COMPSCI 121
Introduction to Theoretical Computer Science

Term/Year: Fall 2017
Department: Computer Science

Enrollment: 160
Number of Responses: 60
Percent Response 37.50%

Unless otherwise indicated in the question text, the following scale is used for responses:
1=unsatisfactory; 2=fair; 3=good; 4=very good; 5=excellent.

GENERAL QUESTIONS

	na	1	2	3	4	5	Tot.	Response Rate	Mean
Evaluate the course overall.		6	18	32	51	32	139	86.88%	**3.61**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.)	0	10	15	34	41	37	137	85.62%	**3.58**
Assignments (exams, essays, problem sets, language homework, etc.)	0	3	15	40	35	45	138	86.25%	**3.75**
Feedback you received on work you produced in this course	1	10	22	35	45	25	137	85.62%	**3.39**
Section component of the course	51	7	10	20	22	25	84	52.50%	**3.57**
On average, how many hours per week did you spend on coursework outside of class? (1=<3; 2=3-6; 3=7-10; 4=11-14; 5=>14)		0	17	53	22	43	135	84.38%	**11.56**
How difficult did you find this course? (1=very easy; 2=easy; 3=moderate; 4=difficult; 5=very difficult)		0	13	33	60	31	137	85.62%	**3.80**
What was/were your reason(s) for enrolling in this course? (Please check all that apply)	Elective						12	7.50%	
	Concentration or Department Requirement						132	82.50%	
	Secondary Field or Language Citation Requirement						3	1.88%	
	Undergraduate Core or General Education Requirement						0		
	Expository Writing Requirement						0		
	Foreign Language Requirement						0		
	Pre-Med Requirement						0		
How strongly would you recommend this course to your peers? (1=definitely not recommend; 2=unlikely to recommend; 3=recommend with reservations; 4=likely to recommend; 5=recommend with enthusiasm)		8	19	32	50	28	137	85.62%	**3.52**

	na	1	2	3	4	5	Tot.	Response Rate	Mean
In total, how much money did you spend on this course? Include the cost of books, course packets, software, or any other materials you needed for this course. (1 = Nothing - I did not spend any money on materials for this course; 2 = Less than $100; 3 = Between $100-$200; 4 = Between $200-$300; 5 = Greater than $300)		125	6	2	0	0	133	83.12%	**1.08**

EVALUATION OF INSTRUCTORS

Barak, Boaz

	na	1	2	3	4	5	Tot.	Response Rate	Mean
Evaluate your Instructor overall.		4	10	28	48	46	136	85.00%	**3.90**
Gives effective lectures or presentations, if applicable	0	7	23	36	35	35	136	85.00%	**3.50**
Is accessible outside of class (including after class, office hours, e-mail, etc.)	13	0	5	15	36	67	123	76.88%	**4.34**
Generates enthusiasm for the subject matter	0	3	5	16	34	78	136	85.00%	**4.32**
Facilitates discussion and encourages participation	49	0	7	19	25	30	81	50.62%	**3.96**
Gives useful feedback on assignments	89	2	7	3	8	20	40	25.00%	**3.92**
Returns assignments in a timely fashion	80	0	7	6	15	21	49	30.62%	**4.02**

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COMPSCI 121

Introduction to Theoretical Computer Science

Comments

What were the strengths of this course? Please be specific and use concrete examples where possible.

Course

Evaluate the course overall.: **1 (unsatisfactory)**

Interesting topic matter

Evaluate the course overall.: **3 (good)**

Boaz genuinely cares about making sure students are learning the right things. Having lots of office hours was really useful and important.

Evaluate the course overall.: **5 (excellent)**

This course was very informative when it comes to theoretical computation. Boaz made the course very challenging and time consuming, however, he also made sure that if you worked hard, you can succeed.

Evaluate the course overall.: **4 (very good)**

i learned a lot and i liked the material. the reading quizzes were definitely a good call to keep me doing the reading.

Evaluate the course overall.: **4 (very good)**

Interesting material, very knowledgeable teaching staff.

Evaluate the course overall.: **4 (very good)**

I really liked the positive energy of this course, and I think that the lecture notes were outstanding. I think I learned a lot.

Evaluate the course overall.: **5 (excellent)**

All around great class, good lectures and assignments, fair exams and grading, interesting subject matter.

Evaluate the course overall.: **4 (very good)**

Great introduction to theoretical CS.

Evaluate the course overall.: **4 (very good)**

Salil's lectures and office hours were the strengths of this course by far. I learned the most from these two sources.

Evaluate the course overall.: **4 (very good)**

This course does an excellent job of teaching and pushing you to learn a lot of material. The lecture notes are great, and the homeworks really do a wonderful job of solidifying ideas from the notes/lectures.

Evaluate the course overall.: **4 (very good)**

I think that Professor Barak was a great lecturer, but some of the course materials should have been refined more.

Evaluate the course overall.: **4 (very good)**

Although this course was completely revamped this year, and was very difficult, it was very rewarding and I learned a lot about the fundamentals of computing and computer science theory.

Evaluate the course overall.: **2 (fair)**

Great people! Difficult material to grasp, and I wish there were more resources for help.

Evaluate the course overall.: **5 (excellent)**

Interesting material

Evaluate the course overall.: **4 (very good)**

This class introduces a lot of interesting topics in Theoretical Computer science and makes you think about CS in a different light.

Evaluate the course overall.: **4 (very good)**

The material, from a broad perspective, is very interesting. Quantum computing, P vs NP, uncomputability, these are really cool topics!

Evaluate the course overall.: **4 (very good)**

Boaz's version of the class did an amazing job starting from the very basics of CS theory to help us understand big open problems in CS (P=NP, Quantum computers, etc.).

Evaluate the course overall.: **5 (excellent)**

Very organized

Evaluate the course overall.: **5 (excellent)**

NAND. On a more serious notes, the material was presented in a clear and concise way that was digestible, while not being spoon-fed. Great Balance!

Evaluate the course overall.: **4 (very good)**

The material has been dramatically changed, and I think it was definitely for the better. Newer topics like crypto and quantum cap off the semester on a high note (and I'd actually like to see much more of them). Amazing material and book put together by Boaz and all-star teaching staff

Evaluate the course overall.: **3 (good)**

Good overview of current topics in theoretical CS, from NP and uncomputability to randomized algorithms, crypto, and quantum. Dedicated teaching staff with fast responses on Piazza, student feedback (ex. on optional lectures) was given actual weight, reasonable midterm and final assessments.

Evaluate the course overall.: **3 (good)**

Boaz is a strong lecturer. The "bonus questions" on the psets make everything manageable

Evaluate the course overall.: **3 (good)**

The content is pretty interesting and related to the evolution of computer science in its modern state. The problem sets covered the weekly content well and were actually quite fun to complete. There is also so much opportunity for extra credit that it is clear that Boaz really does want everyone to do well and learn as much as they can in the class.

Evaluate the course overall.: **4 (very good)**

The NAND computational model really makes things clearer when it comes to time complexity analysis. I liked the lectures and the lecture notes as well.

Evaluate the course overall.: **2 (fair)**

The latter half of the course seemed to get back to the important topics in theoretical computer science, and the coverage of NP-completeness and algorithms was very well done.

Evaluate the course overall.: **3 (good)**

The material is very interesting

Evaluate the course overall.: **3 (good)**

Learned really in depth about computation and complexity theory

Evaluate the course overall.: **4 (very good)**

I learned a LOT from this course. It was not easy, the psets were long, the lecture notes were very confusing, and the lectures were not great, but the course was overall good and the exams were fair.

Evaluate the course overall.: **4 (very good)**

Amazing staff extremely committed to the course and responsive to feedback. Challenging but interesting

Evaluate the course overall.: **4 (very good)**

Rigorous and emphasizes problem solving very well. Exemplifies really clever ideas. I think every CS student should take it. Not very hard either.

Evaluate the course overall.: **4 (very good)**

Went quite in depth for an introductory course, and was still accessible.

Evaluate the course overall.: **4 (very good)**

Lots of interesting material

Evaluate the course overall.: **5 (excellent)**

Teaches the material well. Has interesting material. Connects theoretical CS to the real world.

Evaluate the course overall.: **2 (fair)**

The best thing about the course was that it was actually responsive to feedback, which saved it from being truly terrible, like shortening the readings, etc. I think pedagogically I prefer the use of NAND, NAND++, and NAND<< to Turing machines. I thought the quizzes online were helpful in letting us know how well we understood the material after a reading, I just wouldn't want to be graded on that before going to lecture or having any time to ask around, since the readings were often long and difficult.

Evaluate the course overall.: **3 (good)**

This course really challenged you to think.

Evaluate the course overall.: **4 (very good)**

Taught a broad range of information about computation. Starts very basic and builds a strong foundation for the development of advanced topics like quantum computing and probabilistic computation.

Evaluate the course overall.: **4 (very good)**

The course was a very interesting intro to theoretical CS. I know it's the first year so it was expected things would not be perfect. But it helped a lot that Professor Barak is so dedicated to the field and the class and it really showed in how the class turned out.

Evaluate the course overall.: **3 (good)**

really made you work hard. The professor cares

Evaluate the course overall.: **2 (fair)**

Office hours were great, the course not so much

Evaluate the course overall.: **5 (excellent)**

Incredibly interesting material. We covered some awesome topics, from computability and uncomputability to cryptography and quantum computing (not most intro theory classes can say that I'm sure). The lecture notes were super helpful and made learning the material a lot easier.

Evaluate the course overall.: **5 (excellent)**

The course was set up well for learning. I liked the no-laptops-in-lecture policy, and I appreciate how the quizzes forced students to keep up with the reading. I also loved the material in general, and I thought the difficulty of the problem sets was just right.

Evaluate the course overall.: **1 (unsatisfactory)**

-Challenged me to think about topics that I normally wouldn't

Evaluate the course overall.: **5 (excellent)**

Really interesting material, well taught, good assignments, well organised.

Evaluate the course overall.: **4 (very good)**

Interesting material. Dedicated Professor. Good course structure (designed to help you learn well).

Evaluate the course overall.: **5 (excellent)**

I took the first month or so of the CS121 course when Harry Lewis used to teach it so I can compare it well to this one and there have been some HUGE improvements to the material. It was certainly more difficult (aka rigorous) this time around but Boaz really put in a lot of time to making the course comprehensive and foundational for the rest of our computer science courses at Harvard. There were detailed notes that we read before each lecture that allowed us to keep up with the material and understand what was going on. This stuff needed to be learned a couple of times before it made sense so this was very necessary. The sections were recorded and had good practice problems that applied well to exams and homeworks. All of the course components seemed very cohesive and well thought out.

Evaluate the course overall.: **5 (excellent)**

The material was super super interesting and cool! I loved the partner psets, they were doable, directed, and definitely helped reinforce the material. The lecture notes were fantastic, and after the first few lectures (which were a bit rocky), lecture was a joy to attend (the in-class clicker questions were really helpful). Quizzes were really helpful in forcing us to do the reading. Boaz was super quick at responding to piazza questions - so grateful to have such an awesome instructor.

Evaluate the course overall.: **3 (good)**

Gives a deep theoretical understanding of how CS proofs work.

Evaluate the course overall.: **2 (fair)**

Lots of topics covered.

Evaluate the course overall.: **4 (very good)**

Instructor adjusted the course as we moved on

Evaluate the course overall.: **2 (fair)**

The last few weeks are interesting

Evaluate the course overall.: **4 (very good)**

Extremely ambitious in terms of topics and not afraid to challenge students which helped in gaining a more in-depth knowledge of the material, the advanced section was a good idea and the lecture notes were well constructed and comprehensive

Evaluate the course overall.: **1 (unsatisfactory)**

This course had no strengths

Evaluate the course overall.: **5 (excellent)**

This was a wonderful class. The best I've taken at Harvard. The professor was encouraging, informative. I'm so glad I took this course. It'll influence the way I approach other classes and will inform my future challenges.

Evaluate the course overall.: **3 (good)**

The strengths of the course were the course materials and abundance of resources to seek extra help.

Evaluate the course overall.: **3 (good)**

Course was difficult but had very good community working on the problems

Evaluate the course overall.: **5 (excellent)**

It was really interesting!

Evaluate the course overall.: **2 (fair)**

The Professor is very passionate and energetic.

Evaluate the course overall.: **4 (very good)**

I personally really enjoyed the material and the psets

Evaluate the course overall.: **5 (excellent)**

As my own introduction to theoretical computer science, I really appreciated the rigor of CS 121 (especially coming before CS 124). This class really taught me to think in ways I never have about programming and what it means to compute something. Having Piazza as a resource was invaluable, and thanks to our professor and the TFs the response time on Piazza was incredibly fast. I think being able to read the lecture notes in advance was very helpful because it allowed me to follow lecture itself much better and clarify confusing concepts as opposed to implementation details that I could go over later in the lecture notes. The lecture notes read like a textbook and were very nicely laid out! I also think the quizzes for each lecture were helpful because I could see if I had major points of confusion there.

Evaluate the course overall.: **2 (fair)**

The teaching staff were cool

Evaluate the course overall.: **5 (excellent)**

Did an _excellent_ job of providing rigorous foundations for computation as a whole, lectures complimented notes very well, brought in concrete connections to real-world applications well.

Evaluate the course overall.: **4 (very good)**

Covered some really fantastic concepts

Evaluate the course overall.: **2 (fair)**

The material was cool and the lectures were easy to follow. Boaz was a fun lecturer, and the psets were reasonably challenging.

Evaluate the course overall.: **5 (excellent)**

The course went at a good pace and the incorporation of bonus points made the problem sets manageable, yet still challenging enough.

Evaluate the course overall.: **3 (good)**

A good overview of the basic principles of theoretical CS

Evaluate the course overall.: **4 (very good)**

Ambitiously taught, carefully catered material, good support staff

Evaluate the course overall.: **3 (good)**

Boaz has a passion for the subject matter, and it's clear he really does care about the success and well being of his students.

Evaluate the course overall.: **4 (very good)**

Lots of depth in the topics, tons of topics are covered, Boaz is incredibly passionate about the course and the course material, great TF's

Evaluate the course overall.: **5 (excellent)**

i thought lecture notes were very well-organized. also the material is super interesting!!! boaz does a great job of highlighting the philosophical importance of the concepts we learn. and problem sets were both interesting and difficult but not unmanageable.

Evaluate the course overall.: **3 (good)**

The course covered an incredible amount of material, drew interesting relationships and made a case for the importance of theoretical computer science to domains outside CS, and had in Professor Barak a course instructor who cared immensely for the success of the course.

Evaluate the course overall.: **4 (very good)**

The lecture notes, problem set problems were generally very good.

Evaluate the course overall.: **3 (good)**

The instructors were very receptive to feedback about the course.

Evaluate the course overall.: **3 (good)**

It taught many concepts that every CS concentrator should know like complexity classes and uncomputability.

Evaluate the course overall.: **3 (good)**

It covered a diverse array of topics, all of which were very interesting. Writing proofs was daunting at first, but Professor Barak did a good job of teaching us how to write proofs and helping us along the way.

Evaluate the course overall.: **4 (very good)**

complete material

Evaluate the course overall.: **3 (good)**

Boaz clearly cares about the class. I think this class has the potential to be a really good class, just some of the bumps need to be smoothed out, which I'm sure will happen over time.

Evaluate the course overall.: **3 (good)**

It was clear that Prof. Boaz knew what he was talking about. There was a lot of material available for learning.

Evaluate the course overall.: **4 (very good)**

Getting introduced to theoretical computer science with a big focus on randomized algorithms and also some notions of crypto, quantum computing, and proofs was great. The second half of the course was definitely very intellectually rewarding.

Evaluate the course overall.: **4 (very good)**

I thought the course provided a nice solid introduction to the major topics of theoretical computer science as well as some nice examples and applications, and it definitely made the topics interesting and understandable and made me excited about learning more. I thought the course was generally well structured and had a nice arc and ordering of topics. I found the lecture notes very thorough and well-written thought they provided a good introduction to the topics.

Evaluate the course overall.: **4 (very good)**

Interesting material. Bonus points are very generous.

Evaluate the course overall.: **5 (excellent)**

I think the course was very well structured. The lectures notes and the lectures really helped me understand the material thoroughly, and the quizzes served as a great checker. I really liked the variety of topics we covered toward the end of the course, since it introduced me to a wide range of cool subjects!

Evaluate the course overall.: **3 (good)**

Many resources, teaching staff responsive to student comments.

Evaluate the course overall.: **1 (unsatisfactory)**

i now cry whenever i see NAND.

Evaluate the course overall.: **3 (good)**

I think that the homeworks were generally very thorough and kind of fun to complete.

Evaluate the course overall.: **5 (excellent)**

Doing a deep dive into theory of computation while still being eminently understandable

Evaluate the course overall.: **5 (excellent)**

Interesting material, laidback atmosphere

Evaluate the course overall.: **4 (very good)**

dedicated professor,

How could this course be improved? Please use concrete examples where possible and provide constructive suggestions.

Course

Evaluate the course overall.: **1 (unsatisfactory)**

Clearer textbook and lectures.

Evaluate the course overall.: **3 (good)**

Boaz's lecture notes were sometimes indecipherable. I think he believes that writing in mathematical equations erases any difficulty of understanding because they cannot be misinterpreted, but the problem with writing in math is that sometimes his statements cannot be interpreted at all. In addition, he frequently went back and edited the lecture notes substantially after he had given the lecture, i.e. after I had read and made notes on his notes. For example, the definition of P/poly was only added later, which made me extremely confused as I was studying for the final from my own marked-up versions of his notes. Since the lecture notes are the basis for the class material, organizing them more carefully is important. The TFs didn't know the material for the class because much of it was new, so that wasn't great but hopefully will no longer be a problem next year. Unlike the midterm, the final exam was more of a test of IQ than of your understanding of the course material; you just had to have a Eureka moment to see the reductions or you got nothing. That was a real shame after so much hard work.

Evaluate the course overall.: **5 (excellent)**

This course could be improved with clearer lecture notes. The lecture notes were a crucial part of understanding the course material, however, they often took anywhere from 3 to 6 hours to read closely. Often, I found that very complicated mathematical language to explain very simple concepts was not always accompanied by simple, easy to comprehend, explanations.

Evaluate the course overall.: **4 (very good)**

I wish the learning materials were shorter, and skipped out on some of the less important details. i think more careful explanations for high level ideas could have been helpful as well. I also think the clickers were unnecessary and that we should all just use our phones or something.

Evaluate the course overall.: **4 (very good)**

Textbook is a bit dense, sometimes unnecessarily so.

Evaluate the course overall.: **4 (very good)**

I think that lectures could be somewhat disorganized and not engaging. At times I found lectures rather repetitious (they repeated the notes).

Evaluate the course overall.: **4 (very good)**

It would be great to have a little more clarity in Boaz's lectures - they often focused on proofs for various concepts without diving into the human story behind the proofs or the relationship of what a certain theorem implies relative to the other course material.

Evaluate the course overall.: **4 (very good)**

The course could benefit from a little more organization, but for a first year course, it exceeded expectations.

Evaluate the course overall.: **4 (very good)**

Course policies were always changing because it is a new class and grading seemed somewhat inconsistent.

Evaluate the course overall.: **5 (excellent)**

Most of the issues were typical to a new course and should be worked out organically

Evaluate the course overall.: **4 (very good)**

I think as the course staff gets more experience and feedback, it will become better.

Evaluate the course overall.: **1 (unsatisfactory)**

Both the lectures and lecture notes were incredibly hard to understand. I found myself totally dumfounded by concepts after spending an hour reading the lecture notes and attending the lecture. Then, 10 minutes of googling allowed me to fully understand the same concept.

Evaluate the course overall.: **4 (very good)**

First, NAND, oh my goodness. I would rather have learned about Turing machines, personally, although NAND is probably a good teaching tool. Also, a lot of this class can be likened to hand-holding: requiring attendance in lecture, required readings, absurd extra credit on the homework and midterms that did not carry over. I think the course would have been fine without some of these things.

