

Course Outline

Course Code, Number, and Title: CPSC 1150 – Program Design

Year and Semester: Summer 2023

Course Format: The course is in-person course; therefore, labs, lectures and exams are held in campus.
Lecture 4.0 h + Seminar 0.0 h + Lab. 2.0 h

Credits: 3

Transfer Credit: For information, visit bctransferguide.ca

Course Description:

Program design entails building and implementing an algorithm in a programming language (such as Java) using good software development principles. Students develop problem-solving techniques while learning the basics of algorithm development, procedural abstraction, and data representation.

Prerequisites and Co-requisites:

One of the following: MDT 85; a minimum B grade in Principles of Mathematics 12 or Pre-calculus 12; one of MATH 1171, 1173/1183, 1174; a minimum C grade in one of CPSC 1040 or 1045; or a minimum B grade in CPSC 1050. Visit CPSC1150 page for more information.

Learning Outcomes:

Upon successful completion of this course, students will be able to...

- Represent data in various numbering systems
- Design and develop an algorithm for a given problem
- Utilize appropriate control structures and variables (including arrays) to implement a solution
- Use procedural abstraction to implement structured programs
- Trace, debug and test the correctness of code
- Find and use appropriate libraries, resources and documentation
- Write maintainable code in the current standard coding style of the programming language, including internal and external documentation
- Describe given searching and sorting algorithms including their time complexity
- Trace recursive functions

*A good programmer spends 80% of the time on planning, analysis, and design, and 20% on coding, testing, and debugging.
Remember a great finish starts with a good beginning.*

Instructor: Dr. Bitu Shadgar

Office: B019m

Phone: (604)323 5511 ext.2393

Email: bshadgar@langara.ca

Office Hours: Mondays, Tuesdays, Wednesdays, Thursdays at 12:30-13:00 pm (in-person)
Mondays at 8:30-10:20 am (Online with appointment)

Textbook and Course Materials:

Textbook: Introduction to Java Programming, 11th Edition, by Y. Daniel Liang, published by Pearson.

Requirements: To work on this course using your own computer

- You can download it from oracle.com since Java is chosen as programming language in this course.
- Use any text editor such as [Sublime Text 3](#) or [SciTE](#) (a simple text editor) or a more elaborate/interactive integrated development environment (IDE) such as Eclipse, Visual Studio, IntelliJ or NetBeans. For beginners in programming, using a simple text editor is recommended.

Note: This course may use an electronic (online) instructional resource that is located outside of Canada for mandatory graded class work. You may be required to enter personal information, such as your name and email address, to log in to this resource. This means that your personal information could be stored on servers located outside of Canada and may be accessed by U.S. authorities, subject to federal laws. Where possible, you may log in with an email pseudonym as long as you provide the pseudonym to me so I can identify you when reviewing your class work.

Assessments and Weighting:

Final grades of the course will be calculated based on the following schema:

Quizzes/Labs/Assignments	35%
Midterms (2)	30%
Final exam	35%

- **Quizzes (4.5% in total)** are designed in different weeks of semester (represented in course schedule). Each quiz weights 0.5% of the total grade. No makeup quiz for the missed one. There is one extra quiz which is considered as bonus.
- **Labs (13.5% in total)** are designed in different weeks of semester (represented in course schedule). The lab's due is on **Wednesdays at 11:30 pm** of the week. **Late labs submissions are not acceptable and marked as zero.** Each lab weights 1.5% of the total grade. There is one extra lab which is considered as bonus.
- **Assignments (17% in total)** are listed as below. Each assignment weights 3.5% which gives you 0.5% bonus mark in assignments module. **Due dates are hard deadlines.** Late assignments will be accepted at most 24 hours later with 1% penalty for every hour being late. There is NO EXTRA assignment. Make sure that you are not missing any.

