

**Computer Science 2984  
Computational Thinking  
Spring, 2011**

**Instructor:** Dennis Kafura

**Class:** 11AM-12:15PM, Tuesday/Thursday, Robeson 116

**Office Hours:** 10:30AM-12:00PM, Monday/Wednesday, McBryde 122/A

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### Goals

This course has three interrelated goals. First, the course seeks to better inform prospective majors about the nature of computer science. The activities in the course explore basic computational structures. Second, the course seeks to engender a set of intuitions, perspectives, thought processes, and mental models that are indicative of how computer scientists view the world and conduct the practice of their work. These patterns of thinking are developed by the discovery gained through exploring a variety of computational ideas. Third, the course seeks to introduce recurring, fundamental concepts and structures – ideas that appear, perhaps implicitly, in several different contexts in the computer science body of knowledge or in several different computer science courses.

### Organization

The planned organization of the course is shown in the table below. As a first-time offering, the actual conduct of the course may vary from this plan. The dates of the midterm and final exams are, however, fixed.

<b>Date(s)</b>	<b>Topic</b>
January 18	Course Overview, Definition of computer science
January 20-February 1	State and Behavior
February 3 – February 15	Abstraction: Modeling perspective
February 17 – February 24	Relationships
March 1	Midterm exam
March 3	Return/Review of midterm exam
March 8-10	Spring Break
March 15-17	Concurrency
March 22-24	Abstraction: Engineering perspective
March 29 – April 7	Language concepts (lambda calculus)
April 12-19	Testing and Debugging
April 21-28	Data structures
May 3	Review, Course evaluation
May 6 (10:05AM-12:05PM)	Final Exam

**Textbook:** None.

**Prerequisites:** None

## **Honor Code**

Students in this course are bound by the Virginia Tech Honor Code. Unless otherwise indicated in the assignment all course work submitted by a member of the class must be that individual's work. The course includes significant ungraded in-class collaborative group work where interaction and sharing of ideas is important.

## **Grading**

The final grade will be determined by the grading scheme shown in the following table.

<b>Work</b>	<b>Points</b>
Assignments: individual or team work	200
Midterm exam (Tuesday, March 1, in class)	100
Final exam (May 6, 10:05AM-12:05PM)	100

There will be daily or weekly assignments. Unless otherwise indicated, the assignments will be due before the next class meeting and used for discussion in the next class meeting. Because timeliness is important, late assignments will not be accepted for grading. For all students, the lowest two assignment scores will not be considered in determining the final grade.

## **Team Work**

Some graded assignments will be clearly identified for completion by teams of, by default two, students. While students are strongly encouraged to work in teams when permitted, a student may complete a team assignment as an individual. All members of a team are expected to contribute equally to the submitted work and will be assigned the same score for the assignment. It should be reported to the instructor if a member of the team who does not fully participate in the team's work. To increase the benefit of working with people having different perspectives, two individuals may not be on the same team more than three times during the course.

## **Submitting Assignments**

The answers to an assignment should generally be submitted electronically as a PDF document. The document should be sent to the instructor's email address by the date and time indicated on the assignment. When submitted by a team, the names of all team members must be clearly given.