Course Syllabus
CS 571 - Programming Languages
Spring 2024

Course Information
Instructor: Eric Atkinson
Email: eatkinson2@binghamton.edu
Office: EB N16
Office hours: TW 1-3pm

Class Time: MW 4:40-6:05
Location: Science 1 – Room 140

TAs:
Venkat Sujit Adabala: vadabal1@binghamton.edu
Keara Hill: khill9@binghamton.edu
TA Office Hours: TBD

Course Description
Selected topics in programming languages and alternative programming paradigms. Functional and imperative languages. Logic programming and object-oriented programming paradigms. Languages for concurrent computation. Semantics of programming languages.

Credit and Contact Hours
Credit Hours: 3
Contact Hours: 3 hours per week
Credit Hours Statement: This course is a 3-credit course, which means that in addition to the scheduled meeting times, students are expected to do at least 6.5 hours of course-related work outside of class each week during the semester. This includes time spent completing assigned readings, participating in lab sessions, studying for tests and examinations, preparing written assignments, and other course-related tasks.

Learning Objectives
This course is an introduction to programming languages with a focus on language design features and basic implementation techniques. Upon successful completion of this course, you will be able to:
- Proficiently use multiple different programming languages from different paradigms, including imperative, object-oriented, logic, and functional programming languages.
- Identify advantages and disadvantages of different languages, and which programming language is well-suited to a given task.
- Proficiently use advanced programming language features.
- Understand the basics of how to design and implement your own programming language.

Prerequisites and Corequisites
Prerequisite: Undergraduate Algorithms
Relationship to ABET

N/A

Textbooks and Other Materials

No textbook is required. The primary reference will be the class notes – in the form of powerpoint slides – which may reference other recommended references on a per-topic basis.

Topics/Class Schedule

Class topics will be divided in to the following units:

1. Imperative Programming
2. Object Oriented Programming
3. Programming Language Internals
4. Logic Programming
5. Functional Programming
6. The Lambda Calculus

Assignments

- 5-6 Homeworks
  - Each of these will consist of written questions whose solutions require understanding the concepts presented in class.
- 5-6 Programming Assignments
  - Each of these will consist of a series of programs students must write to demonstrate applications of the concepts presented in class.
- Pop Quizzes
  - Will be held randomly during class to allow students to gauge their progress and check their understanding of course material. The lowest two pop quiz scores will be dropped.

Grading

- Homeworks: 45%
- Programming Assignments: 45%
- In-Class Pop Quizzes 10%
  - The lowest 2 pop quiz scores will be dropped.

Basis of Grade Determination

The final grade for this course is largely based on your performance relative to the performance of other students in the class in accordance with the above percentages. The estimated grade cutoffs are A – 90-100, B – 80-89, C – 70-79, D – 60-69, F – less than 60.

Academic Honesty

CS faculty's academic honesty letter to students:
http://www.cs.binghamton.edu/~ghyan/courses/CSHonestyLetterToStudents.pdf

Watson academic honesty policy:
https://www.binghamton.edu/watson/about/honesty-policy.pdf

Course Policies

- Late policy
  - Please do not turn in programming assignments and homeworks late. It is difficult to catch up if you fall behind.
  - Late homeworks and programming assignments will receive a penalty of 10% per day. Any homework or programming assignment later than 5 days will receive a score of 0.
- In-class pop quizzes are closed-book and closed-web, and students may not collaborate or share answers in any way.
- Any homework or programming assignment a student turns in must be his or her own work. This class has a zero tolerance policy for plagiarism. Any homework or programming assignment found to have been plagiarized will receive a score of zero and may result in automatically failing the class.
  - Students may work in groups, but if they do, each student must turn in their own work and must list all collaborators at the beginning of each homework or programming assignment. Any failure to disclose a collaborator will be treated as plagiarism.
  - Students may use external resources, but must cite the original source for any material used (please note that Wikipedia is not an original source). Any unattributed use of external materials will be considered plagiarism. The only exception to this rule is that students need not cite the course materials (slides, course web site, etc.) nor any "recommended references" directly mentioned in the course materials.
    - Note about AI tools: It is *highly recommended* that students do *not* use generative AI tools such as ChatGPT and Copilot. These tools frequently reproduce verbatim the works they were trained on without any attribution whatsoever. Per the course policy, this is considered plagiarism. If a student turns in a homework answer or programming assignment that has been plagiarized, the fact that the plagiarism was committed by an AI tool is *not* a valid excuse. If students wish to use generative AI tools, they must be *extremely* careful to ensure the generated text is properly attributed *to its original source* (note that an AI tool is not an original source).
- Please do not post homework or assignment solutions to any public forum. If you use Github/Gitlab, make sure your repos are private!

Managing Stress & Disabilities

If you are experiencing undue personal or academic stress at any time during the semester or you have a disability that affects your study, we encourage you to seek support as soon as possible. I am available to talk with you about stresses related to your work in my class. Additionally, a wide range of campus resources is available to provide help, including:

- Dean of Students Office: 607-777-2804, https://www.binghamton.edu/dean-of-students/
- CARE Team: 607-777-2804, https://www.binghamton.edu/services/care-team/index.html
- University Counseling Center: 607-777-2772, https://www.binghamton.edu/counseling/
- Interpersonal Violence Prevention: 607-777-3062
- Title IX Office: https://www.binghamton.edu/services/title-ix/

- Services for Students with Disabilities: 607-777-2686, https://www.binghamton.edu/ssd/index.html
- Office of International Student & Scholar Services: 607-777-2510, https://www.binghamton.edu/international/student-scholar-services/index.html

COVID Policies

See the University's policies at https://www.binghamton.edu/health/services/covid/index.html