CSC 280: Computer Models and Limitations
Course Information Document/Syllabus
Spring 2017 Semester
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Instructor: Lane A. Hemaspaandra, CSB 618.
Grad TA: Ethan Johnson, CSB 626.
Workshop Leaders: Mikayla Konst and Shir Maimon.
UG TAs: David Fink, Maria Janczak, Lia Klein, Dan Rubery, and Hassler Thurston.

Address for Course-Related Email: If you have any questions about the course, you should see a human during office hours; there are office hours every day, Monday through Friday. We will not be using email as a way of accepting questions; we will be using (only) (gasp!) face-to-face human conversations. (There are some limited exceptions. If a TA or workshop leader or I asked you to email him or her directly and gave you his or her email address at which to do that, then of course you may use that address for whatever purpose it was given for. For example, this syllabus mentions below issues regarding religious holidays and regarding CETL accommodations, and gives you an email address to use regarding those.) If your questions are about course logistics, see the grad TA in person (or by appointment, or also he’ll be at each class session) if his office hours are all conflicts for you, although do be aware that there are no exceptions to the rules, and so you should not be requesting an exception, and also be aware of the point made later in this document that this is a Models of Computation course, not a course on designing a Models of Computation course, and so we don’t answer questions about the “why”s of the course’s design or its rules. (Most are designed to help teach a good course within the constraints of its size and its staff support; and to allow us to spend as much of our time as possible on content and on providing you grading/feedback; and also, some rules are related to CETL-accommodation issues.)

Class Time: M/W 325PM–440PM, Morey 321.

Office Hours: There eight hours (some overlapping) of office hours per week (four on Monday, including ones in the morning in case you have questions before class, and one each on Tuesday, Wednesday, Thursday, and Friday); please do use this valuable resource! NOTE: Most office hours are in room CSB 727 (note: it actually has different numbers on different doors; it is the big bullpen through the internal window from the place where the first-year grad students sit), which is a nice room but a bit hard to find. You typically get to it by entering room 737 (the giant mailroom) and walking through that to get to the room called 727. (If you are coming for an office hour in that room after around 5PM, you should find at least ONE of the door to 737 or the other door into 727, which is sort of across the hall from Michael Scott’s office halfway around the floor, propped open so you can get into 727.)

Here are all the office hours, listed by time (note: office hours exist only on days when regular classes are in session, so not during Spring Break and not after the last day of classes):

\[\text{[Any substantially updated versions of this document will be announced as the course goes on via BB and made available on the course home page.]}\]
### Office Hours by Time

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>(Who, Where)</th>
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<tbody>
<tr>
<td>Mondays</td>
<td>1000AM–1100AM</td>
<td>(David, CSB 727)</td>
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<tr>
<td>Mondays</td>
<td>1045AM–1145AM</td>
<td>(Ethan, CSB 626)</td>
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<td>Mondays</td>
<td>500PM–600PM</td>
<td>(Ethan, CSB 626)</td>
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<td>Mondays</td>
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<td>(Lane, CSB 618)</td>
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<td>Tuesdays</td>
<td>450PM–550PM</td>
<td>(Shir, CSB 727)</td>
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<td>Wednesdays</td>
<td>1230PM–130PM</td>
<td>(Hassler, CSB 727)</td>
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<tr>
<td>Thursdays</td>
<td>1230PM–130PM</td>
<td>(Maria, CSB 727)</td>
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<tr>
<td>Fridays</td>
<td>200PM–300PM</td>
<td>(Dan, CSB 727)</td>
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**Workshop Sessions:** There will be workshops. These are required. Each student must be signed up (via the registrar) for (exactly) one of the five workshop sections. You are expected to attend your workshop section every week and participate well at it. (Your first workshop will be 1/18 if you’re in a Wednesday workshop and 1/19 if you’re in a Thursday workshop; there are no workshops during Spring Break or after the end of classes.) Your attendance will directly affect your course grade (see the grading formula). But far more crucially, the workshops are central to the learning of the course; if you skip workshop sections, you’ll miss their value, and will most likely do far worse on quizzes and homeworks than you would have done had you attended the workshops. The five workshop section section-names/times/rooms/leaders are:

1. (“early-Wednesday Mikayla”) Wednesdays 450–605PM (first one: 1/18), Dewey 4162.
   Workshop Leader: Mikayla Konst.

