CSE371 ˙MAT371
LOGIC
SPRING 2024
Professor Anita Wasilewska

Course Webpage:
http://www3.cs.stonybrook.edu/~cse371

Time: Tuesday, Thursday 4:00pm - 5:20 pm
Place : Earth&Space 079
Professor Anita Wasilewska
e-mail anita@cs.stonybrook.edu
Office phone (631) 632 8458
Office location: New Computer Science Department, office 208
Office Hours: Tuesday, Thursday 6:00 pm - 7:00 pm and by Appointment
I also read emails DAILY and respond within a day - two to students e-mails

Teaching Assistants tba on Brightspace
TAs office hours: tba
TA e-mail to be announced
TA Office Location 2126 Old CS Building

Course TEXTBOOK
Anita Wasilewska
LOGICS FOR COMPUTER SCIENCE: Classical and Non - Classical
Springer Nature Switzerland AG 2018 2018
SBN 978-3-319-92590-5 ISBN 978-3-319-92591-2 (e-book)

VIDEO LECTURES
We have a YOUTUBE CHANNEL: LOGIC, Theory of Computation
https://www.youtube.com/channel/UCLZp06JC9yit6M_YW3XuvIw
The first 4 Lectures are for the Theory of Computation, the LOGIC Lectures follow.
The YOUTUBE CHANNEL contains a set of VIDEOS filmed in Stony Brook TV Studio that cover Chapter 1 to Chapter 11 of the BOOK.
Please use them as a suplement to my Lectures when you study at home.
Course webpage contains TWO SETS of Lectures SLIDES

L1. A set of very detailed CLASS Lectures that are complementing the Video Lectures.

CLASS Lectures are more detailed and contain many more examples and problems than the Videos Lectures. There are 3 - 5 CLASS Lectures for one Chapter of the book. i.e for one VIDEO Lecture.

The Class Lectures contain a lot examples and carefully written detailed solutions for many of the homework problems.

L2. VIDEO Lectures are created especially for the Book Chapters VIDEOS so students can follow the Video Lectures, chapter by chapter, with exactly the same slides in hand that were used in the VIDEOS.

Course Goal

The goal of the course is to make student understand the need of, and to learn the formality of logic. The book, and the course is developed to teach not only intuitive understanding of different logics, but (and mainly) to teach formal logic as scientific subject, with its language, definitions and problems.

I will progress relatively slowly, making sure that the pace is appropriate for the students in class. The book is written with students on my mind so that they can read and learn by themselves, even before coming to class. For sure, it is also essential to study after the class.

Important

Students are responsible to study chapters examples and problems solutions that are not included in the Lectures Slides and do the Problems located at the end of the chapters. Problems are similar to the examples and and detailed solutions in the Chapter and previous tests solutions posted on the course webpage. Use them for extra practice.

TESTING

All tests are will given in CLASS.

The PRELIMINARY schedule is posted below and on the course webpage. Changes will be posted on the course webpage and on Brightspace WE DO NOT GIVE MAKE-UP TESTS.

GRADING PRINCIPLES and WORKLOAD

Workload

There will a Midterm test, a Practice Final (for extra credit), and a Final examination.

The consistency of your efforts and work is the most important for this course.

None of the grades will be curved

Records of students points are kept on Brightspace

Contact the ONLY TAs for information about grading, grades changes, etc....
TESTS cover Lectures and Book Chapters only for the portion of material that was covered in class before the dates of tests. Practice Final will cover material after Midterm. Final will contain 1-2 Problems from Midterm material and Problems from the material covered after Midterm. Tests problems will be taken mainly from examples, exercises and problems solved in the Book or will be similar to problems from previous Quizzes and Tests as published on the course Webpage.

Midterm (100pts)
Midterm will cover material from all Lectures given before Midterm

Practice Final (15 extra pts) - it is an in class test and will have Problems from material covered after Midterm.
We will correct only one problem and post the solutions for you to study for Final.

Final (100pts)
Final will cover mainly material Lectured after Midterm but there will be 1-2 questions from Midterm material.

Extra Credit I may give some extra credit problems on Tests.

TESTS POLICY
We do not give makeup tests except of documented cases of Illness or other documented emergencies.

Previous TESTS
I posted a collection of past Tests on the course Webpage. They are designed to help you to learn what you have learned and what you still may not understand.

Final grade computation
You can earn up to 200 points + x extra credit points = (200 + x ) points during the semester.
Extra points are BENEFICIAL for students as they add to the TOTAL number of points!!

None of the grades will be curved
The grade will be determined in the following way:
# of earned points divided by 2 = % grade.
The % grade is translated into a letter grade in a standard way i.e.
100 – 95 % is A, 94 – 90 is A–,
89 – 86% is B+, 85 – 83 % is B, 82 – 80 % is B–,
79 – 76 % is C+, 75 – 73 % is C, 72 – 70 % is C–,
69 – 60 % is D range and F is below 60%.

TESTS PRELIMINARY SCHEDULE
Changes, if any, will be posted on Brightspace and the course Webpage

MIDTERM Tuesday, March 5
Spring Break March 11 - March 17
Practice Final Tuesday, April 30
COURSE CONTENT

The course will follow the book very closely and in particular we will cover some material from the following chapters and subjects.

1. Paradoxes and Puzzles (Chapter 1)
2. Introduction to classical Logic (Chapter 2).
   Propositional and predicate languages. AI languages. Basic propositional and predicate tautologies. Equational Laws for quantifiers.
3. Propositional Semantics: Classical and Many Valued (Chapter 3).
   General definition and examples. Definition of a formal proof. Relationship between proof systems and their semantics. Definition of notions of soundness and completeness of a given proof systems relatively to given semantics. Definition of a logic as a complete proof system.
   Hilbert style proof systems for classical propositional logic. Proofs of the Deduction theorem, and two different proofs of the Completeness theorem.
7. Introduction to Intuitionistic and Modal logic (Chapter 7).
   Reduction of Predicate logic to Propositional logic. Proof of the Completeness Theorem.
    Automated Gentzen type proof system QRS. Constructive proof of the Completeness Theorem.
11. Formal Theories and Gödel Theorems (Chapter 11).

Academic Dishonesty
The following statement about academic dishonesty, is required to be included in syllabi for all undergraduate courses:

"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. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at the academic judiciary website.”

Be advised that any evidence of academic dishonesty will be treated with utmost seriousness. Those involved will be prosecuted to the fullest extent permitted by the University and College policies.

Student Accessibility Support Center Statement
If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or via e-mail at: sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement 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/uaa/academicjudiciary/

Stony Brook University Syllabus Statement If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or http://http://studentaffairs.stonybrook.edu/dss They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: http://www.sunysb.edu/ehs/fire/disabilities.shtml

Critical Incident Management
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students’ ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.