CSE 505 – Computing with Logic Course Information

Fall 2017

Stony Brook University

Instructor: Dr. Paul Fodor

http://www.cs.stonybrook.edu/~cse505

Course Description

- "The course explores logic-based computing and logic programming. It includes an introduction to programming in logic, covering basic techniques for solving problems in a logic programming system. Particular attention will be paid to user interface issues and how a logic system can provide a useful computing environment. The course covers implementation issues, emphasizing how a logic programming system generalizes both traditional programming language systems and traditional database systems." (https://www.cs.stonybrook.edu/students/Graduate-Studies/courses/CSE505)

General Information

- Meeting Information:
  - Lectures: MoWe 2:30PM - 3:50PM, Harriman Hall 116.
  - Course Web page: http://www.cs.stonybrook.edu/~cse505
- Blackboard will be used for assignments, grades and course material

Instructor Information

- Dr. Paul Fodor
  214 New Computer Science Building
- Office hours: Mondays and Wednesdays 5:30PM-7:00PM.
- I am also available by appointment
- Email: paul(dot)fodor(at)stonybrook (dot) edu
  - Please include "CSE 505" in the email subject and your name in your email correspondence

Course Outcomes

- Develop a fundamental understanding of logic as a programming language.
- Explore the computable fragments of first-order logic.
- Study the use of logic for specifying and programming complex systems.

What will you learn in CSE505?

- Logic Programming:
  - Programming in Prolog
  - Computational Basis
    - Resolution, Unication, Memoization
  - Extensions and Applications
    - Non-monotonic reasoning
    - Knowledge Representation
    - Probabilistic Logic Programming
    - Satisability (SAT) and descendants
    - Constraint Programming
    - Abduction and Inductive Logic Programming

Logic Programming

- A framework for unambiguously specifying knowledge and computation

Textbooks

- Foundations: Ulf Nilsson, Jan Maluszynski, Logic, Programming and Prolog, Wiley. Online (PDF); linked from Blackboard.
- Programming in Prolog: Ivan Bratko, Prolog Programming for Articial Intelligence, 3rd edition, Addison-Wesley; ISBN: 0201403757.
- ASP: Michael Gelfond, Yulia Kahl, Knowledge Representation, Reasoning, and the Design of Intelligent Agents: The Answer-Set Programming Approach, Cambridge University Press. ISBN-13: 978-1107029569.
- Additional References:
  - Michael Spivey, An introduction to logic programming through Prolog, Prentice Hall, ISBN: 0135360471.
  - Edmund Burke, Eric Foxley, Logic and its Applications, Prentice Hall, ISBN: 0130302635.

Grading Schema

- Grades will be based on homework and exams according to the following formula:
  - Homework assignments = 15%
  - Project phase 1 = 2.5%
  - Project phase 2 = 2.5%
  - Project phase 3 (final) = 10%
  - Quizzes = 10%
  - Midterm exam 1 = 20%
  - Midterm exam 2 = 20%
  - Final exam = 20%

Examinations

- Midterm exam 1: Monday 10/16, during class time, in classroom.
- Midterm exam 2: Monday 11/13, during class time, in classroom.
- Final exam: Tuesday, December 12, 2017, 5:30-8:00 PM, in classroom (see the Stony Brook University Final Exam Schedule Calendar in http://www.stonybrook.edu/registrar/finals.shtml)

Grading Schema

- **Grade Cutoffs**
  - A [95-100], A- [90-95), B+ [87-90), B [83-87), B- [80-83), C+ [77-80), C [73-77), C- [70-73), D+ [65-70), D [60-65), F [0-60)
  - ***SPECIAL RULE:*** If all your grades, including homework assignments, quizzes, recitation and your three exam grades are above the respective class averages, you're guaranteed to receive a grade of C or higher for this class.
  - There will be extra credit problems as a part of quizzes and homework assignments which values to an increase of less than 4% in the final grade.
  - There will be in-class quizzes / brief assessments used to practice the class material and measure growth in knowledge, abilities, and skills. They will be solved in class and they are valued 2 points each.

Grading

- The final grade you receive in this class will reflect, as far as possible, the extent to which you have mastered the concepts and their applications.
- How much someone needs a grade, or how close they are to the next higher grade, will have no effect on grade.
- As the instructor, I want everyone to do well in this course, and will make every reasonable effort to help you understand the material taught.
- However, the grades provided at the end of the semester are final, except for rare situations involving grading errors.
- They will not be altered for any reason, so please do not ask me to do so.

Assignments

- Homework assignments due on fixed dates and times.
  - **no late submission is permitted**
- All assignments should be submitted electronically
  - Blackboard

Regrading of Homework/Exams

- Please meet with a TA or the instructor and arrange for regrading.
- **You have one week from the day grades are posted or mailed or announced**
  - Late requests will not be entertained

Academic Integrity

- The following rules are posted in every course syllabus: "*Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong.* ***Any suspected instance of academic dishonesty will be reported to the Academic Judiciary.*** *For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at* http://www.stonybrook.edu/commcms/academic_integrity/"

Academic Integrity

- You can discuss general assignment concepts with other students: explaining how to use systems or tools and helping others with high-level design issues
- You **MAY NOT share** assignments, source code or other answers by copying, retyping, looking at, or supplying a file
  - Assignments are subject to manual and automated similarity checking (We do check! and our tools for doing this are much better than cheaters think)
- If you cheat, you will be brought up on academic dishonesty charges - we follow the university policy:
  - http://www.stonybrook.edu/uaa/academicjudiciary

Examples of Academic Dishonesty

- Using source code or pieces of a paper from the internet without properly citing the source.
- Buying or selling source code.
- Representing someone else's source code as one's own. If another person's code is being used, it must be properly cited.
- Unpermitted collaboration (on a paper, homework, lab reports, etc.). Unless an instructor has explicitly approved working together, students should assume, for their own protection, that it is not permitted.
- Helping someone else to plagiarize from one's own homework (for example, by giving them a copy of yours, or doing it for them).

Disability

- If you have a physical, psychological, medical or learning disability, contact the DSS office at Room 128 ECC. Phone 632-6748/TDD
- If you are planning to take an exam at DSS office, you need to tell me ahead of time for every exam.
- **All documentation of disability is confidential.**

Course Software and Facilities

- SWI-Prolog, XSB Prolog, Flora-2, clingo: freely available for Unix-based systems (Linux, Solaris, BSD, …) and Windows.
- Work from home or use CS Graduate Lab.
  - **You can also use the SINC sites, but you have to download a binary version of the software**

Course Support

- Course web pages are partly hosted by the Blackboard system.
- Course Material: handouts, homeworks, notes, etc will be available directly from the course web site.
- Course Announcements: available from the blackboard system.
  - Check these regularly!
- **Piazza**
- Use this to discuss any course-related material: lectures, homework problems, exams, etc.
- All homework assignments will be submitted via the Blackboard system.

Questions

- How to contact course staff:
  - Post your question on Piazza.
  - Come to my office during my office hours:
  - Send me email. (Post on discussion board unless the question is personal).

Catastrophic events

- Major illness, death in family, …
- Formulate a plan (with your CEAS academic advisor) to get back on track
- Advice
  - Once you start running late, it's really hard to catch up

Please

- Please be on time
- Please show respect for your classmates
- Please turn off (or use vibrate for) your cellphones

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- On-topic questions are welcome

Welcome and Enjoy!