Course Information

Course staff	**Room**	**Email id**	**Office Hours**
Sofya Raskhodnikova	MCS 112	sofya	T 3:30pm–4:30pm, R 4:30pm–5:30pm
Ramesh Krishnan Pallavoor (TF)	EMA 302	rameshkp	W 3:30-5:30pm

Webpage: `http://cs-people.bu.edu/sofya/cs332/`

Questions and class discussion on Piazza: Rather than emailing questions to the teaching staff, please post them on Piazza. **Top participants will get bonus points at the end of the course**. Our class page is at: `http://piazza.com/bu/fall2019/cs332`.

Prerequisites: CS 131 (Combinatoric Structures) and CS 330 (Introduction to the Analysis of Algorithms). You need to be comfortable with mathematical proofs. Most assignments in this course require proving some statement and some creativity in finding the proof will be necessary.

Lectures: TR 2:00–3:15pm.

Discussions: The TF will run weekly discussions (interactive problem solving sessions) W 11:15am–12:05pm (MCS B33) and W 2:30–3:20pm (CAS B31) to help with the material.

Textbook: Michael Sipser. *Introduction to the Theory of Computation, 3rd edition,* 2012.

Supplementary textbook: Richard Hammack. *Book of Proof.*
`http://www.people.vcu.edu/~rhammack/BookOfProof/`

Syllabus: An introduction to the theory of computation. Topics include automata, formal languages, computability, complexity and reducibility among computational problems.

Course outline: I **Automata and Language Theory (5 weeks).** Finite automata, regular expressions, push-down automata, context-free grammars, pumping lemmas.

II **Computability Theory (4-5 weeks).** Turing machines, Church-Turing thesis, decidability, halting problem, reducibility, recursion theorem.

III **Complexity Theory (3-4 weeks).** Time and space measures, hierarchy theorems, complexity classes P, NP, PSPACE, complete problems, P versus NP conjecture, provably hard problems.

Homework: There will be an assignment due every Friday by **noon**, to be submitted on Gradescope (see instructions how to sign up on HW0). Assignments will be posted on the course web page, usually one week in advance. Solutions will be distributed in class, but not posted. (You may request an extra copy from the teaching fellow during office hours if you lost yours).

No late homework will be accepted. To accommodate extenuating circumstances, your two lowest homework grades will be dropped.

You should be as clear and concise as possible in your write-up of solutions. Understandability of your answer is as desirable as correctness, because communication of technical material is an important skill. A simple, direct analysis is worth more points than a convoluted one, both because it is simpler and less prone to error and because it is easier to read and understand. Points might be subtracted for illegible handwriting and for solutions that are too long.

Optional problems: Some homework assignments will include optional problems, marked by *. Later, if you ask me for a recommendation or express an interest in working on a research project with me, I will definitely check how well you did on the optional problems.

Collaboration and Honesty Policy: Collaboration on homework problems is permitted. *No collaboration whatsoever is permitted on optional problems and exams.* You must read and sign Collaboration and Honesty Policy. Please keep one copy of the handout for your records.

Violations of this policy will be dealt with according to University regulations.

Exams and Grading: The grade will be calculated as follows:

Homework	weekly	35%
Midterm 1	Thursday, Oct 3	15%
Midterm 2	Thursday, Nov 7	15%
Final exam	Tuesday, Dec 17, 3-5pm	30%
Class participation	lectures, discussions, piazza	5%