CIS*2430 Object Oriented Programming

instructor

Dr. Judi McCuaig
Pronouns: she/her

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teaching assistants

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tech support

Alif
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land acknowledgment

The Dish With One Spoon Covenant speaks to our collective responsibility to steward and sustain the land and environment in which we live and work, so that all peoples, present and future, may benefit from the sustenance it provides. As we continue to strive to strengthen our relationships with and continue to learn from our Indigenous neighbours, we recognize the partnerships and knowledge that have guided the learning and research conducted in and for this class. We acknowledge that the University of Guelph resides in the ancestral and treaty lands of several Indigenous peoples, including the Attawandaron people and the Mississaugas of the Credit, and we recognize and honour our Anishinaabe, Haudenosaunee, and Métis neighbours. We acknowledge that the work we do here occurs on their traditional lands so that we might work to build lasting partnerships that respect, honour, and value the culture, traditions, and wisdom of those who have lived here since time immemorial.

course description

CIS*2430 is a .5 credit course.

This course introduces the Object Oriented (OO) approach to programming and algorithm design. Topics will include the creation and use of objects from class libraries, user defined objects, inheritance, modularity, generic code, components, collections and containers, and an introduction to OO design methodologies.

CIS*2500 is a prerequisite for this course. CIS*2430 relies on a strong understanding of memory management and pointers.

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations which apply to undergraduate, graduate, and diploma programs.

learning outcomes

By the end of this course, you should be able to:

- Identify the major characteristics of different programming paradigms (procedural, functional, logical, and object-oriented)
- Differentiate between procedural and object-oriented paradigms
- Design and implement classes for an object-oriented program demonstrating correct use of encapsulation, constructors, method overloading, class invariants, accessors, mutators, instance variables and class variables
- Construct class hierarchies that maximize code reuse through inheritance while accommodating differences through method overriding
- Describe polymorphism and identify situations in which it is used in an OO program
- Use polymorphism, abstract methods/classes, and interfaces effectively to produce generic code
- Read and understand class diagrams written in UML (Unified Modeling Language)
- Compare event-driven programming with control-driven programming

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communication

email	**cis2430@socs.uoguelph.ca** Do not send course related email to instructors' personal email addresses
Teams	**CIS 2430 Fall 2023** you will be added automatically to the course team
website	**moodle.socs.uoguelph.ca**

times

Lectures	**section 01: T/Th 4:00-5:20pm** **section 02: T/Th 1:00-2:20pm**
Tutorials	**101/201: Friday 8:30** **102/202: Wednesday 12:30** **103/203: Friday 12:30** **104/204: Wednesday 2:30** **105/205: Monday 12:30** **106/206: Monday 8:30**

assessment weights

10%	**Independent Practice** 6 Practice Problems; 2% each; Drop lowest
15%	**Written Homework** 3 Homework Assignments; 5% each
35%	**Coding Assignments** 3 Coding assignments: 10%, 10%, 15%
10%	**In Class Quizzes** 10 quizzes, 1% each
30%	**Final Exam** In person: December 11 at 11:30 am

textbook

Open Text **SCI-OER: Introduction to Object Oriented Programming** details on course website
open source/free

The SCIOER text contains prerecorded videos, interactive tutorials, worked examples, and written notes. The e-text provides a table of contents that indicates which topics will be covered in each lecture. Use the e-text to introduce yourself to the topics ahead of each lecture and tutorial.

Lectures and Tutorials

- **Lectures:** Lectures will consist of a short review of the topics along with hands-on activities. Lectures will not be recorded. You can use the resources in the e-text if you are unable to attend a lecture.
- **In Person Tutorials** Lab sections will be used as in-person tutorials. Some course content will only be covered in those tutorials. In-person tutorials will not be recorded.
- **Bring your laptop to both lectures and tutorials as you will frequently be asked to write small bits of code during them.**

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duedates

This course has many graded components. With the exception of in-class quizzes, work is due at 11:59 pm on the due date shown.

