CARLETON UNIVERSITY
SCHOOL OF COMPUTER SCIENCE

COMP 3400A: Computational Logic and Automated Reasoning

Winter Term 2016

Instructor: Prof. Leopoldo Bertossi
`bertossi@scs.carleton.ca`
`http://www.scs.carleton.ca/~bertossi`

Course Web Page: `http://www.scs.carleton.ca/~bertossi/complog/index.html`
All announcements are made through the News section of this page. Check it frequently.

Lectures: M & W 16:00-17:30. Room: SA 317.

Office hour: Room Herzberg 5125A. W 13:30-15:00.

Prerequisites: COMP 1805.

Description:

This course is about using different kinds of applications of symbolic logic, in particular classical predicate logic, to: (a) represent knowledge, (b) model computational problems, and (c) solve them by means of automated reasoning.

Special emphasis is placed on logical descriptions of possibly hard combinatorial and computational problems. Some automated reasoning systems will be used to model problems and compute from their logical representations, among them: Otter/Prover9/Mace, Prolog, DLV, Datalog.

Topics include: Introduction to classical logic and reasoning. Classical reasoning systems and their use. Elements of knowledge representation and commonsense reasoning. Logical description of combinatorial problems. Elements of logic programming. Introduction to answer set programming and its applications.

The course emphasizes concepts, techniques, and applications rather system issues. Programming of the usual kind is not considered for this course.

This course combines well with courses on artificial intelligence, knowledge representation, data management, algorithms, declarative programming, and formal methods in software engineering, but none of them is a prerequisite.

Assessment: Around 6 assignments related to the use of automated reasoning systems: 60%. Two midterm tests taken in class (the second one on April 6th): 20% each. To pass the course the average of the two tests must be at least 35%.

Reading Material (mandatory):

1. Lecture notes posted after every lecture on the course web page.
2. Relevant survey and research papers will be posted for possibly mandatory reading.