2. (“early-Wednesday Shir”) Wednesdays 450–605PM (first one: 1/18), Hylan 306.
   Workshop Leader: Shir Maimon.

3. (“late Wednesday”) Wednesdays 615PM–730PM (first one: 1/18), Meliora 218.
   Workshop Leader: Mikayla Konst.

4. (“early Thursday”) Thursdays 450–605PM (first one: 1/19), Meliora 209.
   Workshop Leader: Mikayla Konst.

5. (“late Thursday”) Thursdays 615–705PM (first one: 1/19), Meliora 206.
   Workshop Leader: Shir Maimon.

If any time after January 18th you use an add/drop to change which workshop you are in, you are required to immediately send an email to csc280gradta “at” cs.rochester.edu noting which workshop you dropped and which you added.

**Overview:** “This course studies fundamental computer models and their computational limitations. Finite-state machines and pumping lemmas, the context-free languages, Turing machines, decidable and Turing-recognizable languages, undecidability.”

Well, that is the course catalog blurb (well, that is the blurb that is about to appear; the current catalog one is using archaic language to say the same thing). And what it really means is

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2My office hours will start 500PM Mondays, and I’ll always stay until at least 515PM, and starting then I’ll stay on as long as people are there (until 600PM or perhaps longer). So to see me during my office hours, please make sure to arrive no later than 515PM.
we'll be covering much of (though by no means everything in) Chapters 1-5 of the Sipser textbook (so we'll learn about the regular sets, about the context-free languages, about the recursive and recursively enumerable languages, and about the machine models that capture them), and we also will be (probably lightly, depending on how time goes) introducing P, NP, and NP-completeness. (I typically put up the slides for Chapters 1–5 near the start of the course, but please we aware that in that slide set there are various sequences of slides we’ll skip over in class, sometimes with me pointing you to the textbook to read the particular item/issue/proof/example there—we’ll come back to this point in the next paragraph. For our brief introduction to P/NP/NP-completeness, we’ll use a different set of slides that will be made available near when we get to that material.) The pace of our coverage will be in part hinged on how things go in this particular instance of this course; I’m more interested in you understanding well what we cover (which already will be quite a lot) than in covering a zillion things so fast that no one understands them.

Also, although this is by far the most abstract material in the core undergraduate CS curriculum here, we’ll teach it in a very hands-on way. The weekly workshops are the primary vehicle for small(ish)-group hands-on problem-solving, and on the homeworks, you’ll typically be working on each in a very small group (see later). But the class meetings too will have something of a hands-on flavor. The classes will very often start with a surprise quiz (although since we’ll have them almost every class, it won’t be too surprising that we’re having a quiz), often though not always somewhat short (and likely never more than 25 minutes), and then we’ll usually immediately go over the quiz’s answers—sometimes not by me just telling you, but by having people present their right answers, and even their wrong answers, so we can understand the right ones and understand what is wrong with the wrong ones. We may also at other times stop my lecturing and swap into a mode when we right in class try to discover or develop a given technique, or examples related to something we’ve learned. Also, to make more time for this, for some proofs, esp. ones that don’t come across clearly on transparencies and in the time crush of class, I’ll assign them to you through the readings. Indeed, following the lead of Sipser, we won’t be obsessed with proofs (and we especially won’t be focused on proof details); rather, we’ll try to give you the functional, hands-on ability to really work with these different grammars/models of computation (and for the most interesting, important proofs, will try to give you a good understanding of what is the key idea behind the proof).

**Prerequisites:** CSC 173 and MTH 150. Really. If you have not taken and passed both, you’ll need to drop the course now and come back in a later term after you have passed both of those.

