

Object-Oriented Concepts

SYLLABUS AND SCHEDULE | Winter Quarter 2023

Course description

Object-oriented principles including abstraction, encapsulation, and support for re-use. Object-oriented design essentials: contractual design, containment, composition, inheritance, overloading and polymorphism. Design variants and their short vs long-term impact, emphasized.

Prerequisite: CPSC 5005

Course information

Course code: CPSC 5011-02
credits: 3
Location: PIGT 204
Class times: Thu 6:00pm to 8:40pm
First session: Thu 1/5/2023
Last session: Thu 3/9/2023
Final exam: Thu 3/16/2023 6pm to 8pm

Instructor information

Instructor: Prof Susan Reeder
Phone: 206-296-5508
Email: sreeder@seattleu.edu
Office: SINE 290-05
Online office: 531 9189 9472 (Zoom)

Office hours: Tue 1pm to 3pm, Thu 3pm to 5pm & by appointment

Office (student) hours

The time I have listed as “Office hours” is time for you. Office hours are a chance for you to meet with me one-on-one or in small groups to discuss the course, your learning, your plans for the future, or just to check in. Office hours will be in person. You can schedule an appointment using Microsoft Bookings at <https://outlook.office365.com/owa/calendar/ReederAdvising@redhawks.onmicrosoft.com/bookings/>. If we are meeting over Zoom, we’ll use my Personal Meeting ID at <https://seattleu.zoom.us/j/5319189472>, and I’ve set up a waiting room to ensure you receive my full attention during your time slot – and to maintain your privacy.

Response times

The best way to reach me is to use my SU email address. Please do not use the Canvas email option as the message will not reach me in a timely manner.

I will check my email regularly. You can email me at any time, but you may not receive a response outside regular business hours. Generally, emails received before 3 p.m. will receive a response before I finish work for the day, and emails received after 3 p.m. will receive a response on the following business day. Business days are Monday–Friday, except for holidays. I aim to stay off email in the evenings and over weekends and holidays and encourage you to do the same so that you get some balance. If I plan to be available outside regular hours (for example, the evening before a big assignment), I will let you know.

Learning outcomes

On successful completion of this course (i.e. by *passing* this course), you will be able to

1. Specify and implement contractual design
2. Identify costs and benefits of OO relationships
3. Distinguish between and implement OO relationships (has-a, holds-a, and is-a).
4. Define, implement, initialize and manipulate heterogeneous collections
5. Implement and analyze design variants.
6. Reuse code, supporting or refining an established relationship.
7. Compare and contrast design decisions and OO relationship between C++, Java and C#
8. Compare and contrast the benefits of different C++ implementations.

Textbook

Object-Oriented Design Choices, Dingle, CRC, 2021

PB ISBN: 9780367820183

HB ISBN: 9780367820817

eBook ISBN: 9781003013488

Assignments and grading

Grading:

Programming Assignments 20%

Classwork 20%

Midterm Exam 30%

Final Exam 30%

ASSIGNMENT DEADLINES AND EXTENSIONS

Programming Assignments will not be accepted after the due date/time unless arrangements have been made at least 24 hours in advance.

The assignments in this course build on one another, so the feedback process is an important part of your learning. My plan is therefore to return your assignments as soon as possible after you have submitted them. Faster feedback means you're more likely to remember what you wrote and can more easily take the feedback on board for the next assignment.

It would greatly help the learning process if you are able to submit your assignment by the stated deadlines. If you find that you are unable to complete an assignment on time, *please communicate with me in advance*. I do understand that life happens and can sometimes get in the way. I'll do my best to be flexible; for that to happen, we need to keep in dialogue so that I know where you are in your learning and how I can best support you.

To help keep yourself on track, I strongly encourage you to plan ahead: Check the session-by-session schedule on Canvas to see when assignment briefings will be given and when assignments are due. This enables you to block out time in your calendar now so that you know when you will be working on assignments for this course. If you're wondering how much time you need to allow for completing assignments well, then I suggest you use the approach I take for my own coding: make a rough estimate of time and then multiply it by 2.5. This sounds like a lot, but I think you'll find it more realistic for managing your expectations and planning.

