



**ICS 124 – Algorithms and Data Structure Programming**  
**Winter 2020**

**tentative COURSE OUTLINE**

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Calendar Description: [ICS Courses](#)

*Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

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**1. Instructor Information**

<b>(a) Instructors</b>	Lynda E. Robbins, PhD
<b>(b) Office hours</b>	by appointment made via email.
<b>(c) Location</b>	TEC 254
<b>(d) E-mail</b>	<a href="mailto:robbinsl@camosun.bc.ca">robbinsl@camosun.bc.ca</a>
<b>(e) Website</b>	Camosun D2L (Learning Management Software)

**2. Intended Learning Outcomes**

Upon successful completion of this course, a student will be able to:

- Design, implement, test and debug object-oriented solutions for small systems involving multiple objects;
  - including programming techniques of inheritance, abstraction, modularization, information hiding, overloading, interfaces
- Identify appropriate abstract data types and data structures based on the characteristics of the application;
  - including use of software libraries
- Implement and evaluate the trade-offs between a static and a dynamic implementation of an abstract data type using Big-O notation;
- Apply problem-solving skills and provide a foundation for advanced programming courses;
  - developing, understanding, and debugging software components
- Apply accepted standards to ensure security, privacy, and integrity of data while recognizing the ethical, legal, and social implications of computing.

### 3. Access to Required Materials:

1. Sign in or create an account at [learn.zybooks.com](http://learn.zybooks.com)
2. Enter zyBook code

**CAMOSUNICS124RobbinsSpring2020**

3. Subscribe

A subscription is \$58. Students may begin subscribing on Dec 24, 2019 and the cutoff to subscribe is May 12, 2020. Subscriptions will last until Jun 16, 2020.

### 4. Course Content and Schedule

The following is a *tentative* schedule of the order in which topics will be covered. *Please note this is subject to change as the term progresses.*

Week Number	Week of	Topic
1	January 6	<ul style="list-style-type: none"><li>- Course Introduction</li><li>- Complexity Theory</li></ul>
2	January 13	<ul style="list-style-type: none"><li>- Searching</li><li>- Sorting</li></ul>
3	January 20	<ul style="list-style-type: none"><li>- Sorting (<i>continued</i>)</li></ul>
4	January 27	<ul style="list-style-type: none"><li>- Java ArrayList Class</li><li>- Java: Abstract Classes</li><li>- Introduction to ADT (Abstract Data Types)</li></ul>
5	February 3	<ul style="list-style-type: none"><li>- Java:<ul style="list-style-type: none"><li>o Generics</li><li>o Interfaces</li></ul></li></ul>
6	February 10	<ul style="list-style-type: none"><li>- MIDTERM:<ul style="list-style-type: none"><li>o day, time TBA</li><li>o outside of class/lab time</li></ul></li><li>- List ADT: Introduction</li></ul>
--	February 17	<i>Family Day Monday, Reading Break Tuesday-Friday (no classes, no labs)</i>
7	February 24	<ul style="list-style-type: none"><li>- Lists (<i>continued</i>):<ul style="list-style-type: none"><li>o ADT</li><li>o Implementations:<ul style="list-style-type: none"><li>▪ Array</li></ul></li></ul></li><li>- Linked List</li></ul>
8	March 2	<ul style="list-style-type: none"><li>- Stacks:<ul style="list-style-type: none"><li>o ADT</li><li>o Implementations:<ul style="list-style-type: none"><li>▪ Array</li></ul></li></ul></li></ul>