Sept. 10	Independent Practice 1	
Sept. 14	In-Class Quiz	
Sept. 17	Written Homework 1	
Sept. 21	In-Class Quiz	
Sept. 24	Independent Practice 2	
Sept. 24	Written Homework 2	
Sept. 28	In-Class Quiz	
Oct. 1	Coding Assignment 1	late submission/redo Oct 29
Oct. 5	In-Class Quiz	
Oct. 8	Independent Practice 3	
Oct. 15	Independent Practice 4	
Oct. 19	In-Class Quiz	
Oct. 22	Written Homework 3	
Oct. 26	In-Class Quiz	
Oct. 29	Coding Assignment 2	late submission/redo Nov 19
Nov. 2	In-Class Quiz	
Nov. 5	Independent Practice 5	
Nov. 9	In-Class Quiz	
Nov. 12	Independent Practice 6	
Nov. 16	In-Class Quiz	
Nov. 19	Coding Assignment 3	late submission/redo Nov 26
Nov. 23	In-Class Quiz	
TBA	Final Exam	

assignment grading

- Independent practice assignments and in-class quizzes are machine-graded.
- Written homework will be graded by the instructional team.
- Coding assignments are graded partly by machine via and autograder and partly through scheduled interview/demo appointments.
  - There are four weeks in the semester during which coding assignments will be graded.
  - You may submit exactly one assignment for grading to any grading period. A repository with multiple assignments in it will be given a grade of 0.
  - Assignments must be submitted by the due date in order to be graded.
  - A coding assignment may be submitted in the next grading period at no penalty, however that is not advised as it will be extremely difficult to complete all three coding assignments in that case.
  - Work to be graded must be **committed and pushed to the required git repository by 11:59 PM** on the Sunday prior to the grading period. An automated script will download your submissions at 12:01 A.M on Monday.

All coding assignment grading includes a 1-1 appointment over MS-Teams. Make sure you have time during the week after the due date to schedule an appointment.

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Academic Consideration for Coursework

Regrades

You can ask for a regrade on coursework only if errors were made in the grading of your work. It is not a grading error if you simply got a lower grade than you were expecting. To request a regrade you must email a detailed explanation of exactly what the grading error is to the course email address within 5 days of receiving your grade. Be specific about what you believe was graded incorrectly. Your submission will be completely regraded. A regrade could result in your grade being reduced.

Coding Assignments

This course has a flexible submission policy for coding assignments. If you cannot meet the original submission deadline for a coding assignment, you may submit that work during the following grading period at no penalty. You may use this flexibility to redo an assignment if you wish. **However you may not submit two assignments in a single grading period.** Use this flexibility as a last resort. If you use this flexibility too early in the course, you greatly limit your time to complete all three coding assignments.

Independent Practice

If you cannot complete an independent practice assignment by the deadline you can make a request via email for academic consideration to have a later due date. Your request must be made at least 18 hours prior to the submission deadline and there must be clear evidence that you have been working on the independent practice assignment. Requests made without these two prerequisites will be denied. Your request must include an explanation of the reasons for the request but does not need to include personal details.

Written Homework

If you cannot complete a written homework assignment by the deadline you can make a request via email for academic consideration to have a later due date. Your request must be made at least 18 hours prior to the submission deadline and your email request must include clear evidence that you have been working towards completing the assignment. Requests made without these two prerequisites will be denied.Your request must include an explanation of the reasons for the request but does not need to include personal details.

In-Class Quizzes

Quizzes missed for reasons requiring academic consideration may be made up on the Tuesday following the quiz. Makeup quiz times will be posted on the course website. You must notify the course instructors by email of your absence at least 5 hours BEFORE the scheduled quiz in order to qualify to a makeup. The makeup quiz may be a different format than the in-class quiz.

If you feel that you merit academic consideration beyond the built-in flexibility of this course, you must provide documentation and written explanation to the instructor. In your request, please provide evidence that you have been working steadily on the course work to show that your request is not made as a result of procrastination. If you make multiple requests during the semester, you may be asked for additional documentation.

