

State University of New York Polytechnic Institute

MAT 115 : Finite Math for Computer Science

Instructor: Dr. Chen-Fu Chiang
Semester: Fall 2023
Time: MW 4:00 pm - 5:50 pm
Location: Kunsela Hall A135
Office Hours: Monday : 2:00 pm - 4:00 pm || Wednesday : 2:00 pm - 4:00 pm || By appointment
Office : Location: Kunsela C225 || Phone: (315) 792-7379
Email: chiangc@sunypoly.edu ([best way to reach me](#))
URL: <https://sunypoly.edu/faculty-and-staff/chen-fu-chiang.html>
TA Info : Sudhakar Anakala || anakals@sunypoly.edu
TA Hour : Tue. Thu. 11:30 am - 1:30 pm || Library

Recommended Text and References

1. Optional: Discrete Mathematics
2. Optional: Lectures in Discrete Mathematics || Edward A. Bender and S. Gill Williamson || <http://cseweb.ucsd.edu/~gill/BWLectSite/>.
3. Exams and homework problem sets from previous semesters for your practice.
<https://www.cs.sunyit.edu/~chiangc>

Course Description

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 program's 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

Each topic should last for 2 or 3 lectures, based on the progress in the class. The instructor will speed up or slow down the lectures according to students' understanding of the material.

seq #	Topics	seq #	Topics
1	Boolean Functions	2	Truth Table
3	(Propositional + Predicate) Logic	4	Number Theory
5	Proof Techniques	6	Sets
7	Functions and Permutations	6	Combinatorics
9	Lists and Counting	10	Introduction to Probability Theory
11	Basic Concept in Graph Theory	12	Decision Tree

Grading (Tentative)

The lecture format will be the basic mechanism used in the course. Computer demonstrations in the class-room 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% and one 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

Students are expected to produce professional quality programs adhering to the following criteria:

- The problem must be completely solved. The sophistication of the solution will be considered in determining the grade. The program must demonstrate mastery of the topics and techniques being covered at that point in the course even if there are better solutions using other techniques. All paths through the program must produce correct results (or the program is unacceptable). Assignments that are returned because they are unacceptable will be penalized per returned submission.
- The documentation must be complete and the program layout must be visually appealing. Each program and each function must contain a statement of purpose, name of author, date of creation, revision number (if any), date of last revision, language, compiler used and citation of sources. Intra-code commenting of obscure code is expected. Variable names must be rational. The use of correct grammar and spelling in user prompts is assumed; the penalty for sloppy English will be harsh.
- Programs must be crash-proof (commensurate with the level of sophistication of the assignment). User prompts (if any) must be clear, precise, grammatically correct, and correctly spelled. In the

absence of warnings any user input is fair game. You should not expect the user to remember a complex series of instructions; programs should be user friendly. Programs should be able to recover from illegal data entry.

- Assignments should be submitted on-time; this will help students stay "up-to-date" with the course-work. Due dates may be adjusted if the lecture schedule falls behind. Programs will not be graded prior to the due date. It is in the student's best interest to submit problem set solutions on time.

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.

Plagiarism Warning

The work you submit must be your own. You will not receive credit for work which is not your own. You may ask others (classmates/friends/instructors) for advice or help regarding the subject matter of a problem set. However, your answers and the actual design, coding, entry, and running of your programs must represent your own work. All sources of ideas that are used in any way (quoted, paraphrased, or summarized), including ideas taken from the text, must be acknowledged in problem set program documentation. Failure to provide proper attribution constitutes academic dishonesty, and it will result in a failing course grade. Substantially identical program submissions by multiple students, even with attribution, may result in a failing course grade to all who submit the same program. Submitting a program written by someone else, even with attribution, is strictly prohibited and will result in a failing course grade. Students are further reminded that it is their responsibility to take reasonable precautions to prevent copying of their work by other students and that there are now criminal penalties for computer trespass and computer tampering.

Cancellation of Classes Due to Inclement Weather or Other Emergency

SUNY Poly has a 24-hour hotline to inform students, faculty and staff when severe winter weather prompts the cancellation of all classes. On-campus, you can call the "Snowline" by dialing ext. 7669 ("SNOW"). Off-campus, Snowline can be reached by calling 315-792-7385. Snowline cards are available at various locations on campus. In the event of severe weather, Snowline will announce only the cancellation of ALL classes. The cancellation of all classes will also be posted online, at sunypoly.edu, and will be broadcast on radio and television stations in the Utica-Rome, Syracuse, and Albany areas. Individual class cancellations are always available at sunypoly.edu/apps/canceled_classes.

Accommodations for Students with Disabilities:

Your access in this course is important to me. In compliance with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act, SUNY Polytechnic Institute is committed to ensuring comprehensive educational access and accommodations for all registered students seeking access to meet course requirements and fully participate in programs and activities. Students with documented disabilities

or medical conditions are encouraged to request these services by registering with the Office of Student Accessibility Services. Please request accommodations early in the semester, or as soon as you become registered with the Office of Student Accessibility Services, so that we have adequate time to arrange your approved academic accommodation/s. Once Accessibility Services creates your accommodation plan, it is your responsibility to provide me a copy of the accommodation plan. If you experience any access barriers in this course, such as with printed content, graphics, online materials, etc., reach out to me or Accessibility Services right away. For information related to these services or to schedule an appointment, please contact the Office of Student Accessibility Services using the information provided below.

Office of Student Accessibility Services

SAS@sunypoly.edu

(315) 792-7170

Peter J. Cayan Library, L113