		<ul style="list-style-type: none"> <li>▪ Linked List</li> <li>○ Applications</li> </ul>
9	March 9	<ul style="list-style-type: none"> <li>- Recursion</li> <li>- Recursive Sorts</li> </ul>
10	March 16	<ul style="list-style-type: none"> <li>- Queues: <ul style="list-style-type: none"> <li>○ ADT</li> <li>○ Implementations: <ul style="list-style-type: none"> <li>▪ Array</li> <li>▪ Linked List</li> </ul> </li> <li>○ Applications</li> </ul> </li> </ul>
11	March 23	<ul style="list-style-type: none"> <li>- Trees: <ul style="list-style-type: none"> <li>○ ADT</li> <li>○ Implementations: <ul style="list-style-type: none"> <li>▪ Array</li> <li>▪ Linked List</li> </ul> </li> <li>○ Applications</li> </ul> </li> </ul>
12	March 30	<ul style="list-style-type: none"> <li>- Maps</li> <li>- Sets</li> <li>- Hash Tables</li> </ul>
13	April 6 Note: April 10 Good Friday (College Closed)	<ul style="list-style-type: none"> <li>- Heaps</li> </ul>
Exam Period	April 14 – April 22	

## 5. Basis of Student Assessment (Weighting)

ITEM	Weight (%)	Details
<i>zyBook</i>	10	Students are expected to work on assigned zyBook activities on their own time, however, some class/lab time may be devoted to zyBook activities.
Assignments/Labs	20	Assignments will require additional work to be done outside of lab/class times.
Midterm Test	20	A 2-hour midterm test will be held during the week of February 10 <b><i>outside of lab/class time</i></b> . Both sections will write at the same time. <i>The date and time will be announced as soon as timetable and room arrangements have been finalized.</i>
Quizzes	10	Unannounced written/practical quizzes will be held during classes and/or labs. The lowest quiz mark will be dropped. There are no makeup quizzes. Quizzes that are not written will receive a mark of 0. (Since the lowest quiz mark is dropped, students are able to miss one quiz without penalty.)
Final Exam	40	The final exam is scheduled by Camosun College. Be sure to check the date before making travel arrangements.

### NOTES:

1. A weighted average of at least 55% must be achieved on the quizzes, midterm, and final exam to pass the course.
2. A weighted average of at least 60% must be achieved on the quizzes, midterm, and final exam to continue in the ICS program.
3. A minimum mark of 85% must be achieved on zyBook participation and challenge activities to pass the course.
4. Late work is not accepted except in exceptional circumstances. Please contact your instructor.
5. Students are not permitted to leave the room during a test/quiz/exam except with prior accommodation.

## 6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

Advice:

1. Keep up to date with the zyBook and lecture materials daily. This will help you with the unannounced quizzes!
2. If you are having difficulties with the course, please contact your instructor sooner rather than later.
3. Programming is a skill. To become a good programmer you must practice, practice, practice *every* day.
4. It is strongly suggested that students create their own glossary of terms. This will be very helpful for reviewing for tests.
5. Be sure you do your own work. This course utilizes automated and manual checking mechanisms for plagiarism. Please see [Camosun's academic honesty guidelines](#).

## 8. College Supports, Services and Policies



### Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

### Department Policies:

**Grade review:** You have 7 days after marks are posted to review with your instructor.

### Academic Dishonesty:

1<sup>st</sup> violation: minus the weight of the deliverable and a note on your departmental file.

2<sup>nd</sup> violation: F in the course

3<sup>rd</sup> violation: Student Conduct [Policy](#) E-2.5 is applied

**Missed Examinations/Quizzes:** If a student misses a quiz or an exam, a mark of zero will be assigned unless there are extenuating circumstances. In such cases, the proportion of grade assigned to the missed quiz or exam will be added to the proportion assigned to the final exam. The final exam will be held during exam week. NO consideration will be given to any student wishing to write the exam at any other time than that assigned.

**Electronic Devices:** The school's policy regarding electronic devices is that any student who has a cell phone or other unauthorized electronic device (ie. ipad, laptop, playbook, etc.) on their person or around their desk during an exam will be guilty of cheating and will receive a grade of "F" for the course.

## College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

## College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

### A. GRADING SYSTEMS <http://www.camosun.bc.ca/policies/policies.php>

The following two grading systems are used at Camosun College:

#### 1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1

0-49	F	Minimum level has not been achieved.	0
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## 2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

### B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://www.camosun.bc.ca/policies/E-1.5.pdf> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.