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topics by week

A more extensive list of topics and dates is found in the SCIOER textbook

WEEK	Lecture	In Person Tutorials
Week 0	OO vs Procedural Programming	Installing the SCIOER text (drop in)
Week 1	Classes, Objects, Messages	Git, Main Method
Week 2	Methods, Aggregation,Exceptions	Using VS Code, User Input
Week 3	Accessors & Mutators, Static keyword	checkstyle, ArrayList
Week 4	Single Responsibility, Testing	Junit
Week 5	Collections and Data Structures	no tutorials this week
Week 6	Streams, Text Files, Serialization	Try/Catch, Binary Files
Week 7	Polymorphism	Programmer Defined Exceptions
Week 8	Event Driven Programming	Customizing gradle
Week 9	Graphical User Interfaces	Graphical User Interfaces
Week 10	Debugging Strategies, Refactoring	Integrated Debugging
Week 11	Best Practices, Functional Programs	TBA
Week 12	Generics, Exam Review	no tutorial this week
TBA	Final Exam: in-person	

computing requirements

You should have a laptop to bring to lectures and tutorials. All coursework will be completed independently using the Java programming language. Third party libraries and frameworks require explicit approval of the course instructor. Keep reliable backup copies of all assignments as you may be asked to resubmit work at any time.

In particular we will use the following programming tools and languages, all of which are pre-installed on the SCIOER e-text.

- Open JDK 17
- Gradle 8
- Gitlab via `gitlab.socs.uoguelph.ca`
- Junit 5

You will be expected to demonstrate your knowledge without the use of an IDE. An IDE hides much of the process from beginners and prevents learning. We recommend using an editor, such as Sublime, or a less complex IDE such as VS-Code.

You must have access to a computing device and internet connection that allows you to share your screen in online meetings while having a voice conversation. While sharing your screen you will be asked to run your java programs so the device you use must be capable of compiling and running your java assignments. You will not be required to share a video feed.

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academic integrity

- The UofG Academic Misconduct Policy in the Undergraduate Calendar.
- The SOCS Academic Integrity Unit. Login with your central login credentials.

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. All students who take a SOCS course must pass the Academic Integrity Self Test.

For educational purposes, instructors impose conditions on assignments that may limit students' permission to collaborate with others or to utilize external sources (including, but not limited to, software, data, images, text, etc.). This includes any interaction with a large language model such as ChatGPT. Any permitted utilization must be done with proper references. Aiding and abetting is a punishable offence; students must be careful not to help others commit offences by giving out solutions or providing to access computer accounts. Instructors may use automated tools to detect possible cases of academic misconduct.

The use of an AI/Large Language Model (e.g. ChatGPT) will be required for specific assignments in this course. When use of the tool is required, it will be explicitly noted in the assignment instructions. Any use of an AI for this course that is not specifically identified in an assignment description constitutes an academic integrity violation.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member.

tldr;

1. do not share your assignment solution with anyone, even if it is only an outline.
2. do not use an AI to solve your assignments. If you cannot explain your work in person you are likely to get a zero on the assignment.
3. do not pay a third party to do your assignments. If you cannot explain your work in person you are likely to get a zero on the assignment.
4. if you use any sources other than the course textbook to help you with assignments, cite them.

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general policies

- **Communication & Email Policy** Major announcements will be sent directly to your university email address. As per university regulations, all students are required to check their University of Guelph e-mail account regularly: e-mail is the official route of communication between the University and its students.
- **Recording of Materials** Presentations which are made in relation to course work, including lectures, cannot be recorded or copied without the permission of the presenter, whether the instructor, classmate, or guest lecturer. Material recorded with permission is restricted to use for that course and may not be posted on any public space unless further permission is granted.
- **Accommodation of Religious Obligations**: if you are unable to meet an in-course requirement due to religious obligations, please email the instructor **within two weeks of the start of the semester** to make alternate arrangements. See the academic calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations.
- **Instructor's Role and Responsibility to Students** The instructor's role is to develop and deliver course material in ways that facilitate learning for a variety of students. A variety of materials, including notes and recorded lectures, will be made available on the course website and via the SCIOER textbook.
- **Students' Learning Responsibilities** Students are expected to take advantage of the learning opportunities provided. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who fall behind due to illness, work, or extra-curricular activities are advised inform the instructor about their situation as early as possible. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if warranted.
- **Accessibility** The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability, or for a short-term disability should contact Student Accessibility Services (SAS) as soon as possible. For more information, contact SAS at 1.519.824.4120 ext 56208 or accessibility@uoguelph.ca or wellness.uoguelph.ca/accessibility.

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code of conduct

Our learning environment must be a safe, and welcoming environment for all, regardless of ethnicity, gender, sexual orientation, ability, socioeconomic status, and/or religion (or lack thereof). This code of conduct outlines the expectations for all participants [1].