Assignment	Release Date	Due Date
1	Monday, May 8	Saturday, May 27 @ 11:30 pm
2	Monday, May 29	Saturday, June 10 @ 11:30 pm
3	Monday, June 12	Saturday, July 1 @ 11:30 pm
4	Monday, July 3	Saturday, July 15 @ 11:30 pm
5	Monday, July 17	Saturday, Aug 5 @ 11:30 pm

Detailed Course Schedule:

Note that course schedule is tentative.

Week of	Topic	Reference chapter	Labs/Quizzes/Midterms
May 8	Introduction to Computers, Programs, and Java	Chapter 1	Setting the layout and environment, Javadoc
May 15	Variables, Common Errors, Tracing Style, Mathematical Operations, Console Input	Chapter 2	Lab1/Quiz1
May 22*	Data representation (Number Systems, 2's complement) Problem Solving and Implementation	Appendix F Chapter 2	Lab2/Quiz2
May 29	Selection Math functions, Characters	Chapter 3 Chapter 4	Lab3/Quiz3
June 5	Strings, Formatting outputs Review/Q&A	Chapter 4	Lab4/Quiz4
June 12	Loops	Chapter 5	Midterm 1 – On Lab time
June 19	Java methods, Scope of Variables	Chapter 6	Lab5/Quiz5
June 26	Pass by Value, Pass by reference Top-down Design	Chapter 6	Lab6/Quiz6
July 3	Arrays and Algorithms Multi-Dimensional Arrays	Chapter 7 Chapter 8	Lab7/Quiz7
July 10	Review/Q&A		Lab8/Quiz8
July 17	File I/O String Objects	Chapter 12	Midterm 2 – On Lab time
July 24	Algorithms and Recursion Algorithms and sorting Algorithms	Chapter 14	Lab9/Quiz9
July 31	Review/Q&A		Lab10/Quiz10
	Final Exam – covers all the topics, it is a day between August 8-19		

Grading:

To get a C or higher in computer science courses, a student must achieve at least an average of 50% in the exam components (including midterm, final and quizzes) and at least an average of 50% in labs, assignments, and discussions.

If there is a particular Lab, assignment, or exam that you feel was graded unfairly, you must bring that to your TA's attention (for labs or assignments) or instructor's attention (for other components) as soon as that item is graded.

Letter Grade	Overall Average	Letter Grade	Overall Average	Letter Grade	Overall Average	Letter Grade	Overall Average
A+	90 - 100	B+	76 - 79	C+	64 - 67	D	50 - 54
A	85 - 89	B	72 - 75	C	60 - 63	F	Below 50
A-	80 - 84	B-	68 - 71	C-	55 - 59	N	Not Completed

As a student at Langara, you are responsible for familiarizing yourself and complying with the following policies:

College Policies:

[E1003 - Student Code of Conduct](#)

[F1004 - Academic Integrity](#)

[E2008 - Academic Standing - Academic Probation and Academic Suspension](#)

[E2006 - Appeal of Final Grade](#)

[F1002 - Concerns about Instruction](#)

[E2011 - Withdrawal from Courses and Deferred Standing](#)

Departmental/Course Policies:

- **Online Materials:** Brightspace is used as a repository for course handouts and links to supplementary materials as well as discussion forums for sharing techniques and ideas. The students are responsible to stay informed of class news and activities announced through Brightspace.
- **Exams:** The missed exams will be assigned a mark of zero. There are no makeups for midterms, nor quizzes, unless there is a well-documented serious medical issue.
- **Plagiarism and Cheating:** Plagiarism is the representation of another person's ideas, work or words as being one's own. This include copying the work of another student, or from the Internet, from a book or any other source without mentioning the source of the work. Self-plagiarism is the use of one's own work for more than one assignment. Neither plagiarism nor self-plagiarism are acceptable in assignments submitted for this course and both are serious education offences in any teaching environment (classroom or on-line). These offences and any other forms of dishonesty and cheating may result in failure of an assignment, quiz, term project, exam, or the course.

It is your responsibility to protect your work and not to provide it to others. Students can collaborate and help each other, but if you provide your complete work to another student, you also involve in the act of plagiarism and you are penalized as well. For more details, please refer to college policies ([F1004](#)).