Foundations of Computer Science (FOCS), Spring 2023
CSCI 2200, RPI
Tuesdays and Fridays, 10:00am–11:50am, Darrin 308

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Office Hours: Tue 8:30am-9:30am ET and Thurs 2-3pm ET or by appointment, Lally 316

This course introduces the math behind computer science: discrete math and the theory of computation.

Discrete Mathematics:	proofs, sums and recurrences, graphs, counting and probability
Theory of Computation:	what is computing?, how can it be done? what is computable?, how fast can we do it? (P vs NP)

The textbook for the course is *Discrete Mathematics and Computing* by Magdon-Ismail. I *require* and all gradeables expect that you read and worked through the indicated portions of the text along with attending the lectures. One does not substitute for the other.

Other resources: *Discrete Mathematics and Its Applications*, by Rosen
 Introduction to the Theory of Computation, by Sipser

Prereqs. CSCI 1200 (Data Struct.) + MATH 1010 (Calc I). Math 1020 (Calc II) is **strongly** recommended.

Learning Outcomes. Upon successful completion of this course, each student:
- ✓ can define discrete mathematical objects and mathematical proofs using logic,
- ✓ can apply mathematical tools such as induction and recursion,
- ✓ can recall key definitions relating to discrete mathematical objects,
- ✓ can formulate combinatorial arguments,
- ✓ can define and compute the probability of an event,
- ✓ can develop formal models of computation and reason about computability within those models, and
- ✓ can recall key facts regarding finite automata and Turing machines.

Grading.

Final	Midterm	Quizzes (3)	Homeworks (13)	Bonus in class pop quizzes
35%	25%	30%	10%	2%

There are no makeup quizzes, homeworks, or exams. Special circumstances will be handled case-by-case, if the student presents an institute letter requesting it and if the instructor deems the request reasonable.

Threshold	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	<50%
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F

Collaboration and Academic Honesty. All assignments that are turned in for a grade must represent the student's own work. In particular:
- **NO** discussion on exams. Discussion is allowed on homework but submitted work must be your own.
- **YOU ARE RESPONSIBLE FOR ENSURING THAT YOUR HOMEWORKS ARE NOT COPIED.**
- Copying from **anywhere** other than the class notes or your notes is **NOT** allowed.
- You must write and understand all solutions yourself.

In cases of academic dishonesty, the minimum penalty is a course grade of F, and other institute-mandated protocols may be invoked.