

**CS 1431**

**Winter 2024**

**Department of Computer Science**

**(2024W) COMP-1431-WA - Computer Programming II**

# 1. Course Information

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| **Catalog****Description** | Substantially extends the programming skills development, with more complex programs, using advanced C and C++ features. Good programming style and documentation are stressed throughout. Advanced data types, program structures and other advanced topics in C and C++ languages are discussed. |
| **Credit Hours**  | 3  |
| **Prerequisite**  | COMP 1411 |
| **Course Type**  | Lecture  |
| **Required/Elective**  | Required  |
| **Textbook**  | C++ how to program, by Deitel & Deitel, any edition >=8e.  |
| **References**  | * <https://www.w3schools.com/cpp/>
* <https://www.w3resource.com/cpp-exercises/basic/index.php>
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| **Instructor**  | Dr. Abedalrhman Alkhateeb Office: AT 5029Tel: (807) 343-8110 ext. 8310E-mail: aalkhate@lakeheadu.ca |
| **Class Schedule**  | MW 5:30PM - 7:00PM RB 2047 (LEC)  |
| **Office Hours**  | MW 4:00PM - 5:30PM  |
| **Teaching Assistant**  | TBA  |
| **Labs**  | The student must be registered in one of the following labs:COMP-1431L-W1 Th 12:30PM - 1:30PM AT 3001 (LAB)COMP-1431L-W2 Th 4:30PM - 5:30PM AT 3001 (LAB) |

# 2. Course Topics

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| **Topic(s)**  | **Reference in Text\***  |
| Introduction to Computers and C++ Programming |  |
| Control Structures |  |
| Functions |  |
| Arrays |  |
| Pointers and Strings |  |
| Classes and Data Abstraction.  |  |
| Classes Part II |  |
| Object-Oriented Programming: Inheritance |  |
| Object-Oriented Programming: Polymorphism |  |
| C++ Standard Template Library (STL): lists, vectors, stacks, queues, priority queues, sets, unordered sets, maps and iterators.  |   |
| Templates |  |
| Exception Handling |  |
| File Processing |  |

**\* Book chapters are provided for reference only. You are responsible for the material taught in class.**

**3. Course Outcomes**

**Upon completion of this course, students will be able to:**

1. Understand and use the basic programming constructs of C/C++
2. Manipulate various C/C++ datatypes, such as arrays, strings, and pointers
3. Isolate and fix common errors in C++ programs
4. Use memory appropriately, including proper allocation/deallocation procedures
5. Understand object-oriented programing
6. Apply object-oriented approaches to software problems in C++
7. Write small-scale C++ programs using the above skills

**4. Assessments**

First Exam 25% Fifth week

Second Exam 25% Tenth Week

Labs 10%

Final Exam 40% TBA

* All tentative.

# 5. Expected level of proficiency from students entering the course

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| --- | --- |
| Mathematics  | Discrete Math  |
| Computer programming  | Computer Programing Concepts  |

# 6. Integrity:

The University takes a most serious view of offences against academic honesty such as plagiarism, cheating and impersonation. Penalties for dealing with such offences will be strictly enforced.

The following rules shall govern the treatment of candidates who have been found guilty of attempting to obtain academic credit dishonestly. (a) The minimum penalty for a candidate found guilty of plagiarism, or of cheating on any part of a course will be a zero for the work concerned. (b) A candidate found guilty of cheating on a formal examination or a test, or of serious or repeated plagiarism, or of unofficially obtaining a copy of an examination paper before the examination is scheduled to be written, will receive zero for the course and may be expelled from the University.

**7. Supports for Students**

There are many resources available to support students. These include but are not limited to:

* [Health and Wellness](https://www.lakeheadu.ca/students/wellness-recreation/student-health-and-wellness)
* [Student Success Centre](https://www.lakeheadu.ca/current-students/student-success-centre)
* [Student Accessibility Centre](https://www.lakeheadu.ca/current-students/student-services/accessibility/)
* [Library](https://library.lakeheadu.ca/)
* [Lakehead International](https://www.lakeheadu.ca/international)
* [Indigenous Initiatives](https://www.lakeheadu.ca/indigenous)

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact Student Accessibility Services (SC0003, 3438047 or sas@lakeheadu.ca)