Exams:

- 1) All exams & quizzes are closed book & closed notes
- 2) Exams are based on material covered in class and emphasized in the programming assignments -- attendance and completion of the programming assignments strongly encouraged.
- 3) Failure to appear for an exam will result in a score of zero for that test. Makeups are given only for acceptable and documented absences. Makeups may be oral.

An agreement to receive an Incomplete (I) grade may be negotiated if your circumstances do not allow you to finish the course on time. The Incomplete Grades Policy of the university is available on the Office of the Registrar web site: <https://www.seattleu.edu/redhawk-axis/academic-policies/>

GRADING SCALE

A	100–94 [Superior]	B–	82–80	D+	69–67
A–	93–90	C+	79–77	D	66–63 [Poor]
B+	89–87	C	76–73 [Adequate]	D–	62–60
B	86–83 [Good]	C–	72–70	F	59 or less [Failing]

ACADEMIC INTEGRITY TUTORIAL

<https://www.seattleu.edu/academic-integrity/resources-for-students/>

A NOTE ABOUT GRADES

Sometimes I receive questions and complaints when students don't get perfect scores on their work. As you think about your grade, please keep in mind:

- Through our schooling, we have been socialized to focus on grades, oftentimes overlooking what we are learning or trying to learn.
- Practice interrupting your socialization about grades and focus on the goal of learning how to receive feedback and how to use it to improve your work in your next assignment.
- Ask yourself why you expect to receive a perfect score every time (and how your social identities may inform that expectation).

A general rubric will be provided with the first programming assignment. I always strive to give you quality feedback to help you understand why you received the score that you did. If you do not understand the feedback or would like to learn more from the assignment, please feel free to contact me.

How class will work

INSTRUCTIONAL METHODS

Education research shows that your learning is greatest when you are actively involved in making sense of new concepts (“constructing knowledge”) and when you do this in community with other students. This model is technically called “social constructivism,” and is closely aligned with the Jesuit teaching tradition (Ignatian pedagogy). We will use this model throughout the course, so you can expect to

- be engaged in plenty of classroom activities to build on the preparation materials you have completed for each class
- work in small groups during class and for those groups to change on a regular basis
- ask your instructor for clarifications, rather than expecting lectures.

ATTENDANCE AND PARTICIPATION EXPECTATIONS

Numerous research studies have shown that when students actively ask and answer questions, they take greater interest in the material, they clarify shared misconceptions, and they retain more information. Studies also show that missing classes – and therefore missing the opportunity to process ideas together with your peers – negatively affects your grades, even without an attendance grade. (Get in touch if you’d like to find out more about this.)

I would like to see all of you find ways to participate actively in class (in small- and large-group settings), as well as in any activities or discussions on Canvas. I will not take formal daily attendance, but I’ll get in touch with you if I notice you are regularly absent or if you appear to be inattentive in class, just to be sure you are ok and to find out what would best help you learn.

If you are sick, please stay home and rest so that you can recover more quickly and can be fully present in class when you are better. (See notes below on what to do if you miss a class.)

IF YOU MISS A CLASS

If you expect to be absent or to be late to a class, please e-mail me beforehand (or as soon as possible). I will pass on your apologies to the group at the start of class.

If you do miss a class, you need to obtain notes from one of your peers to catch up. (You might want to pair up with a classmate at the start of the quarter so that you know who to turn to first.) If, after going over those notes and checking the readings for the class, you still have questions,

please arrange to meet me during office hours to discuss. Remember to have those notes and your targeted questions ready so that we can use the time to focus on your learning.

COMMUNITY & INCLUSIVITY

Seattle University has a stated commitment to diversity and inclusivity. In part, this includes an expectation that all members of our campus community treat one another with respect and care in the classroom. Actions or statements which espouse the supremacy of one group of people over another, or which marginalize any group, are not welcome in our classroom. Such attitudes are destructive to both our learning process and our community. All students in this course are welcomed and valued.

