CS224 – Principles of Programmung Languages **Spring 2022**

Dr. Jill Zimmerman
Julia Rogers 1111111_2
jill.zimmerman AT goucher.edu
http://phoenix.goucher.edu/~jillz

Office Hours:

9:30 - 10:30 M
8:30-9:30 T
12:30 - 1:30 Th
others by drop in or appointment

Required Texts:
Modern Programming Languages: A Practical Introduction, 2nd Edition by Adam Brooks Webber
The Elements of Computing Systems, 2nd Edition by Noam Nisan and Shimon Schocken

Course web page http://phoenix.goucher.edu/~jillz/cs224

Course Description:
In this class, we will study the underlying principles of programming languages.We will be looking under the hood to the mechanisms that make programming languages work. Topics include syntax and semantics of programming languages, expression evaluation, procedure activations and parameter passing, and memory management. These topics will be illustrated with the use of languages Haskell, Java, and Prolog.

Course Objectives:
After successful completion of this course you will be able to

- recognize why various mechanisms are required in the implementation of programming language features.
- determine the result of various mechanisms in the use of programming languages
- use these mechanisms to write a compiler for a small programming language

Course Mechanics:
The heart of computer science is the solving of problems and the best way to learn is to jump in and try to solve some problems. That is why I employ active learning in my classroom. The majority of class time will be spent on activities as well as graded lab assignments and projects. You need to be an active participant in class, engaging with the material, sharing thoughts, and figuring out problems. I can't stress this enough – you simply can't be a passive learner in the class and expect to do well.

We have a semester long project in the course, broken into several parts. as well as small in-class lab assignments. You will be provided with a good deal of "scaffolding" in class so that you can successfully complete the projects but you will find that you will need to do a

significant amount of work outside of class to be successful.

The Project:
You have a large project in which you will write a compiler for a simple language. It is essential that earlier parts are working before you can move on to later parts. This makes managing due dates a key element to this course. I am therefore adding a small incentive to you for employing good work habits, aiding in your success. There will be four class days which will be labeled as "work days". You will get a bonus project point for employing good work habits on these days in particular. In order to earn this point I need to see evidence of:

1. **Sufficient preparation**. If you are reading the assignment in class trying to figure out where to start, then you are not prepared. Put together a game plan for how you will use the class time to maximize the time when you have me available to assist you.

2. **Use of my assistance**. Work days are where you have ample opportunity to ask questions so that you can move forward and be productive, so I will expect you to use my assistance as required. This is time when you know I am available to help.

3. **Ample progress.** If you are prepared and are using me as a guide then you should be making good progress during the class session. I will expect to see a draft of your work before you leave on the work day.

Academic Dishonesty:
Turning in work that was produced by someone else is cheating and will be subject to an Honor code violation. I will give you a lot of opportunity to collaborate with your fellow students and ask me for assistance, but if you violate that trust and cheat by submitting work that is not your own you will be hurting yourself and others in the following ways:

1. You would be failing to engage in the authentic learning and mastery of the academic material and thus harming your own education.

2. You would be reducing the enjoyment of accomplishments earned through genuine effort.

3. You would be creating an environment of broken trust, which then limits the ability of students to work together meaningfully and collaboratively.

4. You would be harming your reputation and face serious consequences.

Grading:
Your course grade will be based on the following:

Projects	35%
Lab Assignments	20%
3 Exams (10% each)	30%
Comprehensive Final Exam	15%
Total	100%