THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course number:	**ACS-2947-050, 070L, 071L**
Course name:	**Data Structures and Algorithms**
Course web page:	http://courses.acs.uwinnipeg.ca/2947-050/

1 Instructor Information

Instructor:	Jeanette Bautista		
E-mail:	je.bautista@uwinnipeg.ca		
Office hours:	Thursdays	5:00 – 6:00 pm	Office: 3C08B
Class meeting time:	Thursdays	6:00 – 9:00 pm	Room: 3D04
Lab time - Sec 070L:	Fridays	4:00 – 5:15 pm	Room: 3D03
- Sec 071L:	Fridays	12:15 – 1:30 pm	Room: 3C13

2 Important Dates

1. First class: Thursday, September 6, 2018
2. First lab: Friday, September 7, 2018
3. Reading week: October 7 – 13, 2018 (no classes)
4. Midterm exam: Thursday, October 18, 2018
5. Last class Thursday, November 29, 2018
6. Final exam: Thursday, December 13, 2018
7. Final withdrawal date (without academic penalty): Monday November 12, 2018.
   A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before this date.

3 Course Objectives/Learning Outcomes

This course provides an introduction to the theory, practice and methods of data structures and algorithm design. Students will learn elementary data structures such as stacks, queues, linked lists, sequences, trees and graphs in Java language, and the algorithms designed for manipulating these data structures.

The objective of this course is to introduce students to both data structures and algorithm design. The goal of the lecture is twofold: 1) to discuss different data structures to represent real world problems and, 2) to study various ways to design algorithms to solve the problems. As an important part of the course, the Java programs that implement all the algorithms discussed will be analyzed and compared to develop deep knowledge on programming.

4 Evaluation Criteria

1. Labs (5%)
   - 5-8 labs, evenly weighted
   - No late lab submissions accepted
2. Assignments (20%)
   - 4 assignments, worth 5% each
   - Assignments will be accepted up to 1 day late with a 25% penalty
   - Students are responsible for backing up and protecting their work
3. Midterm Exam (25%)
   - During the first half of the regular class time on October 18
   - See #4 below
4. Final Exam (50%)
   - Should illness prevent participation in a test or examination, a medical certificate from a certified physician must be supplied before any adjustments are considered.

Students should contact the instructor as soon as possible if extenuating circumstances require missing an assignment, test or examination.

5 Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	C+	65 – 69%
A	85 – 89 %	C	60 – 64%
A-	80 – 84%	D	50 – 59%
B+	75 – 79%	F	below 50%
B	70 – 74%		

6 Exam Requirements

- Photo ID is required for the final exam.
- The use of computers, calculators, phones, or other electronic devices is not permitted on exams.
- Midterm and final exams are closed book.
- Unless a medical certificate is provided, no accommodation is made for missed exams.

7 Services for Students

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential http://www.uwinnipeg.ca/accessibility.

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2018-19 Undergraduate Academic Calendar.

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect .

8 Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #8, in the 2018-2019 UW Undergraduate Academic Calendar available at
http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf
and the UW academic misconduct policy available at
http://pace.uwinnipegcourses.ca/sites/default/files/pdfs/publications/Academic%20Misconduct%20Policy.pdf

Additional information is available at University of Winnipeg library video tutorial "Avoiding Plagiarism" https://www.youtube.com/watch?v=UvFdxRU9a8g

Avoiding Academic Misconduct. Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves "aiding and abetting" plagiarism. Students who do this can be charged with Academic Misconduct.

Avoiding Copyright Violation. Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor /presenter before photographing or recording slides, presentations, lectures, and notes on the board.

9   Required Textbook / Reading List

- M. T. Goodrich and R. Tamassia: *Data Structures and Algorithm in Java* (6th Edition), John Wiley & Sons, Inc., (ISBN 1118771338).
- Class Notes will be available at http://courses.acs.uwinnipeg.ca/2947-050/

10   Prerequisite Information

- A grade of at least C in ACS-1904/3 or ACS-1905/3
- Co-Requisite: MATH-1401/3

11   List of Topics to be covered (tentative)

Java basics / review	Iterators
Object-oriented design	Trees
Arrays	Binary trees
Linked lists	Priority queues
Big-O notation	Heaps
Recursion	Maps
Stacks	Hash tables
Queues	Search trees
Deques	Sorting
Array lists	Selection
Positional lists	Graphs

12   Additional Course Related Information

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform students via uwinnipeg email (and/or using the preferred form of communication, as designated in this outline), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms
2. Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses (and/or using the preferred form of communication, as designated in this outline) to ensure timely receipt of correspondence from the university and/or their course instructors
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund (November 12 is VW date for classes that begin in September and end in December).
4. No make-up classes scheduled
5. No classes:
    October 8, 2018   Thanksgiving
    October 7-13, 2018   Mid-term reading week
    November 11, 2018   Remembrance Day
    Dec 22/18-Jan 2/19   University closed