**Homework Preparation and Class Participation (and Some Tidbits about Quizzes and Workshops):** You may discuss and work with other CSC280 students—face-to-face, in-person only—on the reading, studying, and problems; the goal of the course is not to compete with each other, and, indeed, in real research, collaborative work is very common. However, it is cheating to solicit help from anyone other than your classmates. And even regarding your classmates, although there is the allowed “face-to-face, in-person” path mentioned above, it is cheating to use any electronic forum for discussion or work together, so you may not post or answer questions on course-related materials to newsgroups/wikis/Piazza-or-so-on/Facebook-or-Google-or-etc.-groups or to places such as Stack Overflow, or even by using email lists wide enough as to have the effect of a local newsgroup or a discussion forum. (A narrow exception is that as you work with your group on your homework in the way allowed below, your group will create and build a single hand-in jointly, and so can work with each other extensively electronically.)

When doing homework sets, you indeed may use the library and the internet to search for
information and examples on techniques and so on. But you should not attempt to find/look up a solution to a given in-progress homework problem; doing so is cheating. If you by accident stumble on a web page that happens to solve an in-progress homework problem, that in itself is not cheating. But you should, immediately the moment you realize that this has happened, not read or copy the solution. The experience and skills you’ll build by working on solving problems are an important part of doing this course; this is not a course about web-searching for answers.

On each homework assignment, you will do it in a group whose size parameters will be specified in the assignment (and how the groups are formed will either be addressed on the assignment or in class; we’ll use some Blackboard features regarding homework groups). It is possible that on some homeworks the group size will be 1 (for size-1 groups we won’t have online group sign-up sheets as for size-1 groups the group formation process isn’t really a process at all). Your group will hand in a single homework, with all of your names on it (your names must all be, in full, at or almost at the start of the first page of your pdf; this is true even if the group size is 1; it is not acceptable to hope that via BB we will know who it comes from; the printed pages that come from your pdf need all your names near the top of the page 1, or you will lose points, quite possibly even getting a 0.1% on the hand-in), and you all will get the same grade, namely, whatever grade we give that turn-in. (Obviously, though you work in a group, you are responsible for completely understanding all of the group’s answers, and you are expected to work on each problem with your groupmate. You should make sure you come out of the process with a good and full understanding of even those problems/answers on which your groupmate(s) contributed more than you did. The important reason is that you learn that material. The stick is: Things you don’t learn may well come back to haunt you, right away, on the quizzes.)

Discussing homework with your not-in-your-group classmates is allowed and even encouraged. However, after such discussions, you have to discard all notes, cell phone pictures, and other materials you have created, before your group writes up its solutions on its own without further consultations with your not-in-your-group classmates or any written or electronic material other than your class notes (including potentially notes you personally took at workshop), materials handed out in class, the textbook, my BlackBoard announcements, and materials linked to from our course homepage or from my BlackBoard announcements. You are not allowed to discuss the homework with people other than your classmates (and potentially the course staff and me, but see elsewhere the limitations on that—we generally do not comment on in-progress homework questions at all). You are not allowed to post or otherwise distribute the homework and/or the solutions to the homework, and you are not allowed to look up the answers to the homework (so Googling to find a homework answer is not allowed, for example; looking for or getting homework sets/answers or quizzes/answers from earlier versions of this course or courses elsewhere or textbook or etc. is also not allowed).