Evaluate the course overall.: **4 (very good)**

Lectures were difficult to understand, often because of the nature of the material. Offering more examples of proofs, etc. in lecture would be useful.

Evaluate the course overall.: **4 (very good)**

I think that some of the NAND section could be cut down to give more time for those topics (I honestly don't think that some of the specifics of conversion between NAND forms (especially between NAND shift and NAND++, which ended up taking 3+ lectures and 2+ psets) are all that relevant to the thesis of the course and should be sacrificed to give students some more tastes of cool theoretical topics. Especially NAND shift, given that its basically just python and most people ended up just using Extended Church Turing to describe pseudocode in python and then convert to NAND++ with poly time overhead.

Evaluate the course overall.: **3 (good)**

Never knew what to expect with grades, but I guess that's understandable given that it was the first semester of the course. Psets often seemed contrived and difficult to approach without hints from TFs at office hours.

Evaluate the course overall.: **3 (good)**

The lecture notes are much, much too dense. Boaz quixotically insisted that we "close read" the notes before each lecture but I'm willing to bet 90% of us didn't. They are simply too long, and go into detail that is largely unnecessary for the exams or psets.

Evaluate the course overall.: **3 (good)**

As a class that is required for all CS concentrators, the class could have been more organized and been more catered to students who may have a little more trouble grasping concepts of proofs than others. Additionally, readings could have been shorter because they often covered proofs in way too much depth than was necessary for the class. I wish lectures had covered the important proofs and concepts that we were expected to know, but compared to the extremely bloated readings, the lectures were almost trivial. There could have been more of a balance between readings and lectures.

Evaluate the course overall.: **4 (very good)**

Sometimes there were many mistakes in the lecture notes. I understand this is the first time teaching this course and this is very likely to improve in the future as well.

Evaluate the course overall.: **2 (fair)**

I can't help but feel we lost an enormous amount of time trying to make the NAND model work. In the end, I feel like the entirety of the first half of the course didn't produce much useful understanding and we would have been better suited just using a well-established model for TCS. Restrictions on collaboration and lecture attendance in the first half of the course were overbearing and unnecessary. I really recommend this class be run like just about every other CS class at Harvard is, and please consider dropping NAND from the curriculum. Unfortunately, it just didn't work.

Evaluate the course overall.: **3 (good)**

I didn't feel like the lectures were that relevant to the course.

Evaluate the course overall.: **3 (good)**

Too much NAND. Stay away from NAND++.

Evaluate the course overall.: **4 (very good)**

The psets were long and required office hours just to understand the questions. The lecture notes were extremely dense and hard to understand. The lectures were boring and confusing to listen to.

Evaluate the course overall.: **4 (very good)**

Graded lecture attendance was very inflexible and inconvenient, especially for students who were capable of keeping up (or even better at it) without going to lecture. It wasn't unheard of for TFs to be just as confused as students

Evaluate the course overall.: **4 (very good)**

Homeworks, lectures, lecture notes vague and unclear; sometimes ridden with typos. Lecture notes could have been more intuitive, rather than rigorous and intimidating with tons of math symbols. I feel a lot of the ideas are extremely intuitive and simple and do not need that much mathematical jargon to explain.

Evaluate the course overall.: **4 (very good)**

Larger range of material to accommodate the wide range of students who take an intro class.

Evaluate the course overall.: **4 (very good)**

More time spent on going over theorems and clarifying concepts. The lecture notes were a bit long and kept changing, which was tough to cope with. Participation grade was not well defined. Practice exams for exams would be great!

Evaluate the course overall.: **5 (excellent)**

More review material. If there were answer sheets to all the HW's, it would've made a lot of people's time studying for the exam easier.

Evaluate the course overall.: **2 (fair)**

1. More practice problems especially smaller ones that help reinforce the basics. I often felt extremely unprepared for the problem sets because I didn't even really understand how to approach the problems and we had had little practice because only some TFs were able to properly explain things in section. I didn't like that we didn't get answers for the psets to look over to understand where we went wrong. Problem sets were better when the question was divided into parts that sort of walked us through the proper way of thinking. 2. The notation in the notes, like all the random constants like a, b, c, z, w, etc coming from nowhere were super confusing. It was confusing alternating between Oh notation and, for example, 2^n/1000, where there were just these random constants. All the subscripts were excessively confusing. I wish the notes were shorter and more focused on clarifying the concepts rather than being like "can you see why? We leave the proof to the reader" (those parts were especially frustrating - this isn't math or english literature, which we have spend out entire education practicing so more likely than not we CANNOT deduce the answer on our own and the internet is not helpful) and going into the nit-picky details with arbitrary numbers, like I think .1 was used and the point was that it was less than 1, but the concept should have been introduced first before throwing a random number at us. 3.

Evaluate the course overall.: **3 (good)**

The lecture notes are very confusing and do not help the understanding of the material. There are much better ways to learn this material without reading extremely dense and confusingly worded lecture notes. The lecture in class also do not further understanding. The problem sets were the only useful tools in this class. This class also assumes a very strong background in CS and mathematics which is not indicated at the beginning of the course.

Evaluate the course overall.: **4 (very good)**

Take it a bit slower at the start to make sure that everyone has developed a strong foundation. Course pace after the first couple weeks was better after it was adjusted.

Evaluate the course overall.: **4 (very good)**

-Make sections more useful (maybe just going over previous HW problems) -Make psets more related to lecture notes (they're basically a lot harder right now than lecture notes, so students would end up just never reading notes since they did not help for psets) -Include more things in lecture that are not in lecture notes (if you want people to watch lectures, since it did not seem that necessary if one reads lecture notes) -Make "Participation" category more well defined

Evaluate the course overall.: **3 (good)**

There was a ton of material and not many resources outside the course. I also wish we got the homeworks back.

Evaluate the course overall.: **2 (fair)**

It could be better taught and the readings less verbose

Evaluate the course overall.: **5 (excellent)**

If lectures could focus more on the harder material, and maybe screen the questions that're asked in class for relevance I think the lectures could be made a lot more impactful. Also crowdsourcing notes and making it easier to annotate and ask questions from the lecture notes could really help.

Evaluate the course overall.: **5 (excellent)**

The typos in the lecture notes were extremely frustrating, especially the ones in the definitions. It made me lose confidence in the validity of the lecture notes in general.

Evaluate the course overall.: **1 (unsatisfactory)**

Because this course was very disorganized, it was hard to know what was expected of me.

Evaluate the course overall.: **5 (excellent)**

Can't see any concrete ways.

Evaluate the course overall.: **4 (very good)**

Less typos in lecture notes. Better office hours (often had to wait a long time to get help)

Evaluate the course overall.: **5 (excellent)**

Maybe a couple extra problems that connected the theoretical questions to an application that we could grasp directly would be nice. The problem with what would happen to crypto if 3SAT was in BPP was cool, for example.

Evaluate the course overall.: **5 (excellent)**

Section was a complete waste of time because it was very slow-paced.

Evaluate the course overall.: **3 (good)**

Definitely too hard. Making the pre-req Math 25 is not cool -- if we wanted to take a harder class, we would have signed up for CS125 or some other course. And CS20 definitely does not prepare you for this class. If you want to make CS121 this difficult, that's ok, but you have to offer an easier intermediary alternative.

Evaluate the course overall.: **2 (fair)**

Make the readings more understandable, lecture notes before each reading made both readings and lectures difficult because of lack of comprehension without the other.

Evaluate the course overall.: **2 (fair)**

it was extremely difficult especially for those who didn't have a strong proofs background. TFs were not on the same page at all and often told misleading information or conflicting information. psets seemed so so much harder than what was went over in lecture and in the textbook

Evaluate the course overall.: **2 (fair)**

Maybe more coding

Evaluate the course overall.: **4 (very good)**

Basing everything around NAND was a bit strange and it might have been a lot more helpful if there were more practice problems available, especially with solutions, which I feel would have helped a lot

Evaluate the course overall.: **1 (unsatisfactory)**

This course was the most disorganized mess of an attempt at creating a course I have ever had the misfortune of being subjected to. From the psets to which no correct solutions could be gained after turning them in to learn what the correct answer to a question you may have had no understanding of was to the exams which offered no ability to practice or format guidance, this course was horrific. The lecture notes would change/be updated at least 2-3 times a week, meaning if you read them first they would be wrong, and overall this course was just awful. I also feel that not allowing for collaboration really hurts those who are likely to be struggling to begin with as it does not allow for them to learn from their peers, and especially in as dense a class as this which is required for all CS concentrators, thats simply a bad way to teach a course.

Evaluate the course overall.: **3 (good)**

The course could be improved with better lectures, and assignments that were in line with the course material.

Evaluate the course overall.: **5 (excellent)**

Maybe review the grading? It was kinda weird

Evaluate the course overall.: **2 (fair)**

This course felt very disorganized and up-in-the-air.

Evaluate the course overall.: **4 (very good)**

Some of the explanations for theorems could be improved as they were somewhat confusing. I feel like later material wasn't explained as well, as me and many others still have trouble with reductions and certain aspects of BPP.

Evaluate the course overall.: **5 (excellent)**

One thing that was a bit frustrating is that the lecture notes were continuously being updated and often I read a wrong or old version. I realize this is probably because the course is in its first iteration but in general also it would be nice if the online presence of CS 121 could be consolidated into one website (or maybe Canvas + one website). It was a bit confusing trying to navigate between all the different sites with lecture materials/notes/ and the calendar and everything. One other thing is the office hours schedule-- since psets are due Wednesday at midnight it was often stressful that we only had one set of office hours that night.

Evaluate the course overall.: **2 (fair)**

Everything, from lecture notes, presentations, and homeworks could have been way more structured. Very few students actually believed that the course's material could prove beneficial to them.

Evaluate the course overall.: **5 (excellent)**

More polish/potentially more real-world connections? NAND felt occasionally unnecessarily abstruse a model.

Evaluate the course overall.: **4 (very good)**

First year growing pains

Evaluate the course overall.: **2 (fair)**

It was a real mess, with a lot of policies that changed over the course of the class. A better idea of what knowledge is expected to be taken away would be a big help, as well as a better match of difficulty between lectures and the lecture notes.

Evaluate the course overall.: **3 (good)**

A finalized set of notes at the start of term (they kept changing, and in some instances definitions were reworded in a way that was confusing)

Evaluate the course overall.: **4 (very good)**

Lots of the material is presented in a very abstruse and needlessly mathematical way. I understand the need for precise math to give absolute clarity on ideas, but too much of it just makes the text confusing and tedious. I feel a much more effective way to convey the material is to first describe ideas casually and intuitively with english, and then provide the math to clarify any loose ends.

Evaluate the course overall.: **3 (good)**

Because the course is new, the course felt disorganized and the lecture notes felt incomplete. Oftentimes, the material was not actually that difficult-- rather, the topics were obfuscated behind poorly worded notes and lectures. Moreover, because office hours were often crowded and potentially understaffed., if was difficult to find time to have a TF walk through the material with you--often the key to understanding the concepts. Instead, office hours were spent struggling through the psets and grasping for hints, which often failed to contribute to a foundation in understanding the material.

Evaluate the course overall.: **4 (very good)**

NAND was confusing, and it was often unclear what material we were responsible for knowing. Early on, it was also difficult to discern how concepts were generalizable and not just confined to the NAND context. Also, the psets were a bit too hard, and most online materials reference Turning Machines which made self-studying difficult. Lectures could also be very difficult to follow.

Evaluate the course overall.: **5 (excellent)**

lectures sometimes felt like they were not super useful. i liked the high-level takeaways from lectures, but some of the proofs/ examples of reductions felt kind of rushed, and i often felt i got more out of the reading. perhaps if lectures were more focused on high-level takeaways or *one* big proof per lecture, it would be more useful. i also think the clicker questions were helpful.

Evaluate the course overall.: **3 (good)**

The amount of reading required for lectures meant most people stopped reading lectures properly and starting only scanning for the answers to the quiz questions. The lecture notes were so densely written that they were often impossible to parse (which was not simply a reflection of the difficulty of the material). Professor Barak's lecture style was unengaging and difficult to follow. Overall, I think Professor Barak's expectations for students' time investment in the course were unrealistic. I think some course material, particularly on topics like quantum computing and interactive proofs, could be cut out of the syllabus without sacrificing much — particularly the first of these topics required a lot of background reading, meaning they were really quite inaccessible and did not add much to my or others' understanding. Overall, Professor Barak used an incredible amount of notation and jargon — I think a lot of the definitions and concepts in the course could be conveyed in simpler terms without loss of precision.

Evaluate the course overall.: **5 (excellent)**

less nand, harder

Evaluate the course overall.: **4 (very good)**

The nebulous "participation grade" was more of a source of stress than anything else. I also didn't appreciate the mandatory lectures.

Evaluate the course overall.: **3 (good)**

The mandatory lectures in the beginning of the semester were a little annoying since I didn't feel like I got much out of lecture that I didn't get from the notes.

Evaluate the course overall.: **3 (good)**

Most proofs provided in lecture and in the lecture notes ended up being unnecessary for the course (i.e. psets and exams). I think the complex proofs, especially toward the end of the course, distracted students from the core concepts of the course and should be removed or marked as optional, especially because I believe that many students could not follow the proofs fully.

Evaluate the course overall.: **3 (good)**

I think it would be better for us to focus more on a few topics rather than covering so many.

Evaluate the course overall.: **3 (good)**

I did not enjoy the mandatory attendance/participation.

Evaluate the course overall.: **4 (very good)**

first time taught, need more consistency in material that changes with the course for certain definitions

Evaluate the course overall.: **3 (good)**

Make some parts of the lecture notes clearer.

Evaluate the course overall.: **3 (good)**

I think that it was not always clear in lecture or in the notes what was meant by any given section, and it was difficult to tell sometimes how what was learned was helpful.

Evaluate the course overall.: **4 (very good)**

I felt like the technicalities about NAND and NAND++ took a bit of the fun away of the first half of the course. Maybe this kind of low level stuff is necessary, but I would've preffered a little less of it, and more about NP, BPP, BQP or another class.

Evaluate the course overall.: **4 (very good)**

I didn't always find the lectures super helpful after having read the lecture notes because they often just covered mostly the same material and I didn't feel like I always learned much from them that wasn't in the notes. The assignments were generally good, although sometimes on the easy side and felt like they had more bonus points than necessary.

Evaluate the course overall.: **4 (very good)**

The textbook is very much a work in progress. I imagine it will only get better as Boaz gets more feedback.

Evaluate the course overall.: **5 (excellent)**

The course was a bit rough on logistics, including grades for participation and quizzes. However, this was mainly due to the fact that it just went through a major revamp, so I believe everything will run more smoothly next time!

Evaluate the course overall.: **3 (good)**

The class was initially disorganized (due to having a new professor); even after the midterm, the point distribution and grade system kept changing, and it was difficult to keep up with all the changes. Also, the formatting of the notes was very strange; it would be more helpful if the chapter numbers corresponded to the names of the files, and if we were alerted when the professor added material to the notes. I would sometimes download a reading early only to find out later that someone had added an entire section to the reading after my download. I suppose all this will be clearer next year, now that the professor has now taught one year.

Evaluate the course overall.: **1 (unsatisfactory)**

please have someone rewrite the textbook so that it is actually understandable!! right now it is impossible to parse.

Evaluate the course overall.: **3 (good)**

I think some of the organization was confusing sometimes, and I think the pace also varied (sometimes it was just good and sometimes it was too fast).

Evaluate the course overall.: **5 (excellent)**

It was pretty clearly a first year course, with a lot of kinks being worked out on the fly, like the textbook being written as we read it, and the ill-fated clicker scheme.

Evaluate the course overall.: **5 (excellent)**

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Evaluate the course overall.: **4 (very good)**

probably too much bonus, somewhat unsure of the big takeaways, wish I had better feedback on the psets/exams

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.) — Add Comments?

Course

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Boaz's lecture notes need to be organized better; if you're going to refer to Theorems by the numbers, e.g. 10.4, then don't change the numbers later on. I frequently had no idea to what theorems he was referring to in problem sets, and neither did the TFs.

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

lecture notes readability could be improved

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

Lecture notes were fantastically detailed.

Evaluate the course overall.: **1 (unsatisfactory)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

Lecture notes were unnecessarily hard to understand.

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The lecture notes were a bit dense and hard to digest.

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

The texts were amazing, so deep and full of analysis. However, they were extremely dense and long which made keeping up with the class harder. It takes 2+ reads to understand basically any of the notes, which added a lot to the time necessary for this class

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Recorded lectures, textbook and section notes were super helpful. Would've appreciated more exam prep materials, since I went into both exams totally unsure of what to expect.

Evaluate the course overall.: **2 (fair)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

The lecture notes were verbose, but usually helpful. Unfortunately the proofs were extremely difficult to understand and they often felt incomplete. If these are a mandatory part of the course, they really should be improved.

Evaluate the course overall.: **3 (good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The lecture notes were good but a bit cryptic for an intro course sometimes.

Evaluate the course overall.: **3 (good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Too much reading. On top of homework and lecture, shouldn't have so much reading. Should be able to understand lecture without reading.

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Very long, dense, hard-to-parse readings (especially at the beginning, when students aren't used to mathematical notation)

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Lecture notes could have been better. I do not like the use of NAND++ and NAND<<. Course should have instead focused on more mainstream concepts such as turing machines and RAM machines/assembly.

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Finish the TODOs in the lecture notes!

Evaluate the course overall.: **2 (fair)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

Incredibly confusing. The section notes and solutions varied in style since each week different TFs wrong them, so it lacked cohesion.

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

lecture notes were rambly and not always very clear. sometimes they were just paragraphs of text that were very hard to parse for someone seeing the material for the first time.

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Professor Barak's is quite impressive and very useful. I just read that for midterm and final and was fine since it is so in-depth.

Evaluate the course overall.: **2 (fair)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

There was so much mathematical notation that the readings took too long to parse through

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Typos in the lecture notes were very frustrating.

Evaluate the course overall.: **1 (unsatisfactory)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

The lecture notes tended to be convoluted and full of typos.

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

The notes assigned before each lecture were phenomenal, I can only imagine they will get more refined over the years but they really changed the experience of the course for me and were a great learning tool. (Some students learn better with lecture but I found that reading the notes and THEN going to lecture was the best for me)

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The lecture notes seemed unnecessarily complicated at times. Topics would have been much easier to understand if they were presented in a simpler manner (which the TFs were great at doing)

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

The lecture notes were often rambly and difficult to follow.

Evaluate the course overall.: **2 (fair)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

Lots of proofs are verbose and extremely annoying to understand. More explanations and examples in "layman's terms" would help immensely to understand the more technical aspects.

Evaluate the course overall.: **2 (fair)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

textbook was very confusing

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Some of the lecture notes were unfinished

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

The textbook was an extremely helpful resource, perhaps could do with a few more examples and guidance on how to approach certain kinds of problems

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

The textbook was wonderful - thank you so much for writing it all down.

Evaluate the course overall.: **2 (fair)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

NAND model is needlessly convoluted (RNAND, NAND++, NAND<<). Far too much time was wasted trying to understand the difference between models instead of learning theory of computation that it explained.

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Lecture notes are a little confusing at times

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Needs more polish

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Lots of typos, but the quotes are fun

Evaluate the course overall.: **2 (fair)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

The lecture notes, while comprehensive, were very close to inscrutable. Everything required upwards of 4 passes through it to begin to understand a proof, and there was a large gap between the difficulty of the lectures and the difficulty of the reading, resulting in a lot of confusion as to the depth we were supposed to understand the material.

Evaluate the course overall.: **5 (excellent)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

The lecture notes are very detailed. I greatly appreciate that we did not have to buy a textbook for this course.

