Brock University
Department of Computer Science

COSC 2P03 – Advanced Data Structures
Fall 2020

Instructors:

Yifeng Li: Section 1, Tuesdays and Thursdays 8:00-9:30am
Sheridan Houghten: Section 2, lecture time forthcoming.

Prerequisites:

COSC 1P03 (minimum 60%); MATH 1P66 and 1P67.

Course Description:

This course emphasizes the definition, usage and manipulation of dynamic data structures and their associated algorithms.

Textbook:

Data Structures and Algorithm Analysis in Java 3rd edition, Mark Allen Weiss, Addison-Wesley. For this term, you are recommended to purchase an electronic copy of this book.

Other Resources:

The following additional resources are available electronically through the Brock library. You will have to log in to access them:

- Basic Concepts in Data Structures, Shmuel Tomi Klein
- Others will be listed in the first lecture.

Mark Distribution:

Assignments (4): 40%
Term Tests (2): 20%
Final Exam: 40%

Tentative Outline:

Note that additional reading may be required.

- Introduction: objectives of the course and a brief review of related material, including, but not limited to: Recursion (ch.1), Complexity (ch.2).
- Stacks and Queues – review (ch.3) and Priority Queues (ch.6)
- Trees (ch.4)
- Heaps (ch.6)
- Advanced Sorting (ch.7)
- Hashing (ch.5)
- Graphs (ch.9)
- Optional Topics: including, but not limited to: Algorithm Design Techniques (ch.10), Advanced Data Structures (ch.12).

Important Dates:

- Last date for withdrawal without academic penalty: Monday 2nd November, 2020.
- Last date to receive notification of at least 15% of final grade: Monday 26th October, 2020.
- Expected dates of term tests: Thursday, 22nd October and Thursday, 19th November.
- Expected dates of final exam: TBD December, 2020.

Course Policies:

Illness: If you miss a test or assignment due to illness, you must submit a student medical certificate (`http://www.cosc.brocku.ca/forms/medical`) *within 3 days of the illness*, by email to the course coordinator.

Plagiarism: The department views plagiarism as a serious issue. Students may visit `http://www.cosc.brocku.ca/about/policies/plagiarism` to view the department's policies on plagiarism. Plagiarism detection software will be used in this course.

Assignments: To pass this course, you must obtain a total assignment mark of at least 40% (i.e. when considering the assignments as a group, not for each individual assignment).

Final Exam: To pass this course, you must obtain a mark of at least 40% on the final exam.

Term Tests: The term tests will be given during **tutorial** time, on preannounced dates.

Assignments:

- All assignments must be completed *individually*.
- Due dates for assignments will be printed on the assignment text. No late assignments will be accepted.
- Assignments are to be submitted electronically using Sakai.
- Assignments must be written in Java using `IntelliJ`.

Additional notes:

- Lectures and tutorials will all be delivered synchronously at the times indicated on your timetable.
- Questions and discussion are encouraged in both lectures and tutorials.
- Assignments for this course are expected to take significantly more time to complete than assignments for first-year courses. Assignments will vary in weight; the weight will be given on the assignment text. Assignments carrying a higher weight are naturally expected to require more time to complete.
- Tutorials are expected to take place every other week, starting in the second week. Students will be informed in class and on the course website / Sakai of the schedule for tutorials.
- There are no scheduled labs for this course. For assistance with assignments in particular, students should contact the TAs during the scheduled times, which will be posted when available.