

# CSCI 364 – Foundations of Computing

## Fall 2014

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Office Hours: MWF 9:00 - 10:00  
Thursday 1:00 - 3:00  
or by appointment

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## Course Description

In this course we will discuss issues surrounding the idea of computation. We will study models of computation, the relationship between computation and formal languages, and different classes of problems, including problems that computers cannot solve.

## Course Goals

Students who successfully complete this course will be able to:

- Describe different types of automata and the languages they recognize.
- Construct regular expressions for string matching.
- Identify NP-complete problems and design appropriate approximation algorithms.

## Required Textbook

*Introduction to the Theory of Computation* Third Edition by Michael Sipser.

Reading assignments will be given as we go. You are expected to complete the reading before class to facilitate class discussion.

## Assignments, Quizzes, and Tests

Your grade will be calculated based on the following items:

- **Homework** – The majority of the homework assignments for this class will be written problems. These will typically be assigned during class and due the next class period. There will also be some programming assignments for which you will be given more time.
- **Quizzes** – There will be a short quiz approximately once a week. These quizzes are not be designed to be difficult, but rather to make sure the class is absorbing the key concepts.
- **Tests** – There will be two tests throughout the semester. They are tentatively scheduled for October 1 and November 5. If these dates change I will give you at least 2 weeks notice.
- **Final Exam** – There will be a comprehensive final exam which will cover key issues from the first two tests as well as material from the final third of the semester.

## Grading

Grades will be weighted as follows:

40%	Homework
10%	Quizzes
30%	Tests
20%	Final exam

I will use the standard 90, 80, 70, 60 grading scale with pluses and minuses. I may relax these standards as necessary but I will not raise them.

## Course Policies

- **Late Policy** – Generally I expect assignments to be turned in on time. I understand that this is not always possible, so in most cases I will accept assignments one class session late without penalty. However, if this becomes a pattern it will start to affect your grade. To keep up the pace of the class, assignments will not be accepted after they are one session late unless there are special circumstances.
- **Extensions** – In certain circumstances granting an extension to an assignment's due date is perfectly reasonable. If you feel you need an extension, please contact me about it *before* the day it is due.
- **Absences** – You are expected to attend each class, but I understand that occasionally there will be exceptional circumstances. If you miss a class or know that you will miss an upcoming class, please contact me as soon as possible to explain the situation. You will still be expected to keep up with assignments and class content.
- **Academic Honesty** – You are encouraged to discuss and work with other students on homework assignments. However, the work you turn in should be your own. Help each other understand the concepts, but produce your own writing. See the Moravian College student handbook for more on the school-wide stance on academic honesty.
- **Disabilities** – Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support in the lower level of Monocacy Hall, or by calling 610-861-1401. Accommodations cannot be provided until authorization is received from the Academic Support Center.

## Communication

Always feel free to talk to me about any issues that may arise. Email is generally the fastest way to get in touch with me if you have a quick question. Though you are most likely to find me in my office during office hours, I will be around other times as well so don't be shy about stopping by.

Class-wide communication by email is important as well. I will set up a Google Group so that we can discuss things via email as a class.

## Course Outline

- Introduction
- Mathematics Review
- Automata and Languages
  - Finite Automata
  - Nondeterminism
  - Regular Expressions
  - Pushdown Automata
- Computability
  - Turing Machines
  - Decidability
  - Reducibility
- Complexity
  - Time Complexity
  - Space Complexity
  - Intractability
  - Approximation Algorithms

The details of this syllabus and schedule are subject to change based on our progress through the material.