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Well prepared, but hard to digest

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

Too many dense readings from textbook to follow each week that don't always follow lecture.

Evaluate the course overall.: **2 (fair)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

The "lecture notes" was more like a textbook than lecture notes. I thought they were much longer and more verbose than lecture notes should be, and it would have been better to have a set of lecture notes and then maybe more details. I also thought the lecture notes were not easy to understand (even if I knew the material from some place else, I still found the lecture notes hard to follow sometimes)

Evaluate the course overall.: **4 (very good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

Readings were too long and dense

Evaluate the course overall.: **3 (good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The lecture notes were comprehensive but cannibalized lecture attendance (meaning that neither really served its purpose or was as valuable as it could have been).

Evaluate the course overall.: **3 (good)**

Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

The lecture slides were good, but the lecture notes, especially towards the end of the course, became incredibly dense with notation and proofs became incredibly difficult to follow.

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

The lecture notes PDF was a very useful resource.

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The readings were often too dense to be understandable in a reasonable amount of time.

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The lecture notes were very thorough but also very difficult to understand, especially towards the end of the course.

Evaluate the course overall.: **3 (good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **3 (good)**

The textbook is hard for a first introduction to technical texts (which this class is for many people)

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **4 (very good)**

I thought the lecture notes were well organized and clearly written, and they gave the course a nice overall structure. Sometimes they felt a little notation heavy and it felt like a lot of parsing through notation to understand statements that weren't actually very deep or complicated, so I really appreciated things like more intuitive overviews of proofs or statements that explained what was really going on rather than getting lost in more notation than necessary. I thought the sidetones about applications or physical implementations or history on how things were discovered were always interesting.

Evaluate the course overall.: **5 (excellent)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **5 (excellent)**

The lecture notes and powerpoint slides were easy to follow and understand, although the lecture notes had minor typos that were fixed throughout the semester!

Evaluate the course overall.: **1 (unsatisfactory)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **1 (unsatisfactory)**

TYPOS IN TEXTBOOK!!! CONFUSING NOTATION!! INCONSISTENT NOTATION!! why are there so many unintelligible doodles in the textbook and lectures? these doodles don't help anyone! why?

Evaluate the course overall.: **4 (very good)**
Course materials (readings, audio-visual materials, textbooks, lab manuals, website, etc.): **2 (fair)**

I was frustrated how frequently the lectures notes changed -- I felt like I was constantly relearning things.

Assignments (exams, essays, problem sets, language homework, etc.) — Add Comments?

Course

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

Problem sets were usually pretty good at helping you to understand the material.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

Good problem sets!

Evaluate the course overall.: **5 (excellent)**
Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

Challenging but very doable. The bonus questions were super helpful.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

The psets were definitely the highlight of this course.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

Psets were good and started very, very time consuming and gradually got better/a bit more reasonable as feedback was collected

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Again, problem sets were difficult and seemed contrived, and didn't know what to expect on exams.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **2 (fair)**

There were times that the problem sets were far too complicated. An example of this is the time we had to code the MULT5 function in NAND. This took a lot of time and I do not think it was necessary. The exams I think were fair.

Evaluate the course overall.: **2 (fair)**

Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

The homeworks themselves were fine, but the homework policy was overbearing and inconsistent with the collaboration policy of the vast majority of Harvard classes. I feel like this prevented me from actually getting to know and working with other people in the class.

Evaluate the course overall.: **3 (good)**

Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Homework was good and interesting.

Evaluate the course overall.: **3 (good)**

Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

P sets were fun and made you think about what you learned.

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

problem sets and questions are pretty easy if you understand the lecture material. However, I think that people should collaborate more, rather than restricting collaboration. Also, I do not like the idea of doing things as partners. People should do things individually, but with collaboration.

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

Probably a bit hard for most.

Evaluate the course overall.: **2 (fair)**

Assignments (exams, essays, problem sets, language homework, etc.): **2 (fair)**

Often just unexpected and we were not prepared with how to deal with these problems. The midterm was fair but a couple of questions in the final were a bit too much with no guidance how to approach.

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Psets are quite tough and pretty much everyone had to rely on TF guidance.

Evaluate the course overall.: **1 (unsatisfactory)**

Assignments (exams, essays, problem sets, language homework, etc.): **2 (fair)**

Extremely difficult and time-consuming; considering that this is a required course for CS concentrators, I felt like it was asking too much.

Evaluate the course overall.: **5 (excellent)**

Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

I think the collaboration policy should have been more lenient like in other courses where you list the names of people you collaborate with.

Evaluate the course overall.: **2 (fair)**

Assignments (exams, essays, problem sets, language homework, etc.): **2 (fair)**

problem sets and final were very difficult

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **4 (very good)**

Sometimes difficult to approach without guidance or hints

Evaluate the course overall.: **5 (excellent)**

Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

The assignments were my main vehicle for really engaging with the material and testing the limits of my understanding - so well done thank you so much.

Evaluate the course overall.: **2 (fair)**

Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Problem sets were very difficult and took up too much time to complete (mostly because of the convoluted nature of NAND++ and NAND<<)

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

I feel like all psets were well created for the class, and the exams were doable under time constraints

Evaluate the course overall.: **5 (excellent)**

Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

Hard, but very useful.

Evaluate the course overall.: **4 (very good)**

Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

Problem sets decent.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Problem sets in the beginning of the semester weren't always related to the readings and what was taught.

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

Homework assignments were very difficult.

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

The psets were difficult, but good at demonstrating the applicability of the concepts we learned. The exams were fair.

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

There were often typos.

Evaluate the course overall.: **3 (good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

I would have very much preferred to have received answer keys following each problem set. Not being able to see the solutions to the problems we couldn't solve ourselves was not conducive to learning.

Evaluate the course overall.: **4 (very good)**
Assignments (exams, essays, problem sets, language homework, etc.): **3 (good)**

I thought the problem sets and exams were generally pretty good, although sometimes it felt like the problems were more about parsing through notation to understand what the problem was asking for than actually proving something interesting or thinking of creative solutions, although some of the problems were definitely interesting and I enjoyed the bonus assignments. I found the reading quizzes a little annoying mostly just because they were hard to remember to do so I lost a lot of points on them just by forgetting to do them in time.

Evaluate the course overall.: **5 (excellent)**
Assignments (exams, essays, problem sets, language homework, etc.): **5 (excellent)**

The extra credit problems were super interesting and also relieved a lot of the stress placed on the assignments and exams. The problem sets had cool problems that reflected the material learned in class very well.

Evaluate the course overall.: **1 (unsatisfactory)**
Assignments (exams, essays, problem sets, language homework, etc.): **1 (unsatisfactory)**

tfs often didn't know how to do the psets!! this is a PROBLEM

Feedback you received on work you produced in this course — Add Comments?

Course

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **5 (excellent)**

gradescope comments were great

Evaluate the course overall.: **3 (good)**
Feedback you received on work you produced in this course: **3 (good)**

feedback varied pretty wildly; sometimes I got thoughtful, thorough comments that helped me understand what I did wrong, other times I got comments like "Your solution doesn't make sense to me" which is entirely useless to me (and does not even tell me if I actually got the problem wrong or if the TF just didn't feel like trying to understand my answer)

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **1 (unsatisfactory)**

Had a few grading errors for gradescope, sometimes the TFs grade asymmetrically (other people I know get full points for a question while I get less than half, when we put similar answers, and vice versa).

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **5 (excellent)**

Love the gradescope system and how receptive the graders were to concerns that were raised

Evaluate the course overall.: **3 (good)**
Feedback you received on work you produced in this course: **3 (good)**

Pset feedback was inconsistent between TFs - you could literally see on Gradescope (where it lists the possible errors) that TFs were taking off different amounts of points for what amounted to the same mistake.

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **3 (good)**

Depends on the TF that was grading an specific question

Evaluate the course overall.: **2 (fair)**
Feedback you received on work you produced in this course: **4 (very good)**

Feedback was helpful and timely most of the time. Programming assignments really needed to be graded faster though. 2 months shouldn't be an acceptable turnaround for an assignment given in the first few weeks of class.

Evaluate the course overall.: **3 (good)**
Feedback you received on work you produced in this course: **1 (unsatisfactory)**

Feedback was often scarce.

Evaluate the course overall.: **2 (fair)**
Feedback you received on work you produced in this course: **2 (fair)**

More feedback is always appreciated.

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **4 (very good)**

gradescope is better than canvas 10x

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **2 (fair)**

Would have liked sample answers.

Evaluate the course overall.: **1 (unsatisfactory)**
Feedback you received on work you produced in this course: **2 (fair)**

Sometimes, points were taken off for no apparent reason.

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **4 (very good)**

Some of the graders were not as generous as others and it was hard to know what the expectations always were.

Evaluate the course overall.: **2 (fair)**
Feedback you received on work you produced in this course: **2 (fair)**

problem set feedback was often vague

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **3 (good)**

As the year went on, we got less and less comments

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **3 (good)**

Could be lacking or unclear at times

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **5 (excellent)**

Thanks TFs, wow it was fantastic!

Evaluate the course overall.: **2 (fair)**
Feedback you received on work you produced in this course: **3 (good)**

Sometimes, comments on psets were vague. Feedback oftentimes came after the problem set deadline, even though it was advertised at the beginning of the course as otherwise.

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **1 (unsatisfactory)**

I wish the TFs could provide more comments besides "Major proof error" or the like because in that case it's really important to get an understanding of the concept you missed.

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **5 (excellent)**

Not bad

Evaluate the course overall.: **2 (fair)**
Feedback you received on work you produced in this course: **4 (very good)**

Generally it was good. Sometimes though something would be marked incorrect on gradescope without an explanation and correct answers weren't provided.

Evaluate the course overall.: **3 (good)**
Feedback you received on work you produced in this course: **5 (excellent)**

I enjoyed the Gradescope comments, which were generally informative, and I liked how organized the entire problem set submission/return process was.

Evaluate the course overall.: **3 (good)**
Feedback you received on work you produced in this course: **2 (fair)**

No sample solutions to the homework assignments or exams were provided...

Evaluate the course overall.: **5 (excellent)**
Feedback you received on work you produced in this course: **5 (excellent)**

We received a lot of feedback on our psets, especially when our solutions were lacking in some way. This helped us think about what we did wrong and come up with ideas to fix our mistakes.

Evaluate the course overall.: **1 (unsatisfactory)**
Feedback you received on work you produced in this course: **1 (unsatisfactory)**

sometimes I got points taken off, and teaching staff were unable to really explain what a "sufficient' answer would be

Evaluate the course overall.: **4 (very good)**
Feedback you received on work you produced in this course: **1 (unsatisfactory)**

I appreciate the generous grading, but I came out of the course not really sure if I know how to write a rigorous proof.

Section component of the course — Add Comments?

Course

Evaluate the course overall.: **4 (very good)**
Section component of the course: **N/A**

Did not attend.

Evaluate the course overall.: **4 (very good)**
Section component of the course: **4 (very good)**

Sections that I attended were very effective in really hammering in most components of the course

Evaluate the course overall.: **4 (very good)**
Section component of the course: **3 (good)**

Depends on the TF

Evaluate the course overall.: **2 (fair)**
Section component of the course: **1 (unsatisfactory)**

I went once, the TF said some patently incorrect things and couldn't answer questions on the proof given in lecture, and I did not attend again.

Evaluate the course overall.: **3 (good)**
Section component of the course: **1 (unsatisfactory)**

Really depended on the TF's and the topic of the week. Some TF's came to section so unprepared.

Evaluate the course overall.: **3 (good)**
Section component of the course: **5 (excellent)**

Helped a lot with understanding dense, tough lecture notes

Evaluate the course overall.: **4 (very good)**
Section component of the course: **3 (good)**

Instead of having lecture required and section semi-optional, lecture should have been optional and at least a section a week required

Evaluate the course overall.: **2 (fair)**

Section component of the course: **2 (fair)**

Some TFs sort of lost control of section because students were so confused so it was all over the place. I don't really blame the TFs because it's a cumulation of things that drives students to the lost state they are in, but still it's hard when the TFs aren't always able to actually explain the material.

Evaluate the course overall.: **4 (very good)**

Section component of the course: **2 (fair)**

Section not as useful. Not recording attendance was also a big deterrent from people going, since just asking to note names is risky for students.

Evaluate the course overall.: **1 (unsatisfactory)**

Section component of the course: **5 (excellent)**

Very well-organized; TFs were very interactive.

Evaluate the course overall.: **5 (excellent)**

Section component of the course: **5 (excellent)**

I watched mark's recorded lectures and they were excellent!

Evaluate the course overall.: **5 (excellent)**

Section component of the course: **1 (unsatisfactory)**

section was too slow-paced and ultimately I deemed it to be a waste of time. we never got to the harder material I needed help on.

Evaluate the course overall.: **2 (fair)**

Section component of the course: **N/A**

Didn't go

Evaluate the course overall.: **3 (good)**

Section component of the course: **N/A**

The lecture material and reading material is very dense and amazingly hard to understand even after staring at it for a while. Would have helped to explain some of the concepts in laymen's terms.

In your opinion, what preparation or background is necessary to take this course?

Course

Evaluate the course overall.: **3 (good)**

CS20 is basically required, but Boaz should at least try to match up more with the notation and naming conventions used in that class.

Evaluate the course overall.: **5 (excellent)**

I would say that CS50 is necessary background for this course because you need to know how to "think" like a computer scientist. The problem sets are largely logic and mathematics based, however, they are often within the scope of computers and computer programming, therefore some experience is needed.

Evaluate the course overall.: **4 (very good)**

be comfortable with proofs

Evaluate the course overall.: **3 (good)**

proof writing/sets/logic/etc at the level of CS20 at the very least

Evaluate the course overall.: **4 (very good)**

CS50/equivalent, some experience with proofs is helpful but not necessary.

Evaluate the course overall.: **4 (very good)**

At least some CS experience. People who haven't programmed in their life are probably not well suited for this course.

Evaluate the course overall.: **5 (excellent)**

Math background in proofs is necessary but they catch you up if you're behind, basic programming is definitely helpful but not necessary.

Evaluate the course overall.: **4 (very good)**

Some proof-based math.

Evaluate the course overall.: **4 (very good)**

CS 50, CS 51, Stat 110

Evaluate the course overall.: **4 (very good)**

You should be comfortable with some proof techniques/discrete mathematics, and you should love CS/math.

Evaluate the course overall.: **4 (very good)**

Some proof experience, comfortability with math, a little coding and a desire to learn the material.

Evaluate the course overall.: **5 (excellent)**

Not really any, ability to reason well is good

Evaluate the course overall.: **4 (very good)**

It requires us to have a good foundation on basic math and if possible, proof based math. Having a background on probability is very helpful for the second half of the course. Taking Stat 110 before or concurrently would be very helpful.

Evaluate the course overall.: **1 (unsatisfactory)**

CS20 as well as some previous CS experience

Evaluate the course overall.: **4 (very good)**

Having some familiarity with proofs before coming into the class will make it a lot easier. Still, if this is your first proof-based course, it is good and will ease you into things. It might be harder for you than others though.

Evaluate the course overall.: **4 (very good)**

Basic knowledge of proofs

Evaluate the course overall.: **5 (excellent)**

Math 21ab + Interest in CS, and a good pset partner to bounce ideas with. CS20 not needed.

Evaluate the course overall.: **4 (very good)**

Honestly need a very strong background in proof based math. 21 series was definitely not sufficient -- I REALLY wish that 21c existed last year because I would have definitely taken it. There is a pretty strong imbalance between students who took 23/25 and the rest in terms of there preparedness to quickly grasp fundamentals and then start focusing on the nuances of the material

Evaluate the course overall.: **3 (good)**

Proof background a must, or expect to do a lot of catch-up work.

Evaluate the course overall.: **3 (good)**

not much background is necessary. I hear stat110 helps

Evaluate the course overall.: **3 (good)**

Be able to write proofs because there is no proof-writing review at the beginning of the course.

Evaluate the course overall.: **4 (very good)**

A lot of math. Definitely thorough comprehension of proofbase math.

Evaluate the course overall.: **3 (good)**

Proof-based math class

Evaluate the course overall.: **2 (fair)**

A comfort with programming at the level of 50/51 is helpful. Much of the material in the latter half is redundant with 124.

Evaluate the course overall.: **3 (good)**

it is hard to say I think that some knowledge of theoretical cs would be helpful e.g. knowing how some NP algorithms work.

Evaluate the course overall.: **3 (good)**

Proofs class. Math.

Evaluate the course overall.: **4 (very good)**

CS 20 is not essential but very helpful

Evaluate the course overall.: **4 (very good)**

None. You can go in the course with just basic calculus knowledge. I came in knowing nothing about proofs, and came out being able to do all of them.

Evaluate the course overall.: **4 (very good)**

CS50

Evaluate the course overall.: **2 (fair)**

Magical brilliance? A baby CS121, much more than what CS20 teaches, but I guess CS20 helps.

Evaluate the course overall.: **3 (good)**

You need to have a strong proof based math background and must generally be extremely good at math. As a student of math 21a and 21b background I was not at all prepared.

Evaluate the course overall.: **4 (very good)**

Some formal mathematics is important. CS20 will definitely prepare you for CS121.

Evaluate the course overall.: **4 (very good)**

Discrete math is most important thing.

Evaluate the course overall.: **3 (good)**

Taking a proof-based math class before is definitely helpful, though not totally necessary. I imagine it would make reading the really math-heavy lecture notes a little bit easier. Taking Stat 110 before is also a big plus.

Evaluate the course overall.: **3 (good)**

Strong math background. You want to know how to do proofs

Evaluate the course overall.: **5 (excellent)**

strong understanding of discrete math (cs20 should be a required class for cs concentrators!!!!), basic understanding of algorithms and data structures would help

Evaluate the course overall.: **5 (excellent)**

A class that rigorously involves proofs (Math 101). CS51 was helpful for making some of the concepts more concrete.

Evaluate the course overall.: **1 (unsatisfactory)**

-Theoretical math -Python experience

Evaluate the course overall.: **4 (very good)**

Knowledge of proofs.

Evaluate the course overall.: **2 (fair)**

Some understanding of proof-based math.

Evaluate the course overall.: **3 (good)**

Proofs Basic knowledge of data structures

Evaluate the course overall.: **5 (excellent)**

Some proof based maths goes a long way, but isn't necessary. I think one could do this course with 0 experience if they tried hard.

Evaluate the course overall.: **4 (very good)**

Some proof-based math. Statistics is helpful (though I didn't have it). Some coding. Some knowledge of computer hardware is helpful.

Evaluate the course overall.: **5 (excellent)**

Some background in proofs, mathematical notation, probability (but nothing major)

Evaluate the course overall.: **5 (excellent)**

Proof-writing, coding in Python

Evaluate the course overall.: **4 (very good)**

Some proof based class (CS20 or something similar)

Evaluate the course overall.: **3 (good)**

Math 25. However, I would also argue that CS20 doesn't adequately prepare one for this course. The dept should seriously consider making this course easier or offering an intermediary alternative.

Evaluate the course overall.: **2 (fair)**

None

Evaluate the course overall.: **2 (fair)**

strong math and proof background

Evaluate the course overall.: **4 (very good)**

Work Ethic

Evaluate the course overall.: **2 (fair)**

Probably more math than I had

Evaluate the course overall.: **4 (very good)**

Some experience with proof-writing and formal math is definitely helpful

Evaluate the course overall.: **1 (unsatisfactory)**

Far more than CS20 under Harry Lewis and the 21 series of math despite that being the exact prep they suggested. There was a presumption that everyone in the class was more in the math25 level of understanding of proofs and mathematical notation.

Evaluate the course overall.: **3 (good)**

The background necessary for this course was basic programming and advanced math understanding. I felt like Math 21a and 21b, CS50, and Stat110 were all needed.

