

Computer Science 4804: Introduction to Artificial Intelligence

Fall 2012

1 Course Description

1.1 Instructor

Instructor: Sanmay Das

Office: KWII 2226

Phone: 540-231-0908

Office hours: Tuesdays from 1:00-3:00 PM (McBryde 122), and by appointment (KWII 2226).

1.2 Staff

The GTAs for the class this semester are Tarek Kanan and TBA.

	TBA	Tarek Kanan
e-mail		tarekk@vt.edu
Office Hours		TBD (Torg 2030)

If you are unable to make it to office hours, you are welcome to send an email to the instructor or the GTAs to set up an alternative time to meet.

1.3 Overview

CS 4804 will cover the foundations of modern AI. We will focus especially on the areas of search, problem solving, knowledge representation, uncertain reasoning, and learning.

1.4 Prerequisites

The official prerequisites are CS 3114 and senior standing. It is important that you are comfortable with calculus, probability, statistics, logic, data structures, and the basics of graph theory and search algorithms. In addition, you should be a competent programmer. Please speak with the instructor if you are concerned about your background.

Note: If any student needs special accommodations because of a disability, please contact the instructor during the first week of classes.

2 Policies

2.1 Website and Communication

We will make extensive use of electronic communication and the course website. You are responsible for checking the course website regularly for announcements and course materials, as well as your e-mail for communications related to the class. The course website is located at:

<http://courses.cs.vt.edu/cs4804/>

2.2 Lectures

Lectures will be held from 11:00AM-12:15PM on Tuesdays and Thursdays in McBryde 318. You are responsible for all material covered and announcements made in lecture. In addition, there will often be in-class exercises or quizzes in class that will count towards your grade.

2.3 Homework

There will be 6-8 homeworks, consisting of a mix of “paper and pencil” problems and problems that involve writing code, running experiments, and interpreting your results. You should expect to do some writing in this class! There is no required language for writing code, but we may sometimes provide support code which you are free to use if you so desire.

2.4 Exams

There will be two exams, one in the middle of the semester and one at the end.

2.5 Assessment and Course Grade

Your overall course score will be determined using the following weights:

1. Class exercises and quizzes: 15 %
2. Homeworks: 50%
3. Exams: 35%

Students will be graded on a curve. There are no fixed grade thresholds.

If you would like to appeal your grade on any of the assignments or exams, you may do so within **one week** of the assignment or exam being handed back. In order to appeal the grade, please provide a detailed written statement explaining why you believe the assigned grade is incorrect, in addition to the assignment or exam. Your **entire** assignment or exam will be regraded and your grade may go up or down, or it may stay the same.

2.6 Honor Code, Collaboration, and Academic Integrity

The Virginia Tech honor code applies to all work you submit in this class. Collaboration is allowed to the following extent: you are welcome to discuss problems (both written and programming) with each other and to take your own notes during these discussions. However, you must write up solutions on your own. You must write, on the assignment, the names of students you discussed each problem with, and any external sources you used in solving the problem.

3 Textbook and Syllabus

3.1 Textbook

There is one required textbook: *Artificial Intelligence: A Modern Approach* (3rd Edition) (AIMA) by Stuart Russell and Peter Norvig, published by Prentice Hall. Check the book's website: <http://aima.cs.berkeley.edu> for further information. This is a terrifically useful, comprehensive textbook that will be a worthwhile addition to your bookshelf.

3.2 Syllabus

This syllabus is a broad outline and may change based on time constraints or other factors. Chapter numbers below refer to the AIMA text.

1. What is AI? History and foundations. The agent perspective on AI (Chapters 1 and 2)
2. Search, local search, game playing, constraint satisfaction problems (Chapters 3 through 6)
3. Logic, propositional and first-order (Chapters 7 through 9)
4. Uncertainty and decision-making (Chapters 13, 16, and 17)
5. Supervised learning (Chapter 18)
6. Reinforcement learning (Chapter 21)