files, and a Make file (or instructions for running/compiling), will also be submitted. Data files may also be required if needed.

Homework and program format: Guidance on report and code format will be provided later. Once the homework is graded and returned, you have one week to communicate with us about grading-related questions such as missing points, missing homework etc.. After that deadline, no requests will be taken.

Policy about late work: The submission deadline will be specified for each homework. No late work will be accepted.

In case of a documented crisis, such as illness, the student should submit the an official document to arrange for alternate grading. Advance notification is required for late submission unless this is impossible.

In-class exercises: Multiple in-class exercised will be distributed and collected in some classes. The class participation score will be decided based on the number of submitted in-class exercises. 80% (e.g. submitted at least 8 out of 10): 5; [60% - 80%): 4; [40%-60%): 3; [30%-40%):2; others: 1

Academic Integrity: Article 2.3.3 of the Academic Freedom Report states: The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards. In addition, CSE adheres to the policies on academic honesty specified in General Student Regulation 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. (See Spartan Life: Student Handbook and Resource Guide and/or the MSU Web site.)
Unless I explicitly state otherwise, I expect all solutions to homework assignments, programming assignments, and exams will be solely your own work. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the www.allmsu.com Web site to complete any course work in this course. Students who violate MSU rules may receive a penalty grade, including but not limited to a failing grade on the assignment or in the course.

Course calendar: The tentative course calendar can be found at the course’s website.

Changes: This syllabus is subject to change. The changes will be announced in the class and then reflected in this document.

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