Evaluate the course overall.: **4 (very good)**

CS20 , and taking Stat 110 concurrently or beforehand is helpful

Evaluate the course overall.: **5 (excellent)**

Lot of proof based math

Evaluate the course overall.: **4 (very good)**

Not much background is needed.

Evaluate the course overall.: **5 (excellent)**

It was difficult not having any background in proof-based mathematics. You don't need any applied CS except maybe basic experience with Python.

Evaluate the course overall.: **2 (fair)**

Proof-based math, probability, and patience

Evaluate the course overall.: **5 (excellent)**

CS20/HW 0, being ready to spend 6-7 hours understanding and writing proofs.

Evaluate the course overall.: **2 (fair)**

Proof-based math. This course was much more math than CS in terms of the work required.

Evaluate the course overall.: **5 (excellent)**

A background in mathematical proofs is very helpful, especially in the beginning.

Evaluate the course overall.: **3 (good)**

A proof based math course is not required but would be the single most helpful thing to have taken beforehand.

Evaluate the course overall.: **4 (very good)**

math background

Evaluate the course overall.: **3 (good)**

CS20

Evaluate the course overall.: **4 (very good)**

A proof background is helpful, as is a statistics background

Evaluate the course overall.: **5 (excellent)**

experience with proofs, coding experience not really required

Evaluate the course overall.: **3 (good)**

At least some experience with proofs, i.e. CS20, Math 23-55, or a 100-level Math course.

Evaluate the course overall.: **5 (excellent)**

proof background

Evaluate the course overall.: **4 (very good)**

General mathematical maturity, some experience writing proofs is nice but by no means required. Also, familiarity with some programing language at a basic level. Some familiarity with algorithms is also nice, but not required.

Evaluate the course overall.: **3 (good)**

Proof based math background.

Evaluate the course overall.: **3 (good)**

Experience in coding (important to understand what the theory is about) and in discrete mathematics.

Evaluate the course overall.: **2 (fair)**

CS20

Evaluate the course overall.: **3 (good)**

It would be best to have some prior knowledge of mathematical proof-writing or philosophy, perhaps. Some introduction to computer science (basic algorithms and complexity analysis) helps as well.

Evaluate the course overall.: **3 (good)**

Some proof background.

Evaluate the course overall.: **4 (very good)**

Mathematical maturity, nothing in particular. I haven't done proofs before, and picked it up along the way

Evaluate the course overall.: **4 (very good)**

Understanding of proofs (CS 20 was helpful)

Evaluate the course overall.: **5 (excellent)**

Even though this is a Computer Science course, it is much more mathy than it is computer sciency. A strong level of proof writing will be extremely helpful.

Evaluate the course overall.: **3 (good)**

Knowledge of proofs is not essential, but very helpful (or else you will have to learn while doing psets, which can be difficult).

Evaluate the course overall.: **1 (unsatisfactory)**

math 25+

Evaluate the course overall.: **3 (good)**

I think some background in proof based math is necessary/advantageous.

Evaluate the course overall.: **5 (excellent)**

CS50+, some math background

Evaluate the course overall.: **5 (excellent)**

proof writing

Evaluate the course overall.: **4 (very good)**

proof writing, theoretical math

What would you like to tell future students about this class?

Course

Evaluate the course overall.: **3 (good)**

You are likely reading this because you have to take the class for the concentration theory requirement, so I won't tell you not to take it. Basically, make sure you have taken CS20, you have good problem set partners, start the problem sets early, and can allocate a couple of hours to reading the lecture notes twice a week. Warning: Boaz's lecture notes were sometimes indecipherable. I think he believes that writing in mathematical equations erases any difficulty of understanding because they cannot be misinterpreted, but the problem with writing in math is that sometimes his statements cannot be interpreted at all. So sometimes really simple ideas could be completely screwed up by his attempts to vivisect them in his lecture notes, and when a human explained it in 5 minutes I would have an 'Oh' moment. Once Boaz realizes that he is teaching human beings who are not operating on his higher plane of IQ, the course should get better. The staff did seem to care about making the course better, and it's a shame that they stopped doing the feedback form in the latter half of the course. The collaboration policy is insane in this class; you cannot even discuss the problem set with other people except your partner. This sounds reasonable until you realize that most of office hours is people who understand one question explaining it to someone who understand another question. It made office hours extremely difficult as the TF can no longer tell a person to whom they have just explained Q1 to go and explain it to Person B. You can't even listen in while they explain it to someone else. Frankly a lot of people just disobeyed it, making life awkward for those of us following it. They eventually allowed two pairs to pair up and work together, but I still don't see why it is necessary at all. If you don't understand the material from problem sets and rely on others entirely, everyone knows you will still bomb on the midterm and final.

Evaluate the course overall.: **5 (excellent)**

I would tell students to get on top of things early and stay there. DO THE LECTURE READINGS. Yes, they are long and often times very confusing, however, they are crucial to understanding the course and if you do not do them, the problem sets and tests will be absolutely awful. If you stay on top of the readings and play close attention in lecture, along with regular office hour attendance, you will do very well.

Evaluate the course overall.: **4 (very good)**

this is a great class and I thought Boaz was a great professor. I learned a lot. Make sure you go to lecture and do the readings, and understand the pset answers. Lecture readings can be a little dense.

Evaluate the course overall.: **5 (excellent)**

Challenging but extremely fair with a lot of opportunity for bonus points. Lectures were easy to understand and the notes are very comprehensive. If you put in the work you'll do well, learn a lot, and feel a lot better about yourself than you do in the average CS class.

Evaluate the course overall.: **4 (very good)**

It's a good introduction to theoretical CS, and Barak definitely tries to make the class a better experience for the students. It's rather reading-intensive (very heavy lecture notes), and lectures are compulsory which isn't ideal, but the psets and exams are pretty fair.

Evaluate the course overall.: **4 (very good)**

If you are not a computer scientist concentrator, but are interested in learning about theoretical computer science, then this may still be the course for you. Just make sure that you are comfortable with proofs and truly are interested in learning about the different definitions of functional classes (P vs NP vs BPP vs BQP vs P/Poly vs etc.)

Evaluate the course overall.: **1 (unsatisfactory)**

You could not ask for much worse of a class than this. Everything about this class is a disaster. The collaboration policy is absolutely arbitrary and detracts from learning, the lecture readings are incomprehensible yet mandatory (and you're graded on understanding it before the material is taught? ok), attendance is required unless you don't show up, and the way grades are assigned is completely opaque. And as much as I enjoy extra credit, when you load every assignment up with bonus points and everybody does them, they don't really mean much anymore. The material covered in this class had so much potential; unfortunately it was completely ruined by the terrible way it was taught.

Evaluate the course overall.: **4 (very good)**

Although a lot of work, you will learn a great deal in this class. By the end of the class, you will be very satisfied with everything you have learned over the course of the semester.

Evaluate the course overall.: **4 (very good)**

Professor Barak is great at teaching but the course materials aren't very polished.

Evaluate the course overall.: **4 (very good)**

This class is hard. But with hard work and spending a lot of time reading and digesting the lecture notes (which are very detailed and critical to being successful in this class), you will learn a lot and it will be very rewarding.

Evaluate the course overall.: **5 (excellent)**

Boaz is a cool guy and he tried very hard to make this an interesting and accessible course while adding a splash of rigor; I commend him for that. A lot of the kinks should be worked out by the next iteration so I'd highly recommend. The course was much easier than I had expected it to be after he hyped it, find a good partner and it is extremely straightforward

Evaluate the course overall.: **1 (unsatisfactory)**

Lecture is essentially worthless as it is nearly impossible to understand.

Evaluate the course overall.: **4 (very good)**

This was the first iteration of 121 with Boaz and I'm sure it will get better in future years. That being said, in our year, there was a lot of hand-holding. Attendance was mandatory for a while, there were required reading quizzes, extra credit on psets and midterms to pad your grade, etc. To some extent, this forces you to engage with the material and learn, but people should just have the option to do the parts they think are useful. You'll try to avoid NAND like the plague but it's inevitable and a surprisingly useful model of computation, so just learn to accept it.

Evaluate the course overall.: **4 (very good)**

Boaz's lecture notes were often really difficult/time-consuming to parse and lectures were even harder to understand, but if you put in the time to learn the material, you will come out of this class with a good basic understanding of CS theory. Also, you can tell Boaz really wants his students to succeed and makes exams very doable if understand the problem sets.

Evaluate the course overall.: **5 (excellent)**

NAND, NAND++, NAND<<, Reductions, NP v P, Halting, RNG --> Basically summarizes the course. Great overview, learned a lot. While some math background is helpful, the key to success is having an insightful pset partner to bounce ideas with for the psets, which are designed wonderfully to strengthen understanding of the material.

Evaluate the course overall.: **4 (very good)**

This course was honestly amazing and really opened up the world of theoretical CS, but it's going to be an extremely difficult and time consuming commitment. On the bright side, the teaching staff genuinely cares about you grasping the material (as opposed to just making a hard course for the sake of it) and constantly provides you ways to demonstrate that you deserve a high grade by going above and beyond (tons of bonus points, given for solving interesting/challenging problems)

Evaluate the course overall.: **3 (good)**

This class is a lot better in retrospect. It was a painful process during the semester - psets took nearly 20 hours a week and were almost impossible without TF input at office hours, lectures were (at the beginning) required at 10 AM, and there was about 20 pages of super dense textbook reading with an accompanying reading quiz due before every lecture. However, in retrospect, I can understand why Boaz chose to focus on NAND so much at the beginning, because it builds a solid and concrete foundation for the rest of the theory. I can now appreciate the overview we got of critical and cutting-edge topics in CS, like uncomputability, NP, randomized algorithms, cryptography, and quantum computing. Although this class feels like a lot at the beginning of the semester, rest assured that exams are reasonable, the teaching staff is competent and always available on Piazza, and although you may not wind up with an A, you'll learn a lot that'll be fundamental to your understanding of CS as a field. I wouldn't recommend it to non-CS concentrators, but as a requirement, I can't complain.

Evaluate the course overall.: **3 (good)**

If you're taking this class, it's probably because it's required. It was Boaz's first year teaching this class, so there was a lot of room for improvement. He expects you to put a lot more time into the class in the form of readings, quizzes, and lecture attendance than you would probably ever want to. Over the course of the semester, he eased up on these requirements, so hopefully he makes it a class with a more reasonable load next year.

Evaluate the course overall.: **4 (very good)**

I really liked the course material. The NAND computational model might seem strange at first but to me it made things easier in the long run. I think this course is likely to improve in future years. Do expect a lot of work however.

Evaluate the course overall.: **2 (fair)**

As much as I wish I could recommend this class, in it's current format it's really not a useful introduction to theoretical computer science. Having studied much of the material before, I can't help but feel like we were held back by focusing on NAND as a model, even though the proofs became impossibly dense and students struggled with the complexities of NAND++. Turing machines, etc. are much more frequently used in classes like this because there are supporting resources in the case students need additional support. However, when the only resource is the lecture itself and partially-done lecture notes, there's not much students can do to catch up. At the end of this course, I feel like I gained very little by studying NAND instead of the ubiquitous automata that would help me in a class like compilers. Furthermore, I still don't quite see the point of the first half of the course, and everything after the midterm felt rushed and incomplete. Maybe it will be better in future years, but in it's current state, I really can't recommend it at all. It's unacceptable that the one required CS class in the department is being run this way.

Evaluate the course overall.: **3 (good)**

The material that is covered is very interesting and Boaz knows a lot about it and is a very good professor. Unfortunately, he is a bit too clever and struggles to understand why people who have never been exposed to theoretical cs or math struggle. If you are someone who doesn't know much about theoretical cs it is a 15h + class. Boaz said himself that he doesn't see why cs124 should be harder than cs 121.

Evaluate the course overall.: **3 (good)**

Don't really know how much I got out of this class in terms of real-world applicable knowledge. The exams aren't that bad if you study. The sets are not bad either. But then lectures and lecture notes are dense and tough to get through.

Evaluate the course overall.: **4 (very good)**

It's an ok introduction to complexity theory. If you already know the basics, though, you should probably just skip onward to higher level theory courses. The lectures for the class are ok, although they sometimes aren't particularly clear. The lecture notes are also fine. The problem sets were sometime quite poorly constructed, although there were tons of bonus points, and the grading was sometimes inconsistent. The course also uses a set of NAND-based formulations instead of the canonical word RAMs and Turing machines. Overall, this year's iteration of the course wasn't great, but this was Boaz's first year teaching the course, so later iterations will almost certainly be improved.

Evaluate the course overall.: **4 (very good)**

Lecture notes are confusing, lectures are boring. But the problem sets are very rewarding and the TFs and professor are very responsive and want you to do well. The exams are fair and you leave feeling like you learned a lot. Overall, it was a bit of a mess because it was the first year, but it'll get better every year, I'm sure!

Evaluate the course overall.: **4 (very good)**

Interesting, essential (but challenging) CS course. Even for people not concentrating in CS, I think CS 121 transforms your way of thinking and really improves your quantitative reasoning.

Evaluate the course overall.: **4 (very good)**

Don't get bogged down by the mathematical jargon and technical details. Instead, focus on the big picture and try to get an intuitive understanding of the concepts.

Evaluate the course overall.: **5 (excellent)**

It's a great course in that it teaches you a lot of interesting material. Also, if you're a CS major you have to take it. Just actually do the reading before lecture, go to every lecture, and go to section, and you'll be fine.

Evaluate the course overall.: **2 (fair)**

The professor is very enthusiastic and responded to feedback, but a lot of things were just unreasonable. The material isn't even that hard, it's just the way it is presented that is super confusing. I've never asked dumber questions in my life because I was just so lost. It is unfair to expect the TFs to learn the material twice as fast as the students and then be able to teach it, so I don't blame them for not being helpful, but it is unfortunate that for as brilliant and nice the professor is, he is really, really bad at explaining things clearly. The best you can do if find a couple TFs that are actually helpful and stick with them.

Evaluate the course overall.: **3 (good)**

This is a very difficult course that is heavy with proofs and mathematics. The lectures and lecture notes are extremely confusing and they make simple topics very confusing. There is no easy way to learn the material as the notes are very dense and unhelpful. The problem sets may be the only way to learn along with going to section.

Evaluate the course overall.: **4 (very good)**

Taught a lot of important knowledge about computational theory. What are the limitations and capabilities of computing in general? What are the different methods of computation?

Evaluate the course overall.: **4 (very good)**

I really, really liked this class. Yes, it's hard and takes a lot of effort but that's how you really learn the material and you'll have to take it anyways :) Professor Barak is really understanding, knowledgable, and a great person. Just read lecture notes for midterm and final and you'll be fine.

Evaluate the course overall.: **3 (good)**

It's hard. I think it will get better with time, as this year the professor was new and there were definitely some challenges. It's good to learn some of this higher-level CS knowledge I guess, but in terms of tangible skills I've learned this semester, there aren't that many I can say I've mastered because of 121.

Evaluate the course overall.: **3 (good)**

This course is mandatory and you are going to work hard. Go to section and office hours. It will take a lot more time than you think.

Evaluate the course overall.: **5 (excellent)**

A challenging but rewarding class that will definitely be worth it in the end, if you are prepared for a very math and proof based class.

Evaluate the course overall.: **5 (excellent)**

This was a great class, and Boaz does a great job teaching it. The material is really fascinating, and I definitely learned a ton about theoretical CS. I would recommend taking this even if you weren't a CS major, as it does a great job showing you the limits of computation, which is important to know regardless of what your major is. I could see people complaining about how involved the course structure is (two reading quizzes a week, homework every week, required/"strongly recommended" lecture and participation), but I think it was set up well for learning.

Evaluate the course overall.: **1 (unsatisfactory)**

If you're a CS concentrator, too bad. But Boaz is a really sweet person who cares about the course, so hopefully the course will become more organized in future iterations.

Evaluate the course overall.: **2 (fair)**

I would only recommend this course for CS concentrators who have to take it for now. Its the first year of a big change and it seems extremely promising. (Boaz and Juan have so much enthusiasm and seem to care a lot!) but the course it a bit messy right now. The lecture notes sometimes go on long convoluted tangents and the math is sometimes typed hastily into the text. Additionally, notes in the margins talk about things he still needs to add to the lecture notes... Some teaching fellows were very unfamiliar with some of the material with all of the changes. I think the class will be great with time, but there are a lot of kinks that need to be worked out.

Evaluate the course overall.: **3 (good)**

This was the first run of this new version of the class so take everything with a grain of salt. I do think the course got better over time (I think understanding how NAND programs worked and related to the content took a while). The lecture notes were more readable by the end. It would have been great if we could have worked more on some of the core concepts in the lecture notes during lecture though - just reading through the lecture notes didn't really teach me how to work correctly and thoroughly through a reduction proof for example. Boaz is a great guy and he really listens to student feedback.

Evaluate the course overall.: **5 (excellent)**

This class is one of my favourite I've taken at Harvard. It was interesting and exceptionally well run. People say it is hard, and it takes a little time, but if you have any background in proof based maths at all, its very easy compared to a high level class in the maths department. If not, its still pretty manageable and good way to get some proof experience. Highly recommend.

Evaluate the course overall.: **4 (very good)**

A great course! It is revamped from previous versions, which I think makes it a lot better. The material is very interesting and is presented in a unique way (unlike courses at other colleges). Professor Barak is incredibly invested in the class - he has basically written his own textbook for it. And this has made the class very good. Professor Barak wants you to learn the material and work hard, and the course is setup so that you can do it. While the pre-lecture quizzes got a lot of flack, they were very helpful in ensuring that you actually did the reading before the class. There were some kinks to iron out this year since it was its first iteration (typos, etc.) but I think that will improve in future years. TFs weren't especially knowledgeable since they hadn't taken this iteration of the course - but, again, that should be improved next year. It takes some work - especially if you have not taken an upper level math course before, as the reading and proofs take some time to get used to. Taking CS 20 or some proof-based math course beforehand would probably be a good idea (I had taken Math 112). Again, Professor Barak is a really great and interesting Professor, and it is a class worth taking.

Evaluate the course overall.: **5 (excellent)**

This course has been totally restructured to give an excellent foundation in very interesting theoretical computer science problems. It totally changed the way I think about the world and computer science and Boaz does a great job of explaining things. Read the notes and go to lecture, unless you're a super genius you need to hear the same concepts a couple of times before it sticks.

Evaluate the course overall.: **5 (excellent)**

THIS CLASS IS AWESOME. I loved it. By far the most interesting class I've taken at Harvard. Boaz is incredible - he cares so much about his students, and he really takes your feedback into consideration. The psets were super fun and very doable - took one or two nights to do. Make sure you find a good partner early on to pset with. Definitely read the lecture notes thoroughly - they are super helpful and otherwise lecture is a waste of time. If you are at all mathematically inclined and care about learning about problems we don't know the answer to, you should for sure take this class. I took math 25 freshman year (and thought it was extremely difficult) but I found the psets to be fairly easy; other students with less math preparation will disagree.

Evaluate the course overall.: **4 (very good)**

This is definitely a challenging, yet rewarding class. It's important to stay on top of lecture notes and start psets early! Go to office hours and section - the TFs are incredibly helpful. The teaching staff really wants you to succeed so there are plenty of opportunities for bonus points. Find yourself a good pset partner and try to enjoy the class. The material is actually super cool!

Evaluate the course overall.: **3 (good)**

The way the course is taught has its pros and cons. Seeing computation built from the ground up using the NAND programming languages was super cool. However, it is hard and one will likely have to study outside of lecture notes and section.

Evaluate the course overall.: **4 (very good)**

The course material was the best out of all my classes and definitely way better than previous iterations. However, the lectures were utterly useless and i feel that Boaz should do more white-board lectures where he actually writes stuff, as opposed to just changing slides. The class is disorganized in that directions were unclear, tons of typos and mistakes in the lecture notes, slow grading, and inconsistent feedback from TF. It will be better next . year!

