State University of New York Polytechnic Institute
MAT 115 : Finite Math for Computer Science

Instructor: Dr. Chen-Fu Chiang
Semester: Spring 2018
Time: MW 10:00 am - 11:50 am
Location: Donovan 1107
Office Hours: MTW: 1:00 pm - 2:30 pm | Tue: 10 am - 11:50 am | by appointment
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TA: Ronik Jonathan Lagisetty
Office Hours: Tue: 3:30 - 4:30
Location: Kunsela C122
Email: lagiser@sunyit.edu

Text and References

The material is mainly based on my lectures. There have been various textbooks for this subject. I would recommend you check the following textbooks (resources) and decicde which one suits you.

1. Discrete Mathematics and Its Applications Seventh Edition 7th Edition (by Kenneth Rosen)
2. A Short Course in Discrete Mathematics for Students of Computer and Computational Science, and Mathematics for Algorithm and System Analysis, by Edward A. Bender and S. Gill Williamson, 2004. Available for download at http://cseweb.ucsd.edu/~gill/BWLectSite/.
3. Exams and homework problem sets from previous semesters can be useful for your practice. They can be found on my website at https://www.cs.sunyit.edu/~chiangc. It is recommended that you practice on the past exams before you take the exams.

Course Description and Goals

Math 115 Finite Mathematics for Computer Scientists will cover a number of topics useful to students majoring in Computer and Information Science (CS), Computer and Information Systems (IS), Applied Computing, and Network and Computer Security (NCS). See the course outline below for details of our coverage.

Course Goals

- Introduce students to finite mathematics and motivate the topic through examples from computer science

- Introduce the basics of propositional and predicate logic, concepts from set theory, functions, relations, lists, several methods of logical proof, and introduce students to the basics of probability theory, counting techniques, and graph theory

- Provide students with a framework of homework assignments and assessments that develop their logical problem-solving capabilities

Student Learning Outcomes

- An ability to apply knowledge of computing and mathematics appropriate to the programs student outcomes and to the discipline

- An ability to use current techniques, skills, and tools necessary for computing practice

- An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices

Topics

- Arithmetic and Logic

  - Boolean Functions
  - Truth Table
  - (Propositional + Predicate) Logic

- Numbers, Sets and Functions

  - Number Theory and Cryptography
  - Induction Proofs
  - Sets
  - Functions and Permutations

- Lists, Probability and Graphs

  - Lists and Counting
  - Introduction to Probability Theory
  - Basic Concept in Graph Theory

- If time allows, we will explore topics such as Satisfiability Problems.

Grading (Tentative)
The lecture format will be the basic mechanism used in the course. Computer demonstrations in the classroom will be used whenever appropriate. Assessment of student performance will use a criterion-referenced model which will include written assignments and quizzes (35%, quizzes are based on reading assignments), regular examinations (midterms 40%, the best 2 of 3 midterm scores will be counted), and a comprehensive final exam (25%). It is encouraged that you work in groups when solving homework problems. A group of size three is encouraged. Due to the size of the class, and the logistics involved, late homework will not be accepted unless you have made prior arrangements with me. The acceptable format of your solution will be specified in the assignment. All examinations are closed-book. A typical grading scale will be as follows:

Percent	Grade
97 - 100	A+
93 - 96	A
90 - 92	A-
87 - 89	B+
83 - 86	B
80 - 82	B-
77 - 79	C+
73 - 76	C
70 - 72	C-

65 - 69   D+
60 - 64   D
Below 60   F

Attendance Policy
Attendance and active class participation are required. Be prepared to participate by asking and answering questions during class meetings. Please send me an email if you know you have to miss a class.

Academic Integrity/Policy
Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an F for that assignment (and may, depending on the severity of the case, lead to an F for the entire course). I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, do not cheat by giving answers to others or taking them from anyone else. The code of academic conduct is detailed on the SUNY Poly student handbook. Make-ups are only given under extreme circumstances. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone.

Accommodations for Students with Disabilities registered at SUNY Polytechnic Institute
In compliance with the Americans with Disabilities Act of 1990 and with Section 504 of the Rehabilitation Act, SUNY Polytechnic Institute is committed to ensuring educational access and accommodations for all its registered students seeking access to meet course requirements and fully participate in programs or activities. SUNY Poly students with documented disabilities and medical conditions are encouraged to request these services by registering with the Disability Services Office and discussing your need for accommodations. For information or an appointment contact the Director of Disability Services, located in Utica, B101 Kunsela Hall and in Albany in the Student Services Suite 309 Nano Fab South or by phone (315) 792-7170; or by email ds@sunyit.edu.