CS350 – Theory of Computation **Spring 2023**

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Office Hours:

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

Text: What Can Be Computed? by MacCormick

Course web page http://phoenix.goucher.edu/~jillz/cs350

Course Description:
We will examine what can and cannot be computed; what problems are tractable and what are intractable. In order to accomplish this we will use models of computation such as python programs and Turing machines.

This is a mathematically and theoretically oriented course and will require extensive problem solving and class participation. We will prove things relating to the very nature of computation! I hope you find the ideas in this course both beautiful and profound.

Even though this course has "theory" in its title, the material is practical as well. Techniques used in this course are used throughout computer science such as compilers, programming languages and text processing. Big ideas often have practical ramifications.

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

- construct and use mathematical models of computation
- formulate logical arguments to reason about what a model can and can not accomplish

Course Resources
We will be using an application JFLAP to build computation models. This application is freely available for download and is also installed on the phoenix server.

Course Mechanics:
You will need your textbook every class day and will need to read the relevant chapters in the text ahead of the class activities in order to be a fully active learner. Class activities will be followed by graded assignments which are to be done individually but discussions with your classmates about concepts and approaches are strongly encouraged. The rule of thumb is that you may discuss work but when it comes time to writeup the work, it needs

to be done by you alone.

All dates for activities, quizzes, and exams are provided in Canvas and you are expected to adhere to all scheduled dates. If the unforeseen happens such as an illness or family emergency, you will need to contact me as early as possible to discuss if due date extensions are needed. Do not assume that late assignments will automatically be accepted.

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 b 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:

Module Assignments	40%
3 Exams (15% each)	45%
Comprehensive Final Exam	15%
Total	100%