CPCSI 220 Principles of Programming Languages Fall 2025

Professor Karyn Doke

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- **Office**: Science Center 2015A
- **Office hours**: Mondays 1-2pm, Tuesdays 10:30-11:30am, Fridays 2-4pm, and by appointment. Feel free to visit during office hours, no prior notice needed, for project queries or chats.

Course Logistics

- **Class**: MWF 11-11:50AM, SCCT 3040
- **EdStem**: https://edstem.org/us/courses/81244/discussion
- **Gradescope**: https://www.gradescope.com/courses/1091519, **Entry Code: 5R4E77**

Course Description

Why are there so many programming languages and how do they differ? What is an appropriate programming paradigm to solve a particular task? In this course, we will learn about common programming paradigms, such as object-oriented programming, functional programming, and logic programming, while using different languages that demonstrate these paradigms. We will also discuss core programming languages concepts such as syntax and semantics, typing, compiling versus interpreting, and context-free grammars. Students will be expected to write programs in a variety of languages, complete a small number of other problem sets, and demonstrate understanding of programming paradigms.

Student Learning Objectives

After taking this course, students should be able to:

- Describe the major differences between programming paradigms, such as object-oriented programming, functional programming, and logic programming.
- Differentiate between the syntax and semantics of a programming language.
- Define different components of language design, such as compilation, scope, and type system.
- Write programs in a variety of languages and paradigms.
- Evaluate the pros and cons of different paradigms for solving a particular problem and select a language that uses an appropriate paradigm for the problem.
- Demonstrate knowledge of programming language environments by implementing an interpreter.

Textbooks

All readings will be through freely available online resources

Software

You’ll need access to a computing environment that supports programming in Prolog, Ruby, Python, Haskell, and Clojure. There are many choices, but for most of this class we will use VSCode. Our department System Administrator is Dave Deeley, sysadmincs@hamilton.edu. Please consult Dave if you have any questions or concerns with software installation.

Assessments

Each submission will be graded using the following scale:

- A: Fulfills all requirements with excellent style and correctness.
- B: Mostly fulfills all requirements, possibly with a few minor mistakes.
- C: Does not entirely fulfill the assignment but otherwise is good work.
- D: Hits on the main points of requirements but has one or more major flaws.
- F : Contains several major mistakes, but parts of it are salvageable.
- 0 : No attempt is made at solving the problem.

The following assessments will be used to determine your grade, with the given weight

Grade Category	Percentage
Assignments: *The largest portion of the work in this class will be completing homework assignments. Most of these assignments will be comprised of designing and writing computer programs. They are meant to be done with the computer/debugging environment, carefully tested, and meticulously commented. You may work with one other collaborator on these.*	35%
Codelets: *These are very short programming tasks that you should be able to complete in approximately 15 minutes. Codelets are graded right or wrong with no partial credit. You may work with one other collaborator on these.*	15%
Programming Labs: *Practicing code in a new language is the best way to learn! To support this, some class meetings will be programming labs using a flipped learning approach: pre-labs and readings on EdStem before class, and structured programming during class. Labs are ungraded, but active participation counts toward your participation grade. You'll work together, sharing ideas and exploring language concepts.*	0%
Participation: *Participation grades will be based attendance, labs, timeliness, and asking and answering questions in class and on EdStem.*	5%
Quizzes: *Weekly quizzes will occur on Fridays at the beginning of class.*	20%
Final exam: *Timed, 3-hour written exam given in person on* ***Monday, Dec 15th 7-10pm***	25%
Total	**100%**

At semester's end, I'll calculate your final grade based on the stated weights. Grades round to the nearest whole number (92.4 to 92, 92.5 to 93). Your grade will be converted to a letter grade based on these cutoffs: 45 F, 60 D-, 63 D, 67 D+, 70 C-, 73 C, 77 C+, 80 B-, 83 B, 87 B+, 90 A-, 93 A. There is no A+ grade. There will be no grade bumping. There is no extra credit in this course. Your grade in this class is the reflection of mastery of course content, and consistent demonstration of your ability to meet or exceed the grading criteria and rubrics of individual assignments and exams. Effort will not be factored into your grade. This course will use the Gradescope for all assignment submissions and posting grades.

EdStem

I will often use EdStem for communication. You are responsible for information provided through EdStem. EdStem is the best place to post questions or discuss homework assignments. For individual matters, please email me.

Late Work Policy

Late assignments will be accepted for up to 36 hours after it is due (without an extension request); after that (36 hours) a late submission will lower your grade on that assignment by 10% per day late. No submissions will be accepted after a period of one week from the due date. Other extensions will rarely be given for unusual circumstances; they must be requested before the deadline. *Codelets will not be accepted late*.

Incompletes

Incompletes will be granted for only the most extreme circumstances. To be considered for an incomplete you must 1) let me know at in advance that you are seeking an incomplete, and 2) provide documentation to support the request. This decision is also made in consultation with the Dean of Students.

Attendance

You are expected to attend every class. You may be excused only for college-sanctioned activities, and you must let me know about such absences as soon as you are notified. If you are sick or will be absent for a significant period of time, please contact me to work out a way to catch up. If you miss class for a college-sanctioned activity, you may make up the participation points by contacting me via email.

