CSCI 364 – Foundations of Computing
Fall 2010

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Class: MWF 1:10pm–2:20pm in PPHAC 103
Office Hours: TBD (or by appointment)

Course Description

At this point in your education, you probably have an intuitive idea of what it means for one problem to be "harder" than another. How would you express this idea to someone else? Could you define it formally? Are you able to tell when a problem cannot be solved efficiently? Solved at all? By the end of this course, you be able to answer "yes" to each of these questions.

This is a course that explores the foundational ideas in our discipline—problems and algorithms—in a formal and precise way.

Course Objectives

At the completion of this course, you should be able to:

- Transform an informal problem into a formal problem.
- Determine where a problem lies in the complexity hierarchy.
- Use mathematical reasoning to prove statements about problems and algorithms.
- Understand the limits of computation and recognize problems that cannot be solved computationally.
- Recognize problems that are intractable.
- Reduce a problem to another problem.

Texts

"Formal Language: A Practical Introduction" by Webber.

Schedule

Topic	Weeks
Problems and languages	1
Regular languages	3
Context-free languages	3
Recursively enumerable and recursive languages	3
Computability	1
Complexity	4

Attendance Policy

This course does not have a rigid attendance policy in the sense that there is a rule describing the number of lectures that you must attend. However, please do not take this as a license to never show up to class; I expect you to be at each class meeting. Your attendance in lecture is important (beyond the usual reasons) in that homeworks, due dates, and readings will be assigned in person during lecture.

Academic Honesty Policy

Please read and understand the College's Academic Honesty Policy (which you can find in the Student Handbook). I will let you know what materials are appropriate to use for reference for specific assignments when they are assigned.

Since collaboration with your colleagues will be an important part of your careers, collaboration is permitted on all graded assignments (with the exception of exams). However, unless I state otherwise, you must turn in your own copy of each assignment *in your own writing*. If the ideas/algorithms expressed in an assignment are not entirely your own (*i.e.*, you worked with one of your colleagues), you must include a note stating who you worked with and the percent contributions of everyone who contributed to the work (including your contribution).

Grading Policy

There are four components to your grade:

- **Homework:** Homework will be handed out regularly throughout the semester. Homeworks will be graded for completeness, not correctness. **Weight: 20%**
- **Programming Projects:** Four programming projects will be assigned over the course of the semester. **Weight: 35%**
- **Tests:** There will be two midterm exams given during the semester. **Weight: 30%**
- **Final:** A cumulative final exam will be given. **Weight: 15%**

Other policy matters:

- **Grading Scale:** I will use the standard 90-80-70-60 scale with pluses and minuses to assign grades.
- **Late Homework:** I will accept homework beyond its due date with the penalty of 30% of the assignment's value per day. For example, if a homework is work 10 points and it is turned in two days late, the maximum amount of points one can receive is 4 points.
- **Lab/Exam Absence:** If you are going to miss an exam due to conflict, you must let me know before the exam. If you miss an exam due to some other circumstance, you must let me know as soon as possible and provide me with documentation. Valid circumstances include events like illness and family trauma. Invalid circumstances are events like hangovers and faulty alarm clocks.
- **Academic Accommodations:** Please let me know immediately if you have any disability that requires accommodation. Students who wish to request accommodations in this class for a disability should contact Mr. Joe Kempfer, Assistant Director of Learning Services for Disability Support, 1307 Main Street (extension 1510). Accommodations cannot be provided until authorization is received from the office of Learning Services.

This syllabus is subject to change.