CSCI 2200: Foundations of Computer Science – Spring 2022

Instructor: Dr. Stacy Patterson (sep@cs.rpi.edu)
Website: https://www.cs.rpi.edu/~pattes3/csci2200
Textbook: Kenneth H. Rosen, *Discrete Mathematics and Its Applications*, 8th ed., McGraw Hill, 2019

Course Description

This course introduces important mathematical and theoretical tools for computer science, including topics from logic, number theory, set theory, combinatorics, and probability theory. The course then proceeds to automata theory, the Turing Machine model of computation, and notions of computational complexity. The course will emphasize formal reasoning and proof techniques.

Upon successful completion of this course, each student is able to:

- formulate mathematical proofs using logic
- apply mathematical tools such as induction and recursion
- recall key definitions from set theory
- formulate combinatorial arguments
- distinguish between various computational models
- think critically on the difficulties of key questions in foundations of computer science
- recall key facts regarding finite automata and Turing machines.

Pre-requisites: Intro to Calculus (MATH-1010 or MATH-1500) and Data Structures (CSCI-1200)

Schedule

An up-to-date schedule will be maintained on the course website.

Grading

- 22.5% Homework
- 24.75% Exam 1 - Wednesday, February 9, 2022 (Wednesday test block)
- 24.75% Exam 2 - Wednesday, March 30, 2022 (Wednesday test block)
- 28% Final Exam - Date TBD

The following chart will be used to convert the course average to a letter grade (percentages will be rounded to the nearest integer).

Percentage:	[100,93]	[90,93)	[87,90)	[83,87)	[80,83)	[77,80)	[73,77)	[70,73)	[67,70)	[60,67)	[0,60)
Letter Grade:	A	A-	B+	B	B-	C+	C	C-	D+	D	F

Exams and homework will not be curved. The course grades may be curved but only to raise the grades.

Grades will be made available throughout the semester in Gradescope. Grades for all assignments will be determined by the professor and the TAs. You may inquire about a homework or exam grade by submitting a regrade request in Gradescope. Grades inquiries must be made within 7 days of the posting of the homework or exam grade.

Homework

There will be nine homework assignments. All homework will be submitted in Gradescope. Homework assignments must be typed, with one problem per page. Figures may be hand drawn (neatly). Assignments

must be submitted in PDF format. You must indicate the page number for each problem in Gradescope. If you do not do this, your homework will not be graded.

Each homework is worth 2.5% of the course grade. It is strongly encouraged that you submit all homework assignments, however, it is not required. If you do not submit a homework assignment, the weight of the subsequent exam will be increased accordingly. For example, if you do not submit Homework 1, then Exam 1 will count as 27.25% of your course grade. If you do not submit Homeworks 1 and 2, then Exam 1 will count as 29.75% of your course grade, and so on.

If you submit a homework assignment, then it will count towards your course grade. You cannot withdraw a homework submission.

If you submit all nine homeworks, the lowest homework grade will be dropped. If you do not submit all nine homeworks, all the homework assignments that you do submit will count towards your course grade.

Exams
There will be two mid-term exams and a final exam. You must take the exams during the scheduled exam times. There will be NO make-up exams (unless the absence is excused by the Student Success Office).

Recitation
In weekly recitation meetings, the TAs and Undergrad Mentors will go over solutions to problem sets, homework assignments, and past exam problems. You should make your best effort to solve recitation problems before recitation. Attendance at recitation is not required, but this may be the only place that solutions will be made available.

Academic Integrity
Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts that violate this trust undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities and The Graduate Student Supplement define various forms of Academic Dishonesty and you should make yourself familiar with these.

Every student must formulate and write up his or her homework assignments independently. Looking up solutions and/or copying solutions from another source is not permitted.

You are also responsible for protecting your own homework from being copied. If multiple students turn in problem solutions that are identical, this is cheating, and all students involved will be held accountable.

No collaboration is allowed during exams.

Violation of these policies will be considered a breach of academic integrity. The minimum penalty for any violation is a course letter grade reduction. Violations of academic integrity may also be reported to the Dean of Students. If you have any question concerning this policy before submitting an assignment, please ask for clarification. In addition, you can visit the following site for more information on our Academic Integrity Policy: Students Rights, Responsibilities, and Judicial Affairs.

Disability Services

Rensselaer Polytechnic Institute strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on a disability, please let me know immediately so that we can discuss your options. To establish reasonable accommodations, please register with The Office of Disability Services for Students. After registration, make arrangements with the Director of Disability Services as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. DSS contact information: dss@rpi.edu; +1-518-276-8197; 4226 Academy Hall.