Evaluate the course overall.: **2 (fair)**

very difficult class, textbook was quite confusing and was extremely wordy. lecture and textbook did not offer that much support in psets, although they were on same material it was really difficult to solve pset problems with them. TFs also seemed confused about certain material and told conflicting pieces of information about psets sometimes. it is a required class for CS though so good luck and start early on psets and make sure you have a good pset partner.

Evaluate the course overall.: **4 (very good)**

I'm not sure what the course will be like next year, but if you have to take it, you have to take it. Good luck!

Evaluate the course overall.: **2 (fair)**

On second look I probably wouldn't have taken this course

Evaluate the course overall.: **4 (very good)**

Solid course that definitely got a little bit too much flak at times. The course is not afraid to push students in terms of breadth and depth of knowledge, moving quite quickly through an ambitious series of topics. Problem sets are definitely challenging so find a partner and go to office hours. The textbook is really comprehensive. There are definitely some kinks to be worked out and the choice to center the course around NAND is a little bit strange, but for a course basically undergoing a complete overhaul it went alright.

Evaluate the course overall.: **1 (unsatisfactory)**

This class under Boaz is awful and a completely disorganized mess. If you can wait and give it a few years to figure itself out that may be okay but insofar as you don't have to take it now, don't.

Evaluate the course overall.: **5 (excellent)**

Do the problem sets thoroughly - do whatever Boaz says because he really knows what he's doing and he's empowering. The homeworks are really informative for the lectures and the exams.

Evaluate the course overall.: **3 (good)**

The new version of the class is not easy and is a lot more work, so be prepared! Get ready for tedious problem sets and quizzes before each class. Also, although it is clear that Boaz really cares about the material and the students, he is not the best lecturer. Also, teaching staff was not super great since the course material differed so much from past iterations of the course.

Evaluate the course overall.: **4 (very good)**

Instead of learning Turing machines like every other theoretical CS course out there, you learn about NAND programs. However, this isn't as big of a deal in the second half of the course, and the material in the second half is definitely the course's strong point.

Evaluate the course overall.: **5 (excellent)**

It's a really hard course, but really rewarding! You'll have to take it anyway so might as well like it!

Evaluate the course overall.: **2 (fair)**

Took this class because it was a requirement and was very disappointed. It was the first year it was offered, so the course and staff were very disorganized. Two TFs quit within the first month of the course, which made things even more hassled. This class relied on a needless convoluted model; the same course could have been taught using a more standard approach and would have had better results. However, Professor Barak is very energetic and passionate about this course, which was probably the only thing that kept me from giving this course a lower score. He deeply cared about improving the class experience and engaging with students.

Evaluate the course overall.: **4 (very good)**

Not everyone enjoys theoretical CS, but I personally found many of the lectures fascinating. The class is at times conceptually difficult, so try not to fall behind.

Evaluate the course overall.: **5 (excellent)**

CS 121 as it is now is a much more rigorous although in my opinion much more interesting and helpful course. Looking back I can say that I really learned how to think computationally and understand foundational ideas in computer science that will help me throughout the rest of my academic career. We were the first iteration of this course, meaning that there were some rough edges (for example, the lecture notes were sometimes updated after lecture and it was a bit hard to keep track of the right versions). However I can tell that Boaz really put his heart into this course and into keeping the common theme of NAND which I actually think helped really unify the various concepts under one mental umbrella. This course definitely has a steep learning curve if you don't have any proof based math background or CS20, but if you put in the time then it is doable. Start the psets early!! And go to Boaz's office hours, he is incredible kind and helpful and always happy to explain things again until you understand the concept.

Evaluate the course overall.: **2 (fair)**

You and me, let's compute right here!

Evaluate the course overall.: **5 (excellent)**

This course might be really hard, but it's incredibly useful and well taught. You'll likely come away from it with an understanding for some of the intricacies of computational theory and *very* well prepared for other 12x courses.

Evaluate the course overall.: **2 (fair)**

This (Fall 2017) was an unorganized class, which is expected for the first year. Let another one of your friends take it and hear if it has improved before taking it yourself.

Evaluate the course overall.: **3 (good)**

This course covers a variety of interesting topics, ranging from P=NP to randomization, cryptography, and many others. Obviously CS concentrators are required to take this, but if you're not a CS concentrator still shop the course and look ahead at some of the later lecture notes--it's useful to know the material covered in this course.

Evaluate the course overall.: **4 (very good)**

Very ambitious, but went overboard. Expect difficulty and time commitment. Decent material though.

Evaluate the course overall.: **3 (good)**

The teaching staff is new and thus there is still a lot of things to tidy up with the course. Lectures were often confusing and not really helpful towards understanding the material (they were too fast paced and assumed an almost perfect understanding of the assigned lecture notes reading). The lecture notes were oftentimes worded poorly making relatively simple concepts easy to explain in a verbal conversation seem entirely confusing. The best way to learn was by talking to a TF, but office hours were often so crowded and primarily focused on Psets that it was hard to ever establish a foundational understanding of the course.

Evaluate the course overall.: **4 (very good)**

It's tough. Allot yourself ample time for psets, but go into the semester with an open mind—you might find this stuff interesting (I did, and didn't really know what to expect).

Evaluate the course overall.: **5 (excellent)**

this class is super interesting!!! especially if you're into philosophy. also boaz does a great job of generating enthusiasm for the class because you can tell he's passionate about both the material and teaching in general. if you do take this class, *read boaz's lecture notes deeply*. they're well-organized, interesting, and cover all the material you need to know. reading lecture notes are crucial to doing well in the class, and at least for me were helpful enough to not really need lectures.

Evaluate the course overall.: **3 (good)**

As I suspect most people are commenting this was the first iteration of CS 121 under Professor Barak. Barak cares immensely and is inspiring, but language difficulties meant his lectures often fell flat. Salil Vadhan's lectures were fantastic, although there were only 2-3 over the course of the semester. Overall this version of CS 121 was a much more challenging class than I anticipated; whereas before Barak's version CS 121 was always thought of as significantly easier than CS 124, I wonder whether they have now coverged in difficulty. The class this semester was a huge time commitment, with a significant amount of dense reading required before every lecture and difficult problem sets (requiring a lot of time sitting in OH). I would encourage you to think carefully about taking the class without the requisite Math background — although a lot of the proofs were constructive, i.e. showing the existence of algorithms by providing an algorithm, they still required a fair amount of formal reasoning. If you're a CS concentrator, bite the bullet — you'll have to take the class at some point. If you're an AM concentrator looking to fill a distributional requirement, or someone from another concentration, I'd say the class isn't worth the pain.

Evaluate the course overall.: **5 (excellent)**

With a strong math background, this is easy but enjoyable

Evaluate the course overall.: **4 (very good)**

I mean you have to take it if you're a CS concentrator. Gives you a solid understanding of the fundamentals of computation and an abstract idea of computational complexity.

Evaluate the course overall.: **3 (good)**

This was the first year that the class was offered, so it was a bit of a mess. It was definitely harder than previous iterations of the course, but I think that made it more rewarding -- you learned a lot more. Boaz is a professor who obviously cares very much about the success and well being of his students and he constantly offers generous opportunities for students to improve their performance in the class through (almost excessive) bonus points. However, I did not find him to be a particularly good lecturer. I don't know if the focus on NAND as opposed to some more traditional models of computation was ideal, but at least there was a (brief) discussion of more canonical things like Turing machines and the lambda calculus.

Evaluate the course overall.: **3 (good)**

If you don't have to take this course as a concentration requirement, I would recommend not; the interesting/useful concepts can be learned when necessary in less time (and work). However, it's not a bad course: it's moderately difficult and the concepts are somewhat interesting and occasionally mind-blowing (e,g. uncomputability).

Evaluate the course overall.: **3 (good)**

Whether you love it or you hate it, you have to take this course. Be prepared for long and difficult problem sets and conceptually challenging topics. After it's over you will feel prepared to take on the harder computer science courses and you will walk away with a greater appreciation for theoretical computer science.

Evaluate the course overall.: **2 (fair)**

The range of abilities in this class means that it is almost impossible to teach effectively, and that was clearly reflected throughout the semester. As CS121 is a mandatory requirement for the Computer Science concentration, and CS125 is no longer offered, it means that everybody, from people who skipped Math55 and are currently conducting world leading theoretical research, to people that just finished CS1 and have never written a proof before, are in the same boat, provided they want to graduate in CS. Hopefully the CS department comes to its senses, and finds a way to tackle this issue.

Evaluate the course overall.: **3 (good)**

Mandatory participation in a giant, recorded CS lecture class at 10 AM :(

Evaluate the course overall.: **4 (very good)**

this will take a lot of your time, be ready

Evaluate the course overall.: **3 (good)**

The material was interesting, but the readings were very difficult to follow, especially towards the end of the course.

Evaluate the course overall.: **3 (good)**

This class is very difficult, despite the fact that the material is rather simple. It is difficult because the professor decided to obfuscate the core concepts with his own theoretical framework. The lectures were unclear could have been much better. Salil was excellent during the review lectures and the one lecture he gave and I highly recommend he become the primary lecturer for this course.

Evaluate the course overall.: **4 (very good)**

Very interesting material and Boaz is a great instructor. The course starts fast and only gets harder so it is extremely important to stay on top of everything from the first week and to ask for help early if there is something you don't understand.

Evaluate the course overall.: **4 (very good)**

If this is your first proof based class it will be challenging. If is not, it is really not that bad. Keep in mind that the majority of people taking this class are cs concentrators who have probably only taken the 21 series and maybe cs 20. If you have taken 23 or above or other proof based math classes you will be at a distinct advantage.

Evaluate the course overall.: **4 (very good)**

Knowledge of proofs at the level of CS 20 was helpful.

Evaluate the course overall.: **5 (excellent)**

Boaz is great. You can tell he is low key a genius, but he is also a genuinely nice person, very approachable, and clearly put a lot of effort into making 121 a good experience for the students. He was literally answering on Piazza 24/7. The material is very interesting and problem sets are fun - just be sure to get yourself a good reliable pset partner. Office hours are ok, should be better next year when the TFs have actually taken the class first.

Evaluate the course overall.: **5 (excellent)**

The course helps you build a strong foundation in theoretical computer science! It goes through almost all (if not all) the main topics of theoretical computer science, and it explains all of the topics really well. The class is extremely well structured and allows students to focus more on learning than grades.

Evaluate the course overall.: **3 (good)**

This was the first year Boaz Barak has taught CS 121, so the course was initially rather disorganized. That settled down by the end of the semester, so I think it won't be as much of a problem next year. Professor Barak was also very responsive to student feedback. Lectures improved in quality as the semester continued. I do think the use of NAND/NAND++ programs instead of Turing machines was a bit odd, since NAND++ is not a very practical or widely-used program even if it is computationally equivalent to a Turing machine. Homework (mostly proofs) was time-consuming, especially when we had to code in NAND, but it didn't take much more time than the average CS pset. 10 psets plus 1 optional bonus pset due during reading period, 1 midterm, 1 final. Section and lecture were optional, but there was a participation grade.

Evaluate the course overall.: **1 (unsatisfactory)**

everyone takes cs121 because they have to, and oh boy, this was definitely not the year to take cs121. the lectures are unstructured, and the psets often too difficult (the tfs had difficulty understanding some of the questions/concepts). the grading scheme was very vague, and boaz was changing the weighting of each grade component throughout the semester. boaz did acknowledge that this course has gone through many, many changes in a short period of time, but he fails to acknowledge that we don't understand/have the ability to comprehend the complicated concepts that he presents in this course. the textbook is his brain child, but unfortunately, it is incomprehensible and ridden with typos. also, quantum computing without any prior knowledge in quantum mechanics? the topics are interesting, but even the tfs don't get it. god bless salil for slowing down boaz and making sure that we weren't all dragged through even more "advanced material." this course, despite its many flaws, has been a bonding experience for many of the cs concentrators. don't take this as an elective!! avoid this class unless you absolutely have to take it. boaz does try his best however, but there are many kinks that may take a while to smooth out.

Evaluate the course overall.: **3 (good)**

This was not my favorite class ever, but I did end up enjoying it more than I thought I would. It took a while to get used to this way of thinking, but I think once you get the hang of it, the material is not too hard to learn.

Evaluate the course overall.: **2 (fair)**

CS121 is pretty rough. At first the 10am filmed lectures were mandatory, which honestly sucked, but they made them optional for the second half of the semester. Boaz is a cool teacher who cares, but the subject matter is not great. Certain ideas like computability and zero knowledge proofs were really cool, but stuff with NAND just felt annoying. Many of the proofs on the homework felt redundant, and feedback on the homeworks came too late and were often unsatisfactory for improving on the next assignment. Making this class mandatory for CS majors is a shame as there are so many other cool classes.

Evaluate the course overall.: **5 (excellent)**

This is a great course! Boaz really cares, and while it has some of the hallmarks of a first-year class, it is so worth taking.

Evaluate the course overall.: **5 (excellent)**

Just focus on learning the theorems, rest of the lecture notes is just noise

Evaluate the course overall.: **4 (very good)**

The grading of psets (and exams) was pretty generous, but as a result I don't feel I received very good feedback. I don't really know if I actually know how to write rigorous proofs. Boaz is incredibly dedicated to this course, which makes all the difference. Overall a good course, and definitely going to get better.

What did you learn? How did this course change you?

Course

Evaluate the course overall.: **3 (good)**

I learned what P and NP were, and a lot of stupid puns in CS now make sense. Honestly I don't really care about theory, but for people who do this was probably a wonderful and transformative experience.

Evaluate the course overall.: **5 (excellent)**

I learned a lot from this course. Mostly, I learned how to truly dissect seemingly impossible mathematical ideas and equations, which I imagine will be a very useful skill.

Evaluate the course overall.: **3 (good)**

NAND!!!

Evaluate the course overall.: **5 (excellent)**

Boaz, you singlehandedly renewed my love of CS. I'm definitely thinking more about studying theory in particular after this class.

Evaluate the course overall.: **4 (very good)**

I have a better understanding now of what theoretical computer science is interested in.

Evaluate the course overall.: **4 (very good)**

I learned a great deal about the fundamentals of theoretical computer science. This course made me much more interested in theoretical CS.

Evaluate the course overall.: **4 (very good)**

I learned that CS theory is really fascinating and that P my or may not be equal to NP.

Evaluate the course overall.: **4 (very good)**

I learned about the theory of computation. This course made me realize I do not want to study the theory of computation.

Evaluate the course overall.: **5 (excellent)**

Learned lots of theoretical computer science and algorithmic thinking.

Evaluate the course overall.: **5 (excellent)**

NAND, NAND++, NAND<<, Reductions, NP v P, Halting, RNG

Evaluate the course overall.: **4 (very good)**

I'm 100% more likely to try out harder and more domain specific theoretical CS classes like the ES quantum class launching next semester. Such an interesting way to change a person's paradigm on the world -- I honestly really liked starting from the basis of logic gates (NAND) as opposed to the contemporary turing machine approach

Evaluate the course overall.: **3 (good)**

Good overview of current topics in theoretical CS, from NP and uncomputability to randomized algorithms, crypto, and quantum. Definitely feel like I came away with a much broader understanding of CS as a field, and am now more interested in continuing to take CS theory classes.

Evaluate the course overall.: **3 (good)**

computing is really important and actually kind of cool

Evaluate the course overall.: **3 (good)**

I learned about the basics of computational theory and found that I am a little more interested than I thought I was in the basis and evolution of theory in computer science.

Evaluate the course overall.: **4 (very good)**

I learned a lot about the theory behind computer science and why things are a certain way or another.

Evaluate the course overall.: **3 (good)**

It made me realize that I need to plan my courses better.

Evaluate the course overall.: **3 (good)**

Complexity theory

Evaluate the course overall.: **4 (very good)**

Foundations of theoretical CS. Completely changed the way I think quantitatively.

Evaluate the course overall.: **4 (very good)**

I learned how to reason about things.

Evaluate the course overall.: **5 (excellent)**

Better understanding of large theoretical CS topics.

Evaluate the course overall.: **2 (fair)**

P != NP. I learned to panic less when given problem sets beyond my ability and to reread difficult text before deciding that I really don't understand. Also how to find TFs that I can understand.

Evaluate the course overall.: **3 (good)**

I learned the limits of computation and some of the most important theorems in computer science, such as P=NP problem, halting problem, reductions, time complexities etc. I think this is a very important course for any computer scientist.

Evaluate the course overall.: **4 (very good)**

I learned a lot about mathematical computation theory. NAND, Turing Machines, and you can do computation with a lot of other things. Like birds and water. Now whenever I look at something, I see a computer. Even if it's something that's not a computer. Like birds or water.

Evaluate the course overall.: **4 (very good)**

I learned a lot about computation and how it relates to the real world, including computability and efficiency which i found to be intriguing. The new units on randomness, cryptography, and quantum were quite captivating.

Evaluate the course overall.: **3 (good)**

I never ever ever ever want to do theory. I will never take another math class again

Evaluate the course overall.: **5 (excellent)**

I learned a concrete way of thinking about the complexity of a wide range of problems and models of computation. This course has really sparked my interest in cryptography and other math and theory-based parts of CS.

Evaluate the course overall.: **5 (excellent)**

I learned the basics of theoretical CS, I improved by logic skills through proofs.

Evaluate the course overall.: **1 (unsatisfactory)**

How to think about theoretical CS at a very complex level.

Evaluate the course overall.: **5 (excellent)**

Learned about theory of computation.

Evaluate the course overall.: **5 (excellent)**

It totally changed the way I think about the world and computer science and Boaz does a great job of explaining things. I am interested in many new problems that I wasn't aware of before and I found confidence in my theoretical computer science abilities.

Evaluate the course overall.: **5 (excellent)**

I am interested in taking more theory classes and writing a thesis/maybe going to graduate school in CS. I learned so much about my own love of math and proofs.

Evaluate the course overall.: **3 (good)**

It was super cool to see computing built from the ground up using the NAND programming languages. It gave me a deeper intuition for the theoretical aspects related to coding.

Evaluate the course overall.: **2 (fair)**

Learned the basics of theoretical CS.

Evaluate the course overall.: **4 (very good)**

I learned the language and theoretical foundation underlying many of the ideas I had associated with the field of computer science, but never had the background to understand in a deep way. Now they're no longer just a bunch of buzzwords I hear dropped in conversation randomly and are actually topics that I now have the opportunity to explore more in the future.

Evaluate the course overall.: **5 (excellent)**

Now I know more about theoretical computer science and how I work.

Evaluate the course overall.: **3 (good)**

The course gave me a better understanding of computational theory.

Evaluate the course overall.: **5 (excellent)**

Learned about how technology works at the deeper level!

Evaluate the course overall.: **5 (excellent)**

I really learned how to think computationally and understand foundational ideas in computer science that will help me throughout the rest of my academic career. I learned how to logically step from what I knew for sure and use those results in creative ways to prove something I didn't know. I think I have gained invaluable skills in this sense and in general how to approach a rigorous course with better study habits. CS 121 definitely enhanced my appreciation for and interest in theory, and although I may not end up going to grad school or deciding to pursue theoretical CS research, it is a field that I would still love to learn more about now.

Evaluate the course overall.: **2 (fair)**

I didn't learn much of value. Having taken other departmental computer science courses (such as cs124 and cs134), half of the material was already familiar and I was too jaded to have a great attitude about learning the rest.

Evaluate the course overall.: **2 (fair)**

I have a better understanding as to probabilistic computing, P vs NP, and computability. Turing completeness is cool

Evaluate the course overall.: **5 (excellent)**

I loved this course. Before taking it, I did not know how much I would like theoretical computer science, but now I know that I am fascinated by it. It was incredible how we proved so much about computation, starting at the basics, in a single semester. I believe I now have a more holistic understanding of computer science after taking cs121.