Homeworks must be submitted on time (and thought the specified channel—BB as pdf—and form—computer typeset); late homeworks get no credit (and will not be graded or marked up with comments, although you always can stop by the TAs’ or my office hours to, after solutions have been gone over in class, make sure you understand those solutions or to discuss an alternate approach). (No late homeworks means no late homeworks; even if one of my faculty colleagues—even the chair—tells you that he or she thinks it will be ok to hand in late a homework assignment in this course, even for some very good reason such as there being a research paper deadline or there being a fellowship deadline, you nonetheless must hand in your homework on time in this course if you wish to get credit for it; similarly, none of my faculty colleagues can excuse you from
It is possible that we may have more than one homework set in progress at the same time, sometimes, especially if one of them is a “midterm-like” homework set. Of course, it is very important to be clear on your homeworks as to which answer is for which problem. Your hand-in should have the problems in the same order as on the set, using the same numbering as on the set, and if a problem is out of our Sipser textbook, please echo back the problem number for clarity. So if on a given set the 3rd problem is to do Problem 1.46(a) of Sipser, your answer must begin “3. (SIP Problem 1.46(a).)” (Also, be careful not to write “Problem” when what you are solving is a SIP “Exercise”; SIP has both problems and exercises.) Your group will hand in your answers via Blackboard as a pdf file. You must prepare them using a computer typesetting system (L\TeX is by far the best; other systems are often problematic due to limited equation facilities, although there are extensions/tools that help with that in many cases; you may use computer typesetting systems other than L\TeX (e.g., from Microsoft or Apple or etc.) as long as their math/etc. support is good; but I strongly commend to you L\TeX, which is the norm for documents in our field). If your homework will include figures such as a DFA drawing, you can either do them also within the computer typesetting system or you can if you write very, very clearly hand-write them and include the image in your pdf. Of course, you will need to use a computer typesetting system powerful enough to let you suck in images; to do that in L\TeX, for example, see section 10.2.2 of The \LaTeX Companion, which UR owns as an e-resource; don’t leave this issue to the last minute, as embedding figures can be hard the first time or few one tries doing it. Indeed, even submitting through Blackboard might be tricky of BB is busy and overwhelmed; so it is very important to submit safely much before the due time that even if you encounter problems you can get your submission in before the cutoff time.

CSUG instructional computers do have \LaTeX on them, and anyone who was enrolled in this class as of the first day of the semester (January 17th) will (at least in concept) have automatically been given a CSUG instructional account (unless you already have one) and ID-card swipe access to department’s Hylan 301 computer lab. (To get your hand on the information—the temporary initial password—for this account, please see Marty Guenther on the 7th floor of CSB, and she’ll give you a piece of paper with your temporary initial passwords, that you’ll then change at your first login. Please don’t all converge on her in a mob, but do see her within a day or two after our first class session.)

Also, you must hand-write YOURSELF your one-(8.5-by-11-)sheet notes allowed on quizzes (see below). Note, again, that the quizzes make it counterproductive to ever be in the state of having relied so heavily on classmates or groupmates that you do not yourself fully understand everything.

You may (except on the first day of class) bring to each class one 8.5-by-11 sheet of handwritten notes (writing on both sides is allowed; again, you may alternatively bring two 8.5-by-11 sheets on which each has one side with handwritten notes and one side that is totally blank), prepared yourself. You are allowed to use this sheet of notes on any surprise quiz that class. (Many people will “grow” their sheet throughout a given chapter, bringing it back, day after day, with new additions, although always of course following the above size limit.)