Racism, sexism, homophobia, transphobia, and other forms of discrimination have no place on our campus or in our classroom. Our class, like our campus, is one community. We learn together. We work together. And we will respect one another. We teach all students, regardless of background or beliefs. All students are equally welcome and valued. Growth mindset includes our ability to grow together, to learn to be more tolerant, and to become more compassionate. No one is being asked to leave the table. Everyone is being asked to make room at the table, so that everyone has a seat and a fair chance.

If you find that anything in our class is failing to live up to these principles (including if you feel that I myself have failed to live up to them), I encourage you to bring this issue up, either to me, or to the Computer Science department chair, your advisor, your department chair, or another faculty or staff member you feel comfortable talking with, who could pass on your concerns to myself or my department chair.

Academic resources to support your learning

My goal is to create a learning environment in which you can be successful and feel supported. I will work hard to create and improve the learning environment throughout the quarter/semester based on my own observations of the course and your feedback on what would help you learn more. In return, I ask and encourage you to make the most of this learning opportunity.

If we are using a remote learning format, you may find that some of your previously successful strategies in face-to-face settings are less suited to this environment. Developing new strategies will help your learning greatly.

I encourage you to explore the services below and to work on the assumption that you'll always be developing some new strategies that will help you become a more flexible learner. I am keen to support you in that growth, and plan to build in opportunities for us all to share new strategies with one another either in scheduled class time or via Canvas.

LIBRARY AND LEARNING COMMONS

<http://www.seattleu.edu/learningcommons/>

LEARNING ASSISTANCE PROGRAMS

Learning Assistance Programs (LAP) provides peer tutoring, facilitated study groups, and learning strategy development through scheduled workshops and individual consultation sessions with a learning specialist. We offer these in various modalities (in-person, synchronous, and asynchronous), depending on university policy and LAP staff availability. Please visit our website <https://www.seattleu.edu/learning-assistance/> or e-mail us at learningassistance@seattleu.edu for the most updated information about accessing services.

University policies

SUPPORT FOR STUDENTS WITH DISABILITIES

If you have, or think you may have, a disability (including an “invisible disability” such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, but have not yet arranged support services and/or accommodations, I encourage you to do so through Disability Services staff at DS@seattleu.edu or (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.

If you expect to take your exams with accommodations approved by Disabilities Services, specific exam arrangements must be made at least one week in advance of the posted exam date.

Seattle University values diverse types of learners and is committed to ensuring that each student is afforded an equal opportunity to participate in learning experiences. For disability and other learning-related needs and accommodations that you have already arranged via Disability Services, please communicate with me during the first week of class. Should concerns arise at any point in the quarter/semester, please let me know as soon as possible. I am committed to working with you, so please do not hesitate to contact me.

NOTICE ON RELIGIOUS ACCOMMODATIONS

It is the policy of Seattle University to reasonably accommodate students who, due to the observance of religious holidays, expect to be absent or endure a significant hardship during certain days of their academic course or program. Please see, Policy on Religious Accommodations for Students (<https://www.seattleu.edu/media/policies/Policy-on-Religious-Accommodations-for-Students---FINAL.PDF>).

ACADEMIC POLICIES ON THE REGISTRAR WEBSITE

<https://www.seattleu.edu/redhawk-axis/academic-policies/>

Be sure that you understand the following university academic policies, posted on the Registrar's website:

ACADEMIC INTEGRITY POLICY:
ACADEMIC GRADING GRIEVANCE POLICY

HEALTH AND SAFETY PROTOCOLS

While there are no specific protocols in effect from the COVID-19 pandemic, everyone is welcome to wear a mask, if desired.

CHANGE IN DELIVERY OF INSTRUCTION

SU reserves the right to change the delivery of instruction for courses without prior notice due to COVID-19 or other events.