Evaluate the course overall.: **4 (very good)**

Theory

Evaluate the course overall.: **4 (very good)**

Must take because required but this revamped course doesn't seem too applicable or helpful, and is time-consuming compared to what I heard about last year's 121.

Evaluate the course overall.: **4 (very good)**

The subject matter was fascinating, and the course was an effective survey of CS theory. Definitely made me interested in learning more.

Evaluate the course overall.: **5 (excellent)**

i found a love for theoretical cs! and found faith in my ability to do proofs.

Evaluate the course overall.: **3 (good)**

I learned how foundational theoretical computer science is for so many things in the world.

Evaluate the course overall.: **4 (very good)**

That the operations you require to perform any computation is incredibly minimal, and that it is incredibly hard to prove things about the relationships between complexity classes.

Evaluate the course overall.: **3 (good)**

The theoretical foundations of computation.

Evaluate the course overall.: **3 (good)**

I learned some fundamental information about computation. These ideas, particularly complexity classes and uncomputability, change how I approach how algorithms are constructed.

Evaluate the course overall.: **3 (good)**

I learned a lot about theoretical computer science and now am even more excited for future computer science courses and to be concentrating in computer science.

Evaluate the course overall.: **3 (good)**

I learned proof-writing, as well as the definitions and implications of the different complexity classes.

Evaluate the course overall.: **4 (very good)**

discovered a part of CS i did not expect to exist

Evaluate the course overall.: **4 (very good)**

I thought this course gave a nice strong foundation in the major topics of theoretical computer science, a lot of which I'd heard of before but definitely hadn't studied very in-depth. I thought it gave a nice range of topics and definitely got me excited about computer science and eager to learn more.

Evaluate the course overall.: **5 (excellent)**

The course taught me a lot about theoretical computer science, and I even learned new programming languages called NAND, NAND++/<<! It taught me how to think algorithmically and approach problems in a logical manner.

Evaluate the course overall.: **3 (good)**

I think this course taught me to think more in depth about the principles of computer science, and its possibilities and limitations.

Evaluate the course overall.: **2 (fair)**

Learned about computability which is cool. It also fulfills a requirement so it changed me in that im now closer to my major.

Evaluate the course overall.: **5 (excellent)**

Better understanding of computation

Evaluate the course overall.: **4 (very good)**

I have a strong foundation in the principles of theoretical computer science. Thank you!

Please comment on your expenditures for this course. For example, did you purchase, rent, borrow, share or use reserve course materials? Were you able to obtain course materials easily? What else should be known about the financial costs of this course?

Course

Evaluate the course overall.: **3 (good)**

Spent nothing.

Evaluate the course overall.: **5 (excellent)**

To be honest, I did not use the textbooks very much, however I imagine they would be very useful if you have the time to consult them. I found it easier to go to office hours or ask Boaz after lecture about confusing topics rather than reading from the textbooks.

Evaluate the course overall.: **5 (excellent)**

Didn't spend any money.

Evaluate the course overall.: **4 (very good)**

None.

Evaluate the course overall.: **4 (very good)**

The lectures and lecture notes were free and I don't think I printed anything for this course, so my costs were exactly 0.

Evaluate the course overall.: **4 (very good)**

All open-source, thanks Boaz

Evaluate the course overall.: **3 (good)**

Textbook PDF and all course materials provided for free.

Evaluate the course overall.: **3 (good)**

Nothing.

Evaluate the course overall.: **4 (very good)**

I spent nothing.

Evaluate the course overall.: **4 (very good)**

Nothing.

Evaluate the course overall.: **5 (excellent)**

None

Evaluate the course overall.: **3 (good)**

I got the Sipser textbook, it wasn't that helpful to own though

Evaluate the course overall.: **5 (excellent)**

No money spent.

Evaluate the course overall.: **3 (good)**

All of the materials were provided.

Evaluate the course overall.: **5 (excellent)**

Nothing really

Evaluate the course overall.: **5 (excellent)**

All the lecture notes are online! No need to buy anything.

Evaluate the course overall.: **2 (fair)**

Health externalities may exist when you factor in this course's negative influence on the psyche

Evaluate the course overall.: **4 (very good)**

provided materials free

Evaluate the course overall.: **5 (excellent)**

just printing lecture notes

Evaluate the course overall.: **3 (good)**

All materials provided free online.

Evaluate the course overall.: **3 (good)**

None. All lectures are available online.

Evaluate the course overall.: **2 (fair)**

nothing

Evaluate the course overall.: **3 (good)**

No expenses

Evaluate the course overall.: **3 (good)**

Professor provided class notes; there was no textbook.

Evaluate the course overall.: **1 (unsatisfactory)**

textbook written by boaz online = free!

Evaluate the course overall.: **5 (excellent)**

nothing

Please comment on this person's teaching.

Barak, Boaz

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **5 (excellent)**

I know Boaz has very specific ideas about what a computer science concentrator should graduate knowing, but I think he needs to realize that very few people in CS121 are going to go on to get a PhD in theoretical computer science. I have heard that Harry Lewis's course ended much, much earlier than Boaz's. I would rather know fewer things well than know lots of things superficially (like quantum computing and crypto just totally went over my head). However, I really hope Boaz keeps caring as much as he does about the class so that it will remain responsive to students' needs.

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Boaz is incredibly knowledgeable and he is a very good lecturer. It was obvious he spent a lot of time and energy to explain difficult topics to his students and that is much appreciated. This was the first year he taught the class and I imagine the class will get exponentially better as the years go on.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **5 (excellent)**

Boaz was a great professor and he was extremely knowledgeable! I'm surprised this is his first time teaching CS121. I only have praise for him!

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Truly one of the best CS faculty.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Boaz is clearly an expert on the material, and is very enthusiastic as well. However, I feel like most of the lectures consisted of proofs, and going through the proofs step by step, while I would be much more interested in learning about the connections between different theorems, the implications of these proofs, and the human stories behind the proofs.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Boaz was a great, extremely enthusiastic, teacher.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **5 (excellent)**

Good teacher, but some of the course materials were sketchy

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Good guy and he makes a genuine effort

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **4 (very good)**

Boaz seems like a really nice guy and also a really, really smart guy. However, lectures could be kind of slow. I suppose part of the blame falls on me since I could have supplemented my learning with the advanced sections and stuff. I personally didn't like the required readings and attendance, but I understand the motivation behind it. For a lot of people, this is their first proof-based class and requiring the readings and attendance sets good habits for the future. I really appreciate the amount of work Professor Barak put into this class, so bravo

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Very comprehensive teaching and thorough.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **5 (excellent)**

The assignments are graded quite quickly given their depth and how long some of them ended up being. Boaz is a solid lecturer and has amazing passion for the course and materials, and given that he structured literally all of it over the past year or so, is able to answer any question on anything related to the course via Piazza. Piazza contributed immensely to the responsiveness of the teaching staff more generally, please keep it up

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **4 (very good)**

Boaz is extremely knowledgeable and qualified. I appreciated the personality/humor he adds to lectures. His speaking pace is a bit slow and I often found it hard to stay awake. This may have been a personal issue however.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **3 (good)**

Boaz is clearly enthusiastic about this class and wants everyone else to be, but his lectures can be a bit fragmented and hard to follow. Also, the lectures don't cover nearly as much material as the readings, so it is hard to know what we should be expected to understand and what is just recommended reading. He is very timely in responding to questions basically at any time of the day, so he does really care about how well the students do in the class, but I wish lectures were more engaging and informative.

Evaluate the course overall.: **2 (fair)**
Evaluate your Instructor overall.: **3 (good)**

Boaz's lectures were helpful, but didn't always feel too closely tied to the material itself.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **4 (very good)**

Boaz is very enthusiastic about the subject but I felt that lectures weren't always that pertinent to what we were learning.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **3 (good)**

Please don't structure the lectures so that people can't understand it without reading the lecture notes super thoroughly. I don't believe that is an effective method of instruction. People just fall further and further behind.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **4 (very good)**

He's not great at lecturing, but he's very passionate and wants you to do well!

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **5 (excellent)**

Very enthusiastic, contagiously so.

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Thought that he was able to get me interesting in the class by drawing connections between theoretical CS and real world problems/ solutions. Also the notes for each HW were very well done, and the lectures were fun and interesting.

Evaluate the course overall.: **2 (fair)**
Evaluate your Instructor overall.: **2 (fair)**

Very enthusiastic. :) Could work on explaining to a more general audience rather than theory enthusiasts.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **4 (very good)**

Boaz Barak did a very good job teaching CS121 for the first time! I took CS20 with Harry Lewis, but this was also very good. He added some humor to his lecture, and he knew the content very well. Engaged the class by putting example problems on the board and he also answered questions.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **5 (excellent)**

Professor Barak is a great man and very knowledgable about the material. I had classroom to table with him and left with a lot of respect for him. He's really just interested in helping students learn and it shows in the constant changes/improvements throughout the semester and the little things he does (like including students' names who suggest lecture note edits on Piazza in his acknowledgments section). Lectures were a little boring, just because no one really understood material going into the class and it's just hard to pay attention.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **3 (good)**

He obviously cares a lot about the material but his lecture notes and lectures themselves can be really confusing.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **3 (good)**

He tries very hard and does a great job answering student questions on Piazza. I think that the course was rough because it was the first iteration and will improve over time.

Evaluate the course overall.: **2 (fair)**
Evaluate your Instructor overall.: **1 (unsatisfactory)**

A lot of the time Boaz just does not make sense.

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

I loved Boaz's lecture notes!

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Boaz is great! I loved his lectures and the jokes he made during them. Sometimes the explanations were a little bit unclear, but for the most part he did a good job explaining the concepts. I found the diagrams that he made to be especially helpful.

Evaluate the course overall.: **1 (unsatisfactory)**
Evaluate your Instructor overall.: **5 (excellent)**

Great professor with lots of enthusiasm; I think the course was just confusing because it was new this year.

Evaluate the course overall.: **2 (fair)**
Evaluate your Instructor overall.: **5 (excellent)**

Very Enthusiastic - sometimes lecture can get a bit convoluted.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **5 (excellent)**

I think there were some difficult concepts that I just couldn't understand from lecture or the lecture notes - I do recognize this is the first run of this version of the course though and considering this I think Boaz did a great job. He went over and beyond, really listened to student feedback, and made himself and his grad students available for anyone who really needed help. I have high expectations for how this course will continue to evolve under Boaz.

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Thought Professor Barak was great, especially for his first year on the course having changed up a lot of things. Really engaging.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **5 (excellent)**

A great professor! So invested in the course and so interested in the material.

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

One of the most dedicated professors I have had in the computer science department, and generally. He really just wants us to understand the material and be excited about it.

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Boaz is incredible. He's so kind, encouraging, and genuinely passionate about this class. He put so much effort into taking student feedback seriously and improving the course and it really paid off. Could not have hoped for a more supportive professor. He also responded lightning-fast to piazza questions, making piazza an extremely effective teaching tool.

Evaluate the course overall.: **3 (good)**
Evaluate your Instructor overall.: **3 (good)**

He was a super nice guy and seemed like he cared a lot about the students. I found the lectures kind of boring and rambly at times, but he was always sure to be supportive of students and make time for them, which I really appreciated.

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **4 (very good)**

Passionate about material

Evaluate the course overall.: **4 (very good)**
Evaluate your Instructor overall.: **4 (very good)**

Extremely attentive and answers Piazza questions almost immediately

Evaluate the course overall.: **5 (excellent)**
Evaluate your Instructor overall.: **5 (excellent)**

Thank you so much Boaz - what a remarkable experience! Yours is the best class I've taken at Harvard!!!

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **3 (good)**

Boaz really cares about the material and generates enthusiasm, but his lectures were not the best. It was often difficult to understand him and follow his train of thought.

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Boaz is great! He's quite smart but he tries really hard to adapt the material to us!

Evaluate the course overall.: **2 (fair)**

Evaluate your Instructor overall.: **4 (very good)**

Very energetic and enthusiastic Professor who deeply cares about educating undergraduate students. However, Professor Barak assumed at all times a certain level of background and knowledge, which was not a fair assumption to make, causing the course to be needlessly difficult at times.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Boaz is a good professor and an effective lecturer. His office hours are helpful, and he genuinely loves his material.

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Professor Barak is an incredible kind and humble person who really cares about his students. I really liked how especially towards the end of the semester, he set the standard of encouraging lots of questions during lecture. I think this helped break up what could have been a very fast paced and difficult to follow lecture into something that for me helped clarify what I read in the notes well. Professor Barak was also always active on Piazza and that's something that I really appreciate because so many points of confusion I was able to clarify there. I also started going to his office hours weekly, which was one of the best decisions I made all semester. He always encouraged us to say if we were confused and was happy to explain even the more basic concepts again and again till everyone was on the same page. Overall I loved how Professor Barak always emphasized the big picture ideas and takeaways over implementation details, and I came away with a much stronger understanding of the material because of this. I can also just tell how much he loves theory and at least for me I couldn't help but be fascinated/inspired by the material as well.

Evaluate the course overall.: **2 (fair)**

Evaluate your Instructor overall.: **2 (fair)**

In general, you could not expect the majority of students to be following Boaz's lecture at a given point. Maybe you should poll in lecture to verify this

Evaluate the course overall.: **2 (fair)**

Evaluate your Instructor overall.: **3 (good)**

His lectures were a bit easy, but as a result easy to follow. The issues I had with the class were the wildly varying levels of difficulty between lectures (easiest) and lecture notes (hardest).

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **4 (very good)**

Overall, I felt that the lecture notes were much more helpful than the content presented in lecture. I liked the structure of reading the lecture notes before lecture though, as it made a lecture a time to solidify the ideas discussed in the notes.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Lectures sometimes too mathy and dense--not clear what the main ideas are. Also, I hate to pick on this, but sometimes your speaking is a bit hard to follow. This isn't a rip on accent, but more on generally how clear and structured your speech is.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **2 (fair)**

Boaz loves CS121 and clearly cares about his students, however his lectures were hard to follow and I found Salils presentation of material to be much clearer in helping me understand the material.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Boaz is extremely passionate about the material and was very accessible outside of class. He also definitely cared about the course, and that was clear to everyone who took it. That said, the lecture notes were long and often too dense, and the presentations dove deep into rabbit holes (ie proofs) that weren't ultimately vital to understanding the material. Overall, it was often hard to know what subjects we were expected to understand, and what subjects were not as vital to grasp completely.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **3 (good)**

Professor Barak clearly cares hugely, but his teaching would benefit if he realized that in lectures "less is more," and further that Harvard undergrads have a limited amount of time to spend on a single course.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

Very excited about abstract CS. Wish I'd interacted with him more throughout the semester. Obviously incredibly knowledgable with respect to the subject matter.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **4 (very good)**

The material that Boaz conveys to his audience is difficult and understandably hard to present to people with limited background in discrete math, but Boaz did an alright job with this. My primary complaint with the lectures was how they rarely added much to the material that the notes did not.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **4 (very good)**

Professor Barak is very accessible outside of class and does a great job of helping everyone learn the material (he especially has very timely responses to questions posted on Piazza). However, I often felt as if he tried to pack too much information into his lectures, and thus ended up skipping lots of material at the end or glossing over material that should have been covered more in depth.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **3 (good)**

Boaz is not the best lecturer.

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **5 (excellent)**

Boaz put so much into this class. He cared a lot about the course material and students' understanding, and answered questions on Piazza frequently.

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Professor Barak was a very enthusiastic lecturer, and I really enjoyed listening to him. He always stopped to answer questions and gave us breaks in the middle to account for the long lectures. The slides were really well-prepared, and he explained the concepts very clearly.

Evaluate the course overall.: **3 (good)**

Evaluate your Instructor overall.: **4 (very good)**

Boaz was super enthusiastic about the material, which I think made it more enjoyable to learn. His lectures were, however, sometimes a bit confusing.

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Great teacher, and a great textbook

Evaluate the course overall.: **5 (excellent)**

Evaluate your Instructor overall.: **5 (excellent)**

Boaz, what a champion

Evaluate the course overall.: **4 (very good)**

Evaluate your Instructor overall.: **4 (very good)**

The technology associated with the lectures (slides, diagrams, clicker participation) was great, but the overall content delivery could be improved. Honestly I felt I learned twice as fast and effectively in Salil's review sections.

What advice on mathematical preparation would you give to future students of this class?

Course

Evaluate the course overall.: **1 (unsatisfactory)**

Strong proof based background is necessary

Evaluate the course overall.: **3 (good)**

Take CS20 and work really hard while you're in it. Keep your notes accessible for CS121. CS20 should be absolutely required for this class- I don't know how the people without it survived. It would be great if CS121 and CS20 actually made some effort to make their curricula join up more; e.g. just having the same naming conventions and notation, and teaching relevant probability stuff.

Evaluate the course overall.: **5 (excellent)**

I would say to be very comfortable with algebra as this will be necessary for several of the problem sets.

Evaluate the course overall.: **3 (good)**

I didn’t have any of the required proof preparation (I did 21a/b and stat 110 before), and I had no problem with the material

Evaluate the course overall.: **4 (very good)**

Definitely make sure you feel comfortable with the mathematical background lecture notes before this course. Proof experience is recommended but I think it is definitely possible to take this class without prior proof experience.

Evaluate the course overall.: **3 (good)**

TAKE CS20 IF YOU DON'T HAVE A LOT OF EXPERIENCE W/ PROOF WRITING/DISCRETE MATH!!!!!! Do not be a fool and assume the "introduction" part of the course title means you can dive in with no experience, because you will die. CS20 is meant to prepare you for 121! Definitely at the very least take their diagnostic test (assuming Prof Nesson puts it on the site again, as Harry Lewis has done in the past) before deciding you don't need CS20. If you have any doubts, at least shop CS20!

Evaluate the course overall.: **4 (very good)**

If you have experience with proofs then you're all set. If you don't, don't worry, but just be aware that the first couple weeks will require some extra work and patience from you.

Evaluate the course overall.: **4 (very good)**

I don't think that too much mathematical preparation is required for most of the course (I got by fine without CS20). However, I do think that the probability lectures would've been incomprehensible if I hadn't been concurrently enrolled in Stat110. I don't know if students who don't have much probability background will comment on this, but I would certainly think that it would be a good idea to include probability as part of the summer work, so that students don't have to cover weeks of Stat110 material in a few days.

Evaluate the course overall.: **5 (excellent)**

Proof background is helpful. Otherwise they mostly help you out as you go if you're behind.

Evaluate the course overall.: **4 (very good)**

I did Math 23, Math 154 and a summer school course in analysis, which I found more than sufficient for this class. Probably Math 23 is good enough, I think.

Evaluate the course overall.: **4 (very good)**

Have experience with proofs before this course. For example, Math 23/25 is great, or CS 20 or Math 104 also helps.

Evaluate the course overall.: **1 (unsatisfactory)**

Proof-based math

Evaluate the course overall.: **4 (very good)**

Before taking the class, I would look through some online discrete math resources and generally try to be comfortable with most of the topics. If you love math and are willing to put in hard work, this class doesn't really require any crazy prerequisite mathematical knowledge.

Evaluate the course overall.: **4 (very good)**

Know how to do some basic proofs and proof concepts.

Evaluate the course overall.: **4 (very good)**

Experience with writing proofs is helpful, but not necessary. Comfortability with math is a must, as the course is very math-heavy and very theoretical (not a typical "coding" CS class).

Evaluate the course overall.: **3 (good)**

doable with fairly little mathematical prep (e.g. no proof-background, no probability background) if willing to put in the work

Evaluate the course overall.: **5 (excellent)**

CS20

Evaluate the course overall.: **5 (excellent)**

Background in proofs would be helpful but isn't necessary

Evaluate the course overall.: **1 (unsatisfactory)**

Take CS20 before. No other math is really necessary.