Re-Grade Requests

If you believe I have made a genuine error when grading your assignment, please submit a grade review request through Gradescope with an explanation describing why the grade received is incorrect, with references to the posted rubric. Grade reviews must be requested within one week of a grade being posted. After this time, no grade will be revisited. In the event of a grade review, the entire assignment will be reviewed. It is possible to receive a lower grade on a reviewed assignment. Similarly, inquiries about missing grades must be made within one week of grades being posted.

Academic Integrity & Collaboration

Hamilton's policy on plagiarism can be found in the Honor Code: https://www.hamilton.edu/student-handbook/studentconduct/honor-code. Cases of plagiarism will be taken seriously and referred to the Honor Court. Anything you turn in should be your own work, and each instance of collaboration with or borrowing from others should be properly acknowledged and cited. If you reference anything besides notes from class, the textbook, or the professor, you should cite it in your submission. This course features a significant amount of programming, which falls under this policy.

Important note: you may not have an AI agent (such as ChatGPT or Copilot) write any of the code you submit in this class. You should not even query such an agent about programming problems. Doing so would be equivalent to having a person write code that you submit, a clear violation of the Honor Code. **If you have Copilot or a similar AI-driven code completion installed, you should disable it for this semester.**

That said, I expect, and hope students will collaborate throughout this course, by discussing ideas and algorithms, but not by sharing code (or even looking at each other's code). You are allowed to collaborate with one other student in this class on codelets and assignments. **If you choose to collaborate, please submit one assignment with both of your names.**

If you discuss ideas related to an assignment, please cite that collaboration in your submission; this is fine and expected. On the other hand, submitting code or solutions that you did not create yourself is plagiarism. Your citations must be tied to a particular part of the assignment and must (1) identify the source, and (2) describe the nature of the help received. Below are two examples of proper citation in C++, which would appear beside the relevant code:

```
// CITE: Lucy Williams
// DESC: Discussed how to use anonymous functions with filter.

// CITE: https://www.math.rutgers.edu/~greenfie/gs2004/euclid.html
// DESC: Source of Euclid's method for determining GCD.
```

Good rules of thumb:

- Never have anyone else type into your text editor
- Never copy code from another student or the internet
- Cite any collaboration or outside reference you use
- **Ask if you are unsure**

Public Code Policy

You may not post code you write in this class publicly (e.g. GitHub, your blog, etc.), even after the semester ends. This is to ensure that current and future students aren't able to find answers. You may provide your code privately to potential employers.

Consequences for Academic Dishonesty

Academic integrity is important, and I will not tolerate violations. Egregious violation of these rules (i.e., cheating on a quiz or exam, plagiarism that is beyond overlooking a citation for a line or two of code, etc.) will result in a final grade of 'F' for the class.

Accommodations

If you believe you may need accommodation for a disability, contact me privately within the first two weeks of the semester to discuss your specific needs. If you have not already done so, please contact Allen Harrison, Assistant Dean of Students for International Students and Accessibility at 315-859-4021, or via email at aharriso@hamilton.edu. He is responsible for determining reasonable and appropriate accommodations for students with disabilities on a case-by-case basis.

Mental Health and Wellness

If you are feeling isolated, depressed, sad, anxious, angry, or overwhelmed, you aren't alone: we all struggle sometimes. Don't stay silent! Talk to a trusted confidant: a friend, a family member, a professor you trust. The counseling center offers completely confidential and highly professional services and can be contacted at 315-859-4340. If this seems like a difficult step, contact me. We can talk and call or walk to the counseling center together.

Course Outline

Tentative schedule and is subject to change

Week	Dates	Topics	Due
0	08/29	**Course Introduction**	
1	09/01 09/03 09/05	**Program Syntax** **Parsing & Regular Expressions**	*Last day to add a course (09/04) 2pm*
2	09/08 09/10 09/12	**Ruby**	Assignment 0 – Self-replicating program
3	09/15 09/17 09/19	**Ruby**	Assignment 1 – Regular Expressions
4	09/22 09/24 09/26	**Ruby**	Assignment 2 – Ruby part 1
5	09/29 10/01 10/03	**Clojure**	*Last day to drop without penalty (10/3) 3pm*
6	10/06 10/08 10/10	**Clojure**	Assignment 3 – Ruby part 2
7	10/13 10/15 10/17	**Clojure** *Fall Recess No Class* *Fall Recess No Class*	Assignment 4 – Clojure part 1

8	10/20 10/22 10/24	**Haskell**	Assignment 5 – Clojure part 2
9	10/27 10/29 10/31	**Haskell**	
10	11/03 11/05 11/07	**Haskell**	
11	11/10 11/12 11/14	**Prolog**	Assignment 6 – Haskell Part 1
12	11/17 11/19 11/21	**Prolog**	
Thanksgiving Break			
13	12/01 12/03 12/05	**Prolog**	Assignment 7 – Haskell Part 2
14	12/08 12/10 12/12	**Foreign Language Interface**	Assignment 8 – Prolog Poems *Last day of classes (12/12)*
15	**12/15**	**Final Exam: 7-10PM**	