CSC 172: Data Structures and Algorithms

Eustrat Zhupa

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E-mail: ezhupa@cs.rochester.edu
Web: http://www.cs.rochester.edu/u/ezhupa
Office: Wegmans Hall 2107
Office Hours: Mon 2:30 - 4:30 (PM), Thu 5:00 - 6:30 (PM)
Lecture Hours: TR 3:25 -4:40 Classroom: Hoyt Auditorium

Course Description

This course presents the fundamental data structures, their design and use. The course also covers various algorithms and their analysis. Java is the official language for all the programming tasks. The data structures covered are Lists, Stacks, Queues, Trees and Graphs. This course also covers various sorting and searching algorithms.

Topics covered

The course gives you a comprehensive understanding of various data structures and when to use them. Topics include:

- Basic data structures: lists, stacks, queues, trees, hash tables, trees, graphs.
- Analysis of data structures with respect to time/space complexity.
- Various cost-benefit tradeoffs in designing, implementing, and using them.
- Implementation of the data structures in Java.
- Various algorithms including algorithms for searching and sorting, recursive algorithms, graph-based algorithms.
- Dynamic Programming basics.

Required Readings

- Lecture notes
- Textbook: Data Structures and Algorithm Analysis in Java, C. A. Schaffer.
Additional Readings

- Cormen, Leiserson, Rivest, Stein, Introduction to Algorithms, MIT Press.

Prerequisites

CSC 171 or equivalent, MTH 150

Grading Policy

- Letter grades will follow the Official University of Rochester Grading Scheme.
- All appeals of grades for any component of the course (homework, project, quiz, exam, etc.) must be made within ONE WEEK of the grade being posted.
- I reserve the right to curve the scale dependent on overall class scores at the end of the semester.
- The grade will be determined taking into account the following:
  - The midterm exam is worth 20%.
  - The final exam is worth 20%.
  - Quizzes are worth 15%.
  - Labs are worth 20%.
  - Projects are worth 25%.

Grading Scale

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<thead>
<tr>
<th>Percentage score</th>
<th>Letter grade</th>
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<tbody>
<tr>
<td>90-100</td>
<td>A</td>
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<tr>
<td>85-89</td>
<td>A-</td>
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<tr>
<td>80-84</td>
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<td>75-79</td>
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<td>50-54</td>
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<td>0-49</td>
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Course Policies

Accommodations for Disabilities

- The University of Rochester respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of disability, please contact the Office of Disability Resources. The access coordinators in the Office of Disability Resources can meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can reach the Office of Disability Resources at: disability@rochester.edu; (585) 276-5075; Taylor Hall.

- After you receive accommodation approval, it is *imperative* that you reach out to the instructor for the appropriate arrangements.

Communication and information about the course

- Relevant information and updates about the course will be posted on the website of the course and/or on Blackboard.

- Emails sent to the instructor about this course (better) include in the subject "CSC172: ".

During lecture

- You do not need any electronics in class and they will not help you or your fellow students seated near you.

- Unless you are taking notes with a laptop, you do not need it.

- Please note Section V.7 of the College’s Academic Honesty policy regarding Unauthorized Recording, Distribution or Publication of Course-Related Materials.

Attendance Policy

- Attendance in lectures is recommended, but not required. If you choose not to attend, please make sure you don’t miss important announcements or information about the course.

- Attendance in workshops is *required*. Quizzes are part of the workshop activities.

Policies on Incomplete Grades and Late Assignments

- A grade of "I" can be given only in circumstances beyond the students’ control, such as illness or personal emergency, that prevented the students from finishing the coursework on time. Please refer to the Academic Procedures for more information on this.

- Late submissions are not permitted in this course.
Academic Integrity and Honesty

- All assignments and activities associated with this course must be performed in accordance with the University of Rochester’s Academic Honesty Policy. More information is available at http://www.rochester.edu/college/honesty

- All the work you do in this course must be *mainly* your own contribution. Collaboration on coding assignments is permitted, subject to the following requirements:
  - You must acknowledge your collaborators in your submission.
  - You must be able to explain anything you submit in person at any time.

- Additional requirements/details may be posted with each assignment.