

# CS 381-001 Programming Language Fundamentals

4 credits

CRN 32556 - Winter 2025

**OSU catalog course description including pre-requisites/co-requisites:** An introduction to the concepts found in a variety of programming languages. Programming languages as tools for problem solving. A brief introduction to languages from a number of different paradigms. **Prerequisites:** CS 261 and (MTH 231 or CS225)

**Instructor:** Julianne Coffman

**Office Hours:** Posted on Canvas

**Meetings:** MW 10:00am – 11:50am in WLKN 110

**E-mail:** [coffmaju@oregonstate.edu](mailto:coffmaju@oregonstate.edu)

Email should be a secondary with the primary contact being Canvas messaging.

**TA Info:** Posted on Canvas

**Textbooks:** **Concepts of Programming Languages** by Robert W. Sebesta, 12<sup>th</sup> Edition.

**Canvas:** Announcements, office hours, weekly homework assignments, readings and other course information will be placed on Canvas.

**Learning Objectives:** On completion of the course, students should be able to perform the following tasks.

1. **Create** functional programs using *algebraic data types* and *recursive functions*.
2. **Produce and explain** the *type* and *result* of an expression in the context of functional programming.
3. **Produce** an *abstract syntax* for a language given its concrete syntax.
4. **Create** a *denotational semantics* for a language given its abstract syntax and an informal specification of its behavior.
5. **Produce and explain** the behavior of a program under *static* vs. *dynamic typing*, and discuss the benefits and drawbacks of each approach.
6. **Produce and explain** a program's output under *static* vs. *dynamic scoping* of names.
7. **Produce and explain** a program's output under different parameter passing schemes, such as *call-by-value* vs. *call-by-name* vs. *call-by-need*.
8. **Create** logic programs and express queries using *predicates*.

## **Course Policies:**

**Makeup Exams** – Makeup exams take a considerable effort to schedule, so they will not be given under normal circumstances. Any requests for makeup exams must occur in the first week of classes to be considered.

**Incompletes** –I will only consider giving an incomplete grade for emergency cases such as a death in the family, major disease, or child birth, while also having a passing grade. If you have a situation that may prevent you from completing the coursework, let me know as soon as you can.

### **Grading:**

Scores for coursework items will be posted on Canvas as they are graded. Feedback will be provided when available. You will turn in all coursework items through Canvas and/or Gradescope **before** 23:59 on the date they are due, be sure you give yourself an hour or more to submit coursework.

**Grade Evaluation:** Your course grade will be based on the following:

Homework	60%
Quizzes	20%
Final Exam	20%
<b>TOTAL -----</b>	<b>100%</b>

### **Homework:**

There are seven homework assignments. Assignments will be submitted to Canvas

- Homework submitted up to 24 hours late will receive a 10% penalty.
- Homework submitted from 24 to 48 hours late will receive a 20% penalty.
- Any **disagreement in scoring** must be addressed within one week of the work being graded. All questions about grading must be placed in the "Assignment Comments" section of the Canvas submission for that assignment. If a response to your comment is not posted within 48 hours you can email a TA requesting that they review the comments.

### **Quizzes:**

There are seven quizzes for this course, Quizzes administered in Canvas and contain multiple choice. True/False, matching and fill in the blank questions. Each quiz attempt has a 90 minute time limit and is not proctored. You will get two attempts at each quiz and your **AVERAGE** score is kept. Some quizzes contain randomly selected questions so you may receive different questions on each attempt at the quiz. Quizzes are open book. Late quizzes are not allowed. Your low quiz score will be dropped.

### **Final Exam:**

The cumulative final exam will be given in class during finals week at the time scheduled for this class, Wednesday March 19<sup>th</sup> at 9:30am

**Grading Scale:** *Note: Average score ranges given in interval notation*

<b>Grade</b>	<b>Average Score</b>
<b>A</b>	<b>[93, 100]</b>
<b>A-</b>	<b>[90, 93)</b>
<b>B+</b>	<b>[87, 90)</b>
<b>B</b>	<b>[83, 87)</b>
<b>B-</b>	<b>[80, 83)</b>
<b>C+</b>	<b>[77, 79)</b>
<b>C</b>	<b>[73, 77)</b>
<b>C-</b>	<b>[70, 73)</b>
<b>D+</b>	<b>[67, 70)</b>
<b>D</b>	<b>[63, 67)</b>
<b>D-</b>	<b>[60, 63)</b>
<b>F</b>	<b>[0, 60)</b>

\* REMINDER: A passing grade for core classes in CS is a C or above. A C-, 72 or below, is not a passing grade for CS majors.

**Attendance** - Be respectful of your classmates' right to learn and my right to teach by following these rules:

- Class attendance is not required, but it is **STRONGLY ENCOURAGED**.
- There will be ungraded in-class activities (ICAs) that will help with Homework assignments.
- When a class is missed, it is the STUDENT'S responsibility to obtain any notes, assignments.
- Please be on time for lecture because it can be disruptive to other students, as well as the instructor.

## **University Policies**

### **Academic Calendar:**

All students are subject to the registration and refund deadlines as stated in the Academic Calendar: <https://registrar.oregonstate.edu/osu-academic-calendar>.

### **Statement Regarding Students with Disabilities:**

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

### **Face Covering Guidance & Public Health Policy:**

The University's guidance for face coverings will be upheld in the classroom. Since the policy may change as the situation evolves please refer to the following link:

<https://covid.oregonstate.edu/face-covering-guidance-public-health-policy>

### **Expectations for Student Conduct:**

<https://beav.es/codeofconduct>

### **Reach Out for Success:**

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at [oregonstate.edu/ReachOut](https://oregonstate.edu/ReachOut). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

### **Student Bill of Rights:**

OSU has twelve established student rights. They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus: <https://asosu.oregonstate.edu/advocacy/rights>

### **Tentative Schedule**

<b>Week</b>	<b>Topic</b>
<b>1</b>	Introduction & Evolution of Major Languages & Paradigms
<b>2 -3</b>	Haskell
<b>4</b>	Syntax
<b>5</b>	Semantics
<b>6</b>	Data Types
<b>7</b>	Scope
<b>8</b>	Parameter Passing
<b>9</b>	Logical Programming languages & Prolog
<b>10</b>	Prolog Cont. Review
<b>11</b>	Finals Week