Evaluate the course overall.: **4 (very good)**

I think it's important to have some proof background coming into this course. Homework 0 gives a good taste of the "abstract" methods of proof. If you found that extremely difficult, you might want to consider CS 20 or Math 101 to learn about proofs

Evaluate the course overall.: **4 (very good)**

Knowing mathematical notation is not enough, but you can learn everything on the fly. Just make sure you get a solid foundation for proofs during the first 3 weeks of the course which may seem easy, but is extremely essential.

Evaluate the course overall.: **4 (very good)**

Basic comfort with proofs, set theory, stat110 is useful for the probabilistic computation unit

Evaluate the course overall.: **5 (excellent)**

Definitely know proofs.

Evaluate the course overall.: **5 (excellent)**

Math21ab + Interest in CS is sufficient

Evaluate the course overall.: **4 (very good)**

I wish 21C existed last year. You really really should have some strong background in proof-based math or try to do most of the Math Background review before the class. Also should have a generally strong background in programming/CS fundamentals via CS50/51/61 (probably just two of those is necessary, if you're just starting out when you get to Harvard).

Evaluate the course overall.: **3 (good)**

Definitely proof background.

Evaluate the course overall.: **3 (good)**

high school math (up through calc 2) was enough for me. I think this course taught me as much about math (set theory, graph theory, etc) as it did about computing

Evaluate the course overall.: **3 (good)**

Know how to do proofs and maybe a bit of set theory.

Evaluate the course overall.: **4 (very good)**

A math theory class. Definitely be comfortable with proofs.

Evaluate the course overall.: **2 (fair)**

Math 21 is fine.

Evaluate the course overall.: **3 (good)**

Make sure you have a basic understanding of how to write a proof and graph theory.

Evaluate the course overall.: **3 (good)**

A proofs based math class.

Evaluate the course overall.: **4 (very good)**

Previous proof experience would be pretty helpful.

Evaluate the course overall.: **4 (very good)**

CS 20 is a good idea, and the class could get off to a smoother start if more students take CS 20 first

Evaluate the course overall.: **4 (very good)**

Please don't get intimidated by the preparation that this course preports to require. Don't even get intimidated by the first problem set, which is only there to weed people out. I promise that by the 2nd pset, the work will get much easier. I came in here knowing absolutely nothing about proofs, statistics, mathematics, computer theory, etc and came out being able to do all the problems and having a good intuituion!

Evaluate the course overall.: **4 (very good)**

Would recommend experience with proofs, and some probability. CS20 would be beneficial for incoming students.

Evaluate the course overall.: **5 (excellent)**

take CS20 or some class that has mathematical proofs. It helps a lot.

Evaluate the course overall.: **2 (fair)**

Really comfortable with algebra and limits wouldn't hurt.

Evaluate the course overall.: **4 (very good)**

Need more experience with writing proofs

Evaluate the course overall.: **3 (good)**

Taking CS20 alone will not prepare you. I suggest learning the course material the summer before or taking a math class such as 23 or above.

Evaluate the course overall.: **4 (very good)**

Take CS20 or have equivalent knowledge.

Evaluate the course overall.: **4 (very good)**

CS20 would be nice but it does not help too much after the first quarter of the class once people are used to it. I think if the introduction on discrete math lecture is turned into two then no background is strictly required.

Evaluate the course overall.: **3 (good)**

Proof-based math and statistics background are helpful though not necessary.

Evaluate the course overall.: **3 (good)**

You need to know more about proofs and learn a lot of math symbols. Learning latex/rmarkdown beforehand will save you a lot of time.

Evaluate the course overall.: **2 (fair)**

Take CS20

Evaluate the course overall.: **5 (excellent)**

Ask questions early if you have questions! Start in the summer reviewing the math background and CS20 material.

Evaluate the course overall.: **5 (excellent)**

Take a rigorous class involving proofs.

Evaluate the course overall.: **1 (unsatisfactory)**

-CS20 or some theoretical math -STAT 110

Evaluate the course overall.: **4 (very good)**

Have some experience is proofs.

Evaluate the course overall.: **2 (fair)**

CS20 would be nice, (I took it prior) but you can definitely take the class without it.

Evaluate the course overall.: **3 (good)**

Know basic data structures and proof methods

Evaluate the course overall.: **5 (excellent)**

If you have done any proof based maths class (I came in with 25a,b 122,123,124,130,131), this class is easy. If not, still quite feasible.

Evaluate the course overall.: **4 (very good)**

I had some proof-based math background (had taken Math 112), and that definitely made the course not as difficult as it was for some of my peers - though I think it was still possible to take without having proof-based background. I think I saw that CS 20 may be required as a pre-req in the future - this may be a good idea. I got by without any Stats background, but, again, it would have been nice to have had some prior introduction to Stats.

Evaluate the course overall.: **5 (excellent)**

Should know how to write proofs (otherwise this class will be much more difficult/a lot more work)

Evaluate the course overall.: **5 (excellent)**

take 21a and 12b beforehand and also have a solid grasp of proofs

Evaluate the course overall.: **3 (good)**

Read the comments from TFs on Gradescope. I think those were surprisingly helpful in proof writing.

Evaluate the course overall.: **4 (very good)**

Definitely read up on proofs beforehand - many of the proofs we do aren't insanely formal and you get used to the format pretty quickly but it can be jolting at first without math 23/25/55 or CS20.

Evaluate the course overall.: **2 (fair)**

Just have solid foundation of stats and proofs.

Evaluate the course overall.: **5 (excellent)**

discrete math

Evaluate the course overall.: **2 (fair)**

have proof experience

Evaluate the course overall.: **4 (very good)**

Have a partner to talk things out with

Evaluate the course overall.: **2 (fair)**

I think it was probably necessary for me to have taken more calculus, but I can't be sure.

Evaluate the course overall.: **4 (very good)**

Practice with reading and writing proofs beforehand would be quite helpful, a lot of times I would understand the high-level ideas underlying a proof but struggle converting those ideas into a proof in a concise way that covered all the necessary details

Evaluate the course overall.: **1 (unsatisfactory)**

At the absolute least you need cs20 and ideally more like math 25 or something of that nature.

Evaluate the course overall.: **3 (good)**

Definitely need Math 21a and Math21b. Maybe even more!

Evaluate the course overall.: **4 (very good)**

CS20 at a minimum, and Stat 110 is very helpful too

Evaluate the course overall.: **5 (excellent)**

Lots of proof based math!

Evaluate the course overall.: **2 (fair)**

Take CS20 or some class that teaches you how to write proofs for your own sake.

Evaluate the course overall.: **4 (very good)**

Not much math preparation is needed

Evaluate the course overall.: **5 (excellent)**

Familiarize yourself with the language of proof based mathematics! Definitely do the prep that Professor Barak mentions on his website as well as Homework 0, if possible over the summer. This helped me not feel as lost during the first couple weeks.

Evaluate the course overall.: **2 (fair)**

Take cs124 or another theoretical proof-based class. It's ideal to learn how to write proofs either on your own or through another class, rather than by attending a single proof section

Evaluate the course overall.: **5 (excellent)**

make sure you can complete HW 0, use OCW to check over some 6.042J Psets.

Evaluate the course overall.: **4 (very good)**

Really none required - stat 110 concurrently can be helpful

Evaluate the course overall.: **2 (fair)**

This class requires more math skills than computer science, so make sure you have taken a rigorous proof-based math class before hand.

Evaluate the course overall.: **5 (excellent)**

My advice is to take a proof based math course prior to taking cs121. If cs121 was the first time I did proofs, I think I would be overwhelmed by the sheer amount of proofs you do in this class.

Evaluate the course overall.: **3 (good)**

Proof based math courses are highly useful. Especially something like Math 25A, which covers a lot of the early material of this course (e.g. injectivity/surjectivity/bijectivity) and gives you a good idea of how to write a formal technical/mathematical proof.

Evaluate the course overall.: **4 (very good)**

You technically build all the math from first principles, but you go through them so fast I'd recommend people have taken other discrete math courses beforehand (Stat 110, CS 20, etc.)

Evaluate the course overall.: **4 (very good)**

Stat110 might be helpful. Writing proofs (CS20) is probably helpful.

Evaluate the course overall.: **4 (very good)**

CS 20. Do it.

Evaluate the course overall.: **3 (good)**

CS20 should be sufficient

Evaluate the course overall.: **4 (very good)**

Stat

Evaluate the course overall.: **5 (excellent)**

i don't think you need that much actual math *knowledge*; i didn't know what graphs or big Oh were before this class. but i would tell them to do homework 0. and i do think proof writing background helps a ton.

Evaluate the course overall.: **3 (good)**

I think having taken Math 21a and Math 21b would be important at the very least (simply to build mathematical maturity). Ideally students would already have taken Math 23, Math 25 or Math 55, or a 100-level Math course.

Evaluate the course overall.: **5 (excellent)**

stricter prereqs

Evaluate the course overall.: **4 (very good)**

You don't need multivariable calculus or linear algebra. Just a willingness to wrestle with proofs.

Evaluate the course overall.: **3 (good)**

Either take one of Math 23, 25, 25, or take CS20.

Evaluate the course overall.: **3 (good)**

I don't think any mathematical preparation is actually necessary: the introduction lecture and some googling is sufficient.

Evaluate the course overall.: **3 (good)**

Practice writing proofs. If you have never taken a proof based course, practice on your own over the summer.

Evaluate the course overall.: **2 (fair)**

Just take CS20, it's not worth the pain otherwise.

Evaluate the course overall.: **3 (good)**

Past proof-writing is not necessary; familiarizing oneself with direct proofs, proofs by contradiction, proofs by contrapositive, proofs by construction, and other basic proof structures can be done through online resources.

Evaluate the course overall.: **3 (good)**

Abstract, theoretical math preparation is important.

Evaluate the course overall.: **3 (good)**

I took Math 23 and definitely felt prepared.

Evaluate the course overall.: **4 (very good)**

I did the class without having done proofs before, and I was able to pick it up along the way. Some level of mathematical maturity will be very helpful.

Evaluate the course overall.: **3 (good)**

Students should consider CS20, or Math 23 or higher. Students with no proof writing experience will find this course challenging.

Evaluate the course overall.: **4 (very good)**

I think familiarity and comfort with writing proofs is pretty important, as well as experience understanding and learning new mathematical notation. A small amount of combinatorics background is probably also helpful but not necessary.

Evaluate the course overall.: **4 (very good)**

CS20 provides a good basis of knowledge.

Evaluate the course overall.: **4 (very good)**

If you have not taken 23 or above you should really take cs20 before this. As someone who has taken several proof based courses before this I did not find the material overly challenging. However, many of the people I knew who took only 21 struggled.

Evaluate the course overall.: **4 (very good)**

Proofs at the level of CS 20

Evaluate the course overall.: **2 (fair)**

Basic math proof background.

Evaluate the course overall.: **5 (excellent)**

The MIT course that they recommend for over the summer is great in terms of lecture videos. You can try to read Sipper, but it's probably less helpful, since a lot of it is taught differently in 121.

Evaluate the course overall.: **5 (excellent)**

Definitely be comfortable writing rigorous proofs; knowing basic probability would also help.

Evaluate the course overall.: **3 (good)**

CS 20 is extremely helpful, especially with regard to proofs, though it is possible to learn the material without it. Background in computational theory does help but isn't as crucial.

Evaluate the course overall.: **3 (good)**

I would really recommend having taken some other proof based class before CS121, but I think that it wouldn't take too long to get the hang of it if you have not.

Evaluate the course overall.: **3 (good)**

Though it will be more difficult for students with little proof based math experience, it is not necessary. The class does a good job getting those up to speed.

Evaluate the course overall.: **5 (excellent)**

Work with someone who knows how to write proofs

Evaluate the course overall.: **4 (very good)**

Go into this course comfortable writing proofs. If you *think* you've written proofs before, you will need additional preparation.

Any comments on course policies: reading lecture notes, quizzes, attendance, collaboration policy, else?

Course

Evaluate the course overall.: **1 (unsatisfactory)**

Lecture notes were difficult to get through and often confused me, ended up just looking up many of the concepts online for a clearer explanation

Evaluate the course overall.: **3 (good)**

Boaz's lecture notes were sometimes indecipherable. I think he believes that writing in mathematical equations erases any difficulty of understanding because they cannot be misinterpreted, but the problem with writing in math is that sometimes his statements cannot be interpreted at all. So sometimes really simple ideas could be completely screwed up by his attempts to vivisect them in his lecture notes, and when a human explained it in 5 minutes I would have an 'Oh' moment. It's a shame that the staff stopped doing the feedback form in the latter half of the course. The collaboration policy is insane in this class; you cannot even discuss the problem set with other people except your partner. This sounds reasonable until you realize that most of office hours for other classes is people who understand one question explaining it to someone who understands another question. It made office hours extremely difficult as the TF can no longer tell a person to whom they have just explained Q1 to go and explain it to Person B, while the TF moves on to another person. You can't even listen in while they explain it to someone else. Frankly a lot of people just disobeyed it, making life awkward for those of us following it. They eventually allowed two pairs to pair up and work together, but I still don't see why it is necessary at all. If you don't understand the material from problem sets and rely on others entirely, everyone knows you will still bomb on the midterm and final. The quizzes were incredibly difficult, even if you spent two hours on the lecture notes and thought you understood the topic. Quizzes should be about just checking that people read and got the basic idea of the lecture notes, not a problem set question in and of themselves.

Evaluate the course overall.: **5 (excellent)**

The collaboration policy is perfect for this class. The groups of 4 were extremely helpful for understanding topics and in a theoretical, proof-based math class such as this, talking things over with people is very beneficial. The lecture notes were very helpful, but, at times, they were very confusing to explain even the simplest of topics.

Evaluate the course overall.: **4 (very good)**

I liked the collaboration policy, lecture notes ,and quizzes. They made sure I understood the material throughout the semester. I do wish participation were a smaller proportion of the grade.

Evaluate the course overall.: **3 (good)**

Lecture notes would be easier to digest if there was more plain English accompanying the dense mathematical notation; it sometimes felt like swimming through the notation line by line without understanding a single thing about the big picture of what those lines meant together. Also, there's a lot of "TODO" things still left in the lectures/just lots of little typos in general, but that's not a huge deal as the TODOs don't actively detract from anything and the typos often get sorted out in piazza. Collaboration policy seemed restrictive, as it seemed like even saying a problem statement to someone outside of your partner/collaborating pair would land you a hearing with the Ad Board. Just made some people super nervous all the time and prevented people from explaining things to each other.

Evaluate the course overall.: **4 (very good)**

I think the collaboration policy is too strict. In all of my other pset classes you are allowed to work with as many people as you'd like, and this has always been tremendously helpful to me. Working through problems with others not only makes the process significantly more enjoyable, but also far more productive and instructive. You learn a lot, and I think this would apply especially for this class, just by seeing other people's thought processes and approaches to different problems. All of that is lost with a collaboration policy like the one in CS121.

Evaluate the course overall.: **4 (very good)**

I think that the collaboration policy was rather poorly designed, and I think it reflected a rather narrow view of how students do problem sets. In an ideal world, perhaps students would get together, decide who they would partner with, then work out all of the problems together at the same time, and everyone would learn equally. In reality, I did all of the problem sets on my own because I knew that collaboration would turn into me doing half of the problems and my partner doing the other half. Additionally, the collaboration policy is WAY too complicated. The probability that I would accidentally commit some violation of the policy was part of the reason I simply completed the problem sets on my own - had I been in a group, I think that I would've been incredibly concerned that a partner or I would've done something out of the limits of the policy on accident. In sum, I think that the collaboration policy is idealistic in the sense that it really tries hard to force students into a particular way of doing things without recognizing that comprehension can occur in many environments. Given the amount of bonus points in the class, I think that thinking of problem sets as *tools to do well on the test* rather than rigorous assessments in and of themselves is a beneficial change in mindset for the course. With the large amount of bonus, I would guess that most students will get 100% in the pset category, so why not make problem sets less of a weekly assessment and more of an opportunity to learn?

Evaluate the course overall.: **5 (excellent)**

The collab policy was a little stringent I felt, but I did like the lecture notes/quizzes format because it helped me keep up with everything and it was basically free points.

Evaluate the course overall.: **4 (very good)**

Lecture attendance should not be compulsory. Lecture notes are dense (but really helpful), but they also tend to make going to lecture quite pointless.

Evaluate the course overall.: **4 (very good)**

I did not appreciate the lack of organization when it came to the attendance policy. At the start of the semester, all lectures were mandatory, and then after the midterm, the policy changed to optional attendance (with clicker questions still persisting). I would rather there be one policy throughout the entire semester, as I was confused with the logistics of the course.

Evaluate the course overall.: **1 (unsatisfactory)**

Collaboration policy is terrible, lecture readings are impossible to understand, why do graded quizzes on material before students learn about them, I don't even know what the attendance policy is or if it's enforced, this class is a mess.

Evaluate the course overall.: **4 (very good)**

I thought that the collaboration policy was a little bit strange. Why only allow pairs? Most classes in theory have more open collaboration policies and it seems to work fine for those classes.

Evaluate the course overall.: **5 (excellent)**

Wasn't totally sure what the grading policy was after it sort of changed halfway through; making that explicit would be cool. Also it would be nice to not have such a rigorous policy when it comes to talking to other people, I had to refuse to talk to a couple of friends about psets because we already had a buddy pair and I felt kind of bad about it

Evaluate the course overall.: **4 (very good)**

I've mentioned this in my other comments, but I didn't like the quizzes and attendance. For me, I felt like they were more a hassle than anything. I learned the most from doing the psets regardless, so I felt like they were just busywork.

Evaluate the course overall.: **4 (very good)**

Read lecture notes, reflect on the material, ask for clarifications on piazza or office hours or go to section before going to lecture -- that way you will get the most out of the class.

Evaluate the course overall.: **5 (excellent)**

Everything was nice, although the TFs were a little harsh on the grading side.

Evaluate the course overall.: **5 (excellent)**

Loved the bonuses! Pset Collaboration was also a great idea -- bouncing ideas off with partners very much helped to strengthen understanding of the material.

Evaluate the course overall.: **4 (very good)**

Lecture notes: a bit too long, should cut down on material slightly because it's so dense Quizzes: I wish we could view the question after we submit, had to jump through hoops to review them Attendance: Wish it was a little clearer how we were being evaluated here. Did not go to a ton of lecture after midterm but went to a bunch of sections. Yet, I'm afraid that I won't get credit for it because it wasn't directly tabulated each time we went

Evaluate the course overall.: **3 (good)**

Glad for the slight relaxation on the attendance policy, which was ridiculous at the beginning, given that it was a recorded CS class at 10 AM. However, the presence of clickers and posts about participation still being "a factor" seemed contradictory, and most of my friends still attended out of fear for the grades. Reading quizzes were reasonable in retrospect, since I probably wouldn't have read/learned as much otherwise. The collaboration policy makes no sense to me - why wouldn't you want to encourage group discussion and learning, which is quite fundamental to CS as a subject? Maybe it's possible to "steal" answers without justification in classes like Math 21, but for a proof class, it seems like it should be easy to catch people for actual cheating/copying while still allowing for collaboration between more than 4 people.

Evaluate the course overall.: **3 (good)**

lecture notes are hopelessly dense. quizzes worked well. lecture attendance should not be required. collaboration policy is good

Evaluate the course overall.: **3 (good)**

"Lecture notes" aren't even close to being notes for what the lecture actually covers. If readings are going to be continued to be required, they should be much shorter in order to incentivize actually doing the readings. I personally just ended of skimming or even just searching for the answer to the quiz questions. I think the collaboration policy shouldn't be as strict because for mathematically-based classes like this, I believe that students definitely learn better when they are able to discuss with a variety of students.

