Traditionally, the programmer solves a computational problem by designing an algorithm and encoding it in an implemented programming language. Research in artificial intelligence and computational logic has led to an alternative, “declarative” approach to programming, which does not involve encoding algorithms. A program in a declarative language only describes what is counted as a solution. Given such a description, a declarative programming system finds a solution by the process of automated reasoning.

In this class, you will learn to use the declarative programming tool CLINGO, which has found applications in many areas of science and technology. You will study the syntax and semantics of the input language of CLINGO, write programs in this language, and read papers on the theory and applications of declarative programming.

Readings. There is no textbook for this course. The CLINGO user guide, lecture notes, and relevant papers will be posted on the class homepage.

Software. The system CLINGO and its two components, GRINGO and CLASP, are installed on the departmental machines:

```
/projects/tag/clingo-4.5.4-linux-x86_64/clingo,
/projects/tag/gringo-4.5.4-linux-x86_64/gringo,
/projects/tag/clasp-3.1.4/clasp-3.1.4-x86_64-linux.
```

They can be also downloaded from the site

http://potassco.sourceforge.net/.
Programming Assignments. You will be given a series of programming assignments. Your program and the output that it produced should be emailed to the instructor and to the TA by the due date. The program and the output should be included in the body of your message; don’t send them as attachments. If you get a reply with questions or comments about your solution, please get back to us promptly.

If you need help or advice, talk to the instructor or the TA. Before submitting your solution for grading you should not talk about the assignment to other students or look for similar programs in books or on the web. Solutions to programming assignments will be discussed in the first class meeting after the due date, and at that time you will get an opportunity to compare your program with programs written by others.

Quizzes and Exercises. Several quizzes on the theory of declarative programming will be given during regular class meetings. You will be allowed to use hard copies of all materials posted on the class homepage or handed out in class, and any notes that you made during the semester. The dates of quizzes will be announced a week in advance.

There will be no other tests and no final, and there will be no make-up quizzes. If you become ill and miss a quiz, tell the TA about it and get a medical note. If we have made a mistake in grading your quiz then send the TA an e-mail message describing the problem within a week after we return the graded work to the class.

To help you prepare for the quizzes, we will give you a series of exercises to work on at home. Solutions to the exercises will be discussed in class. You are not expected to submit your solutions for grading.

Grading. Your final grade will be determined by the programming assignments and the quizzes. They will have the same weight. The lowest programming assignment score and the lowest quiz score will be dropped.