- **Expected Behaviour:** Members of our learning community are expected to:
  * participate in an authentic and active way, and in doing so, contribute to the health and value of our community,
  * exercise consideration and respect in their speech and actions,
  * attempt collaboration before conflict,
  * refrain from demeaning, discriminatory, or harassing behaviour and speech,
  * be mindful of your surroundings and your fellow participants, and alert community leaders (e.g. your instructor) if you notice a dangerous situation, someone in distress, or violation of this Code of Conduct, even if it seems inconsequential.
- **Citizenship & Participation:** Communities mirror the societies in which they exist and positive action is essential to counteract the many forms of inequality and abuses of power that exist in society. If you see someone who is making an extra effort to ensure our community is welcoming, friendly, and encourages all participants to contribute to the fullest extent, we want to know.
- **Unacceptable Behaviour:** Unacceptable behaviours include: intimidating, harassing, abusive, discriminatory, derogatory or demeaning speech or actions by any participant in our community, either in person, online, at any related events, or in one-on-one communications carried out in the context of community business. Harassment includes: harmful or prejudicial verbal or written comments related to race, religion, disability, gender, sexual orientation; inappropriate use of nudity and/or sexual images in public spaces (including computer labs and presentation slides); deliberate intimidation, stalking or following; harassing photography or recording; sustained disruption of talks or other events; inappropriate physical contact, and unwelcome sexual attention.
- **Consequences of Unacceptable Behaviour:** Unacceptable behaviour from any community member, including the course instructor and those members with decision-making authority, will not be tolerated. Anyone asked to stop unacceptable behaviour is expected to comply immediately. If a community member engages in unacceptable behaviour, action will be taken to ensure that such behaviour ends, beginning with action on the part of the course instructor, and escalating if necessary. Additional information on University policy regarding harassment, conduct, and human rights is available here.
- **If You Witness or Are Subject to Unacceptable Behaviour or Have Any Other Concerns:** please notify the course instructor as soon as possible. If you feel that the course instructor cannot or will not provide remedy for the situation, please contact any of these alternate resources:

  Associate Director, Undergraduate (ugraddir@socs.uoguelph.ca),
  Director of the School (director@socs.uoguelph.ca),
  Associate Dean, Academic (cpesada@socs.uoguelph.ca),
  Office of Diversity and Human Rights (dhrinfo@socs.uoguelph.ca, or ext 53000),
  Campus Community Police (ext 52245).

[1] Based on citizen code of conduct, distributed under a Creative Commons Attribution-ShareAlike license

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health & wellness

All members of campus play a role in fostering and promoting a safe, supportive environment, as well as good physical, emotional, spiritual, cultural, and mental health and wellness. The ongoing pandemic has forced all of us to adjust our work habits and our expectations of ourselves.

> **If you are sick or exhausted, take some time off.** School is not more important than your health.
> **If you are experiencing challenges, please contact the instructor.**There are resources on campus set up to help you.
> **Medical concerns?** Student Health Services at x52131
> **Threats of violence, personal safety?** Campus police at x2000
> **Psychological or emotional concerns?** Counselling services at x53244
> **Accessibility concerns?** SAS at x56208
> **Sexual assault?** Campus police at x2000, or counselling services at x53244
> **Mental Health concerns?** Please see the Mental Health Resources website.
> **Parenting?** Students who are also parents often face the barrier of exhaustion in the evening once children have finally gone to sleep. While I maintain the high expectations for all students in my classes regardless of parenting status, I am happy to problem-solve with you in a way that makes you feel supported as you strive for school-parenting balance.

Other sources of help can be found at the following links:

- Student Health Services, Monday to Friday, 8:30am-4:30pm, x52131, J.T. Powell Building
- Couselling Services, Monday to Friday, 8:15am-4:15pm, x53244, Level 3, University Centre
- Wellness Education Centre, Monday to Friday, 8:30am-4:30pm, x53327, J.T. Powell Building
- Student Support Network, Monday to Friday, 12:00pm-10:00pm, Raithby House
- Campus Community Police, 24/7, x2000, Trent Building
- Good2Talk, 1.866.925.5454
- Here 24/7, 1.844.437.3427