Evaluate the course overall.: **4 (very good)**

I did not like the partners structure of the collaboration policy. I would've preferred that we were allowed to discuss the problems with other people but still everyone write their own answers. I think that it is easy to just split the problems when you have a partner (even if that is not what is supposed to happen) and not end up learning half of the things. It was also hard when you do not have a partner. I liked reading the lecture notes and the quizzes. I think however that the problem sets should be due on Fridays so there is more time to read and analyze the lecture notes. Monday, Tuesday, and Wednesday is rush time for doing the problem set and Monday and Wednesday are also the days prior to when the quizzes are due which means that everything gets crammed in these days(ideally you would manage your time better but it is hard for most of the people I talked to).

Evaluate the course overall.: **2 (fair)**

If the expectation is for us to read lecture notes, they really need to be made more clear. The quizzes were helpful. I strongly believe lecture attendance should not be mandatory; it's overbearing and creates unnecessary stress for students who don't need to attend lecture twice a week at 10 AM. The collaboration policy is not consistent with that of other classes in the department and stymied discussion and communication within the class. I really recommend that you try to run this more like a typical Harvard CS class because it's a departmental requirement.

Evaluate the course overall.: **3 (good)**

collaboration policy was a but idiotic especially at the start of the semester.

Evaluate the course overall.: **3 (good)**

Lecture notes were really dense and lot of volume. Don't really agree with that style. We already have p sets and lecture and section. Please make actual lecture more effective so we don't have to spend hours and hours reading dense lecture notes on top of everything.

Evaluate the course overall.: **4 (very good)**

It would have been nice if the quizzes and attendance had not been required. Also, I would have preferred a more liberal collaboration policy allowing us to work with anyone we want, since that seems to work ok in math and physics courses.

Evaluate the course overall.: **4 (very good)**

I have nothing against reading the lecture notes, but I wish they were less dense/mathematically rigorous (particularly at the beginning of the course). Also, if reading lecture notes is required, going to lecture shouldn't be. The collaboration policy was too strict--I think it's reasonable to expect each group to come up with their own solutions, but not reasonable to prohibit groups from talking to others. It's super helpful with this kind of content to talk it through with other people.

Evaluate the course overall.: **4 (very good)**

I do not like quizzes. I think they are not meaningful and quite shallow. Also, collaboration should be made more open and people shouldn't be afraid to talk to other people regarding the homework.

Evaluate the course overall.: **4 (very good)**

I think lecture notes were great. I think the non-mandatory attendance was a good step - allowed people to do what suited them best.

Evaluate the course overall.: **4 (very good)**

No mandatory attendance in lecture was a great change, and when quizzes switched to easier questions with a bonus was great, while the beginning versions of the quizzes were too challenging in my opinion. Collaboration policy with a partner and another group was good, including the option for one more group to collaborate with may be beneficial.

Evaluate the course overall.: **5 (excellent)**

Attendance policy was a bit weird this year and I didn't know if it counted me as in attendance when I was there.

Evaluate the course overall.: **2 (fair)**

I personally like to go to lecture, but I wouldn't want it to be mandatory if it's going to be filmed anyway. I liked the idea of the collaboration policy because although I am 100% sure people broke it (I didn't, actually, but I saw others being more casual) I wonder if it is a bit too strict. I would support classmates helping each other understand concepts relevant to the problem sets without explicitly giving algorithms on how to answer. If the lecture notes were more understandable, and if the exercises had solutions at the end (or multiple choice of basic concepts/facts), that would be a lot more helpful to reinforce what we should take away from it, rather than an abstract statement at the beginning of the chapter and an often very, very vague summary at the end.

Evaluate the course overall.: **4 (very good)**

I wish attendance wasn't mandatory. I do like the quizzes though.

Evaluate the course overall.: **4 (very good)**

The lecture notes on the CS121 site are really helpful. You should actually read those.

Evaluate the course overall.: **4 (very good)**

Lecture notes should be more featured in course since they were so useful for studying. Maybe restrict what we have to read even more though since there is just so much.

Evaluate the course overall.: **3 (good)**

I would have liked a looser collaboration policy, especially at office hours. It could be really frustrating when you and someone else would listen to a TF explain something, and things would click for them but not you, but they couldn't help you at all. I realize there are concerns about cheating but I think if you make the effort to go to office hours you should be allowed to talk about potential approaches to problems as a small reward or incentive.

Evaluate the course overall.: **3 (good)**

Reading note quizes were good Attendance was good. I wish we got homework solutions. I like reading good explanations of problems and I couldn't find time to go over each homework in office hours.

Evaluate the course overall.: **2 (fair)**

The lecture notes were confusing at best, as were the lectures, but if you read them enough times maybe some material will sink in.

Evaluate the course overall.: **5 (excellent)**

I thought all of it was fine, but the typos on the lecture notes were really frustrating for me.

Evaluate the course overall.: **1 (unsatisfactory)**

Collaboration policy could be more like CS50's. Lecture notes were a bit convoluted, so perhaps a simplified outline could help us follow them.

Evaluate the course overall.: **4 (very good)**

I thought the lecture notes were very hard to decipher and went far to in depth in areas that were not all the applicable to the broader picture.

Evaluate the course overall.: **2 (fair)**

I wish lecture notes were better split into conceptual and problem-based material. Additional, there's a lot in there that felt unnecessary. It took me some time to drag topics that were important from the myriad of topics in the readings. I also would recommend quizzes that better help the reader. Rather than one or two somewhat tough questions, I think the course would benefit from a 10 question quiz that's fairly easy, but through the material guides you the reading topics and helps you see what topics/ theorems/properties will be more important overall.

Evaluate the course overall.: **4 (very good)**

Weight the quizzes less - attendance shouldn't matter

Evaluate the course overall.: **3 (good)**

I think it would be great to go over more of the core concepts in the lecture notes in lecture I guess I also don't really understand why the collaboration policy became different in this class I think many of the components in this class were fair though

Evaluate the course overall.: **5 (excellent)**

All good. Lecture notes were great.

Evaluate the course overall.: **4 (very good)**

I thought the course was set up really well. While attendance, quizzes, reading lecture notes, etc. are not popular, I think they are really great and important components of the course. I think that going to lecture is really important for learning the material well, and reading the lecture notes beforehand (and having the quizzes to provide a grade-boost incentive to do so) was also very helpful. I found the collaboration policy somewhat awkward. While I can see that one reasoning for it would be that the course staff does not want a group of people at office hours to be sharing answers and all submit the same answer, the policy made me feel very awkward at office hours - while I normally enjoy talking with other people and meeting people/making friends through sharing and communicating at office hours, I often found myself separating myself so as to avoid mistakenly breaking the collaboration policy. Also, often in office hours I find it helpful to listen to the TF's explanation to someone else's question, as it is a similar question to the one that I would have had. However, I would not do that in this course out of fear of breaking the collaboration policy. This resulted in TFs taking a very long time to get to each individual person's question, and I assume that they answered many of the same questions repeatedly. I often got to office hours at the beginning and was only able to ask one question by the end of the 2-hour time period - not sure what the solution to this is, but perhaps changing the collaboration policy would be one approach.

Evaluate the course overall.: **5 (excellent)**

I love the lecture notes and the quizzes that encouraged us to read the notes before lecture. My guess is that without that students would not be prepared for lecture at all and would get behind very easily. They are unpleasant, yes, and reading the notes takes time, but I see that as necessary to learning this difficult material. So I would resist changing this. I think there could be more leniency given to collaboration policy, where we list people we worked with and still have partners. There is sort of an unspoken guideline to this that keeps the number of people low but not restricted to just another set of partners. It is logistically very difficult and made office hours feel secretive and competitive for no reason.

Evaluate the course overall.: **5 (excellent)**

I loved collaborating with a partner on psets. I think there should not be so many bonus questions on quizzes. I appreciated the quizzes to make me do the reading, and I really enjoyed the lecture notes. I showed up to lecture, so I also liked the attendance policy.

Evaluate the course overall.: **4 (very good)**

The lecture notes generate an incredible enthusiasm and Boaz is a very enthusiastic instructor but some of the concepts feel like they were taught too complicatedly. Turing machines and the definitions of NP for example definitely feel like they could have been taught in an easier / more intuitive way.

Evaluate the course overall.: **4 (very good)**

Get rid of NAND programming assignments. Please.

Evaluate the course overall.: **2 (fair)**

Quizzes were fine, but reading lecture notes were sometimes unreasonable and too difficult to understand without covering in lecture. Lectures were often a different topic from lecture notes, requiring lecture notes as a prerequisite, not as a supplement.

Evaluate the course overall.: **4 (very good)**

Some of the lecture notes were unfinished

Evaluate the course overall.: **2 (fair)**

I think it's fine to make lectures mandatory. Students who want to whine about it can just grow up.

Evaluate the course overall.: **4 (very good)**

Definitely keep making sure people keep up with the readings, they can be pretty dense but are pretty necessary in understanding the material. I think perhaps less emphasis should be placed on attendance, but recording lectures is pretty important I think. Providing more examples through sample problems and solutions would help students a lot I think as it would give more of a framework to work off of. For collaboration policy, the allowance for a group of two to work but not write up with another group of two was quite strange, I think just allowing for a partner is enough.

Evaluate the course overall.: **3 (good)**

The course policies were super strict and made the class super stressful at times.

Evaluate the course overall.: **4 (very good)**

Lecture notes are very dense and hard to parse -- making attendance optional in the second half was a good move

Evaluate the course overall.: **5 (excellent)**

The attendance policy was kind of annoying, but then it was great. I liked the lecture notes and the quizzes.

Evaluate the course overall.: **2 (fair)**

It is very disrespectful to students to change course policy halfway through the term. Please make final decisions about grading, etc. before beginning the class. For example, changing the quiz grade percentage penalizes those who put so much effort into that part of the grade (instead of penalizing those who "collaborated" dishonestly). Lecture notes were sometimes very confusing, especially in some of the proofs. The proofs could have been stated much simpler and NAND made the whole thing that much more confusing. Attendance should not be mandatory, as topics like this should allow students to learn at their own pace. However, I do appreciate all the work the Professor put into the making of this course. His enthusiasm and dedication to student learning shows a lot in lecture and in responses on piazza (where he sometimes replies within minutes.) This work that he puts in is greatly appreciated by myself and other students.

Evaluate the course overall.: **5 (excellent)**

I really think the collaboration policy in this class should be addressed and clarified. It was difficult not to collaborate with other groups at office hours and I don't think restricting collaboration is the right way to approach academic integrity. Rather, maybe everyone could be required to submit their own problem set but collaboration across the course could be allowed. Sometimes it felt very intimidating to try and approach a problem by myself because my partner was unavailable and at least for me just being able to talk a problem out (not share solutions) with others is always helpful. Otherwise, I really liked the clicker component of this class! It made lectures so much more interactive and broke them up nicely by allowing us to do some active thinking. Although it was a bit of a hassle to get them (maybe this could be remedied by using the app) I did enjoy having the clickers to use in lecture.

Evaluate the course overall.: **2 (fair)**

Collaboration is nice for students but you can't possibly expect Harvard students to do all the problems. People use collaboration to split up the work

Evaluate the course overall.: **5 (excellent)**

Read the lecture notes. Read the lecture notes read the lecture notes read the lecture notes. I cannot emphasize this enough. Also, for Psets, start early by writing out informal solutions 4-5 days before they're due. Get the thought process started.

Evaluate the course overall.: **4 (very good)**

It really helped make things low stress that there were so many bonus points.

Evaluate the course overall.: **2 (fair)**

I didn't love the participation policy, or the quizzes, but that's whatever. More importantly, the lecture notes and the lectures need to be fixed. The lecture notes were incomprehensible, and the lectures were far too easy in comparison. The level of understanding that was expected of us was really hard to discern between the large gap in difficulty in those two.

Evaluate the course overall.: **5 (excellent)**

I think reading the lecture notes before each lecture is extremely helpful. Additionally, the quizzes force you to stay on track with the readings, which is good. I don't think attendance should be mandatory for lectures. Personally, I learn much better by watching lecture videos and being able to pause them to think over confusing topics.

Evaluate the course overall.: **4 (very good)**

See general course comments regarding lecture notes. Quizzes not bad, but reading takes a long time. I don't think you should monitor attendance at all--I believe students have enough self control to know what's good for them. People will flock to what is most useful. Collaboration policy sometimes feels restricting--I want to talk about ideas with people at office hours beyond my "collaborating pair". I feel like it's inhibiting learning.

Evaluate the course overall.: **4 (very good)**

Attendance should not be mandatory. Collaboration policy with one partner group was weird in that we can't discuss 121 with other people; it was better in the beginning when the partners weren't limited to one. In addressing the quizzes, the answers could just be immediately released afterwards and not after one takes the quiz since too many people were getting the right answers. The readings were a bit too dense for each lecture and didn't seem relevant to lecture.

Evaluate the course overall.: **4 (very good)**

I wish attendance were mandatory for lectures. I feel like non mandatory attendance is just...less useful. Also wish the quizzes were more visible, somehow.

Evaluate the course overall.: **2 (fair)**

I thought the lecture notes were not good. I think lecture notes should be shorter and more concise and possibly linked to supplemental readings. I also thought that the notes in general were difficult to understand. I found the idea of having non-mandatory lectures, but still having clicker questions that count towards our grade was confusing. I think collaborating and working with people generally helps in learning, and allowing two people to submit the same pset lends itself towards splitting up the work, but there might be benefits to the collaboration policy. I thought the quizzes were annoying, but realistically it's the only way to get people to read the notes before lecture.

Evaluate the course overall.: **4 (very good)**

Course attendance shouldn't be mandatory (and it wasn't in the second half), and the lecture notes were too dense and confusing much of the time. More of the Salil-style exam reviews would've been helpful throughout the semester.

Evaluate the course overall.: **5 (excellent)**

reading lecture notes is super helpful, i think quizzes are decently motivating (but it's easy to take them by just command f searching for the answers, so idk if it accomplishes the goal necessarily of motivating students), collaboration policy was fine–i liked the pset partner policy, and i think attendance should only factor into play as bonus points. if you're doing well without going to lectures, etc., i don't think it should harm you.

Evaluate the course overall.: **3 (good)**

Requiring reading of the lecture notes was not a brilliant idea because it meant most of the class disengaged with the lectures themselves. The collaboration policy seemed too stringent and killed the collaborative spirit found in many other challenging classes where students come together to solve problems. Students should be required to attend lecture; turning up to an empty lecture theatre is deflating, both for the students attending and for the Professor.

Evaluate the course overall.: **5 (excellent)**

I didn't like having to do quizzes before lecture because then lecture would be boring. So, I went to lecture, then read the lecture notes. This means I had to skim the notes to get the quiz answers, which felt pointless

Evaluate the course overall.: **4 (very good)**

Being able to have a homework partner was a huge boon. It made this course much much more manageable. Please don't make attendance mandatory in the future. It just creates resentment.

Evaluate the course overall.: **3 (good)**

The quizzes could easily be done by just skimming the lecture notes, so I'm not sure that they were effective in achieving their purpose. Mandatory attendance is a negative in my eyes. The collaboration policy for homework was sort of strict, but it was for the most part fair.

Evaluate the course overall.: **3 (good)**

I like the ability to collaborate psets. I think the quizzes were a fine way to assess reading. The lecture notes, especially towards the end of the the course, were very dense and hard to understand. I think many students were confused by probabilistic algorithms so I would suggest spending more time on that topic, maybe at the cost of others.

Evaluate the course overall.: **3 (good)**

I think that you should keep the quizzes, but you shouldn't grade them based off of correctness. It would be better if quizzes were only part of a participation grade. I think that the way participation was awarded was good (multiple ways to participate such as going to office hours, posting on piazza, going to lecture, or going to section). The collaboration policy worked well and I loved how there were always challenge questions through which we could earn bonus points and make up lost points on other psets!

Evaluate the course overall.: **5 (excellent)**

Make lectures and section optional and please amend the collaboration policy to be like Stat110 for example

Evaluate the course overall.: **2 (fair)**

I feel strongly that attendance shouldn't be mandatory, and participation should be removed entirely from the grading structure. Unlike all other courses, CS121 is a mandatory course to graduate in the CS concentration, and therefore, even people that are already familiar with all of the material covered in the course, still have to take it. Do you not feel that their time would be better used elsewhere, rather than sitting in lecture, and making pointless posts on Piazza to try and satisfy the participation requirement?

Evaluate the course overall.: **4 (very good)**

The expectations for the participation grade was unclear to me and I'm worried about it bringing my grade down a lot

Evaluate the course overall.: **3 (good)**

I strongly dislike the attendance/participation requirement. I'm not particularly fond of the quizzes, either (since they're so easy to forget to do), but they seem reasonable. I would rather the quiz questions be appended to the ends of the psets so that there would be fewer assignments to manage for the course. Other than that, it would have been nice if we could have gotten access to homework solutions.

Evaluate the course overall.: **3 (good)**

I would have really liked sample solutions to past homework assignments. Without them, I sometimes worried that I didn't know what questions were looking for. Otherwise, I felt the course was structured well.

Evaluate the course overall.: **3 (good)**

The quizzes are on the difficult side.

Evaluate the course overall.: **4 (very good)**

I thought reading the lecture notes was very useful and attending lecture was generally helpful, although I definitely appreciated when lecture attendance was made no longer mandatory. I had trouble remembering to do all the online quizzes and didn't generally find them super helpful (they were generally pretty easy when I remembered to do them but often I forgot until it was too late), so at least having bonus points on those was definitely helpful. I pretty much did all the assignments alone so I can't really speak on the collaboration policy.

Evaluate the course overall.: **4 (very good)**

In regards to the collaboration policy, I think it should be relaxed. I think students should be able to talk to other students at a high level, but not show their actual work to each other. This is important in office hour environments, where under the current policy if you are waiting for the TF you are discouraged from working with others on a problem.

Evaluate the course overall.: **4 (very good)**

I think there was a lot of information in the lecture notes that was not necessary (i.e. too advanced) to understanding problem sets and exams. The collaboration policy improved during the course when we were allowed to collaborate with another pair. It would have been nice to receive the answers and explanations to both quizzes and problem sets, but we only ever received the answers to the quizzes.

Evaluate the course overall.: **5 (excellent)**

Nope - thought it was great.

Evaluate the course overall.: **5 (excellent)**

The lecture notes/quizzes combination really helped solidify my understanding of the material, so I thought those were great. The collaboration policy seemed a bit strict at first, but I liked it in the end because it helped me focus on solving the problems by myself and with my partner. Too much collaboration could have deterred my learning.

Evaluate the course overall.: **3 (good)**

I thought the collaboration policy was needlessly restrictive, in that it encouraged people to work only within pairs (or groups of 4) and not help others. I'm sure people cheat in any computer science course, so it seemed that the people hurt most by this policy were the students who would have liked to help others during office hours or the like (not necessarily giving them answers, but helping them understand the course material), but didn't want to risk getting into trouble.

Evaluate the course overall.: **1 (unsatisfactory)**

you should be more clear about attendance and participation from the VERY BEGINNING. also, the grading scheme of quizzes was also too vague! however, the reading guidelines that were provided afterwards was extremely helpful!

Evaluate the course overall.: **3 (good)**

Reading lecture notes is probably recommended, although if you're like me and learn better from lectures than from readings, you'll still do fine if you don't read the lecture notes that thoroughly. Also, if you don't have time to do the readings before class, you can usually just focus your reading on the quiz question(s) or guess.

Evaluate the course overall.: **3 (good)**

The lecture notes need heavy editing. There are many typos and difficult to understand descriptions. The cryptography lecture notes I thought were fantastic, and if the rest of the lecture notes were as clear and thought out, they would be perfect as they are already very thorough.

Evaluate the course overall.: **5 (excellent)**

quizzes were just a hassle

Evaluate the course overall.: **4 (very good)**

I enormously appreciated the clear collaboration policy, and felt it was a much more fair experience than my other CS courses, because my success didn't depend on how many friends I had in the class. This is important for me as a woman in computer science. I was sometimes frustrated by the ever-changing lecture notes, but loved the quizzes.