UNBC CPSC 200 Outline Fall 2021

Algorithm Analysis and Development

Prerequisites: A grade of C^- or better in CPSC 100, CPSC 101, and CPSC 141; or permission of instructor.

Transitional Semester: The world, and the UNBC Prince George Campus in particular, continue to be disrupted by the Covid 19 pandemic. Consequently this syllabus is the *current* plan. It may be revised as circumstances change.

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Admin Assistant: Felicity Edzerza; **Phone:** 960-4690; **e-mail:** `csugrad@unbc.ca` ;

Lecture times: M W F 16:30– 17:20. **Room**: 5-176. There are *no* assigned lab or tutorial times. Lectures may be recorded and later posted to `learn.unbc.ca`.

Text Book: [?] is *required* for this course.

References: [?] is a good JAVA resource book. [?] is difficult reading, but contains a wealth of information on list data-structures, algorithmic analysis and sorting algorithms.

Grading Scheme:

Homework:	25%	
Midterm 1:	20%	Fri, Oct 15
Midterm 2:	20%	Mon, Nov 15
Final Exam:	35%	3h in 7–1y Dec

I reserve the right to re-weight the components of the marking scheme. Your grade will always be at least as good as you would have had with the original weighting.

Assignments: There are occasional written non-programming assignments (typically, math-like problems) throughout the semester.

There are medium-sized programming assignments during the semester. Familiarity with JAVA is assumed.

Syllabus: Material is mainly from Chapters 2–4 and 7 of [?], with other material as time permits. Topics include:

- Course introduction, loop invariants. (1 week)
- Algorithm analysis and asymptotic complexity (2 weeks).
- Java generics, strict week order. (1 week)
- Sorting algorithms, recursive algorithms (2 weeks).
- Containers, linked lists, stacks, queues, deques and iterators (2 weeks).
- Tree classes (1 week).
- Introduction to decidability, complexity, and complexity classes (1 week).

Times are approximate. More detail may be found on the `learn.unbc.ca` site.

Academic Offenses: First offenses result in a grade of $-100\,\%$ and formal notification of the Faculty Dean. Allowing someone to copy your work is an offense. See the UNBC Calendar for official rules and details.

References

[1] Donald E. Knuth, *Sorting and searching*, second ed., The Art of Computer Programming, vol. 3, Addison-Wesley, 1998.

[2] Cay S. Horstmann, *Big java: Early objects*, 5th ed., Wiley Publishing, 2012.

[3] Mark Allen Weiss, *Data structures and algorithm analysis in* `Java`, third ed., Addison-Wesley, 2012, for CPSC 200—2018.