Separate from this is the issue of bringing in notes on the homework problems. If you are called on to present some of the homework problems—if we happen to go over some such problem in class or at a workshop—you may bring with you to the blackboard as many sheets as you like of your own handwritten notes on the problems. In fact, you should keep for yourself a copy of the
homework you hand in; this copy will be valuable for example if you are called on regarding the homework, either in class or in your workshop session sections, or if partial work you did on one homework set is useful on the next set (which you might be doing before the earlier set is graded and handed back). We will in general not give out answer sets for homeworks or quizzes. But we’ll usually go over quizzes right away in class. And as to homeworks, after they are handed in, if you have questions, then—after that workshop has gone over whatever new problems it has on its agenda to go over—at your next workshop, ask your workshop leader if that past homework problem can be discussed. In fact, ideally ask that to your your workshop leader by email ahead of time, so your workshop leader can plan ahead regarding that. Also, it is not impossible that we may in class go over some homework problems some time after they are handed in. By the way, I try to never give out answers to in-progress homework questions, so no, you can’t get me to solve your in-progress homework question for you (and the same applies to the TAs and workshop leaders). After all, Part of solving homework problems is understanding them and understanding what is appropriate as a solution to them, so requests for answers to the problems, or questions on the problems, or even just requests for clarifications of the problems, while the problem set is in progress, are likely to get either no reply, or the answer “no comment” (perhaps with a pointer to this document), or the answer “part of solving homework problems is understanding them and understanding what is appropriate as a solution to them”—but most likely is no answer at all. In fact, if you get no answer at all, please consider that to implicitly be the answer I just gave above. Of course, if you have questions about the underlying material (that a question might be related to), you can and should use the office hours or the workshop sessions to ask questions about or better learn about that material (but not to ask for answers to or explanations of in-progress homework questions). We also don’t answer emailed questions about either course content (rather, see a human during office hours) or course logistics (except if it is something broken such as “BB is not accepting hand-ins”; but course-design questions/rule-change-requests we don’t answer by email or in person, as described elsewhere) and so please consider each such email to be implicitly answered by this sentence itself. As to content, note that it follows that if you have a question sometime after the last workshop-or-office-hour you can make in a week, you can’t get an answer to it before the Monday due date/time of a homework set, unless you can make one of the Monday morning office hours. So do start your homeworks early.

As to the CSUG Tutoring Center, that is a special case and here are the rules that apply to that. You may seek help regarding CSC 280 at the Tutoring Center. But it is cheating to seek help regarding any in-progress homework problem—you may not get a tutor to help, to check an answer or partial answer, to give hints on a homework problem, etc. But what you may do is seek help on material and techniques. So if the homework is on the pumping lemma, asking a tutor to do anything at all on one of the homework problems (or a problem so close that solving it is a disguised version of partially solving the HW problem) is cheating. But telling a tutor you are having trouble with the pumping lemma and would appreciate the tutor helping you understand it, perhaps on some examples the tutor thinks up, is ok (but if the tutor by random chance hits on the homework problem itself or a problem so close that solving it is a disguised version of partially solving the HW problem, it is cheating if you do not stop him or her right away; tutors are not responsible for knowing what is on your in-progress HW set, but you are).

Regarding class participation, you are expected to participate in class insofar as the very large class size allows. This is not a separate chunk of your grade, but rather it is an expectation (like class attendance), and you risk having your grade lowered if you do not meet it. For example, if
you are called on to put up your answer to a for-home-thought problem and it is clear you have not put in a substantial amount of time and thought, that could lower your grade. Note that, even if you do not know a perfect answer, if you clearly have put in careful thought (e.g., you have partial results or a clear description of what issue is stumping you), then you would not have your grade lowered. Also I do expect you to use the office hours and other suchavailabilities to the full extent needed to do well in the course. There are office hours each M/Tu/W/Th/F, and if you are both doing poorly and not using them, then you’re in a doubly bad state: both from the poor grades, and from the fact that by not making the effort to use the office hours to learn the material you are not making the expected effort to participate and do well in the class. Of course, not every student can make all the office hours, but all of you should be able to make some of them; and you should plan ahead and use those hours you can make. Also, you’ll have your weekly workshop section, which is a powerful weekly 75-minute resource (that by the way comes after the week’s two class sessions yet before the Monday due date of the homework—so it is a key way to learn the week’s examples/techniques/etc.).

Audio or video recording of the class sessions is not permitted nor is having an open computer (laptop/tablet/PDA/phone/etc.) in class, except if you have a documented disability that would need such recording/assistance and CETL has sent me an accommodation letter on that issue.

You may not Skype in—not even in silent view-only mode—on days you can’t attend class, nor may you have a classmate electronically record or transmit that class session for/to you. If you cannot attend, though, of course do get from a classmate (in the dream case, one that you have warned to please take notes for you due to you having to miss the class session) a detailed account of what happened in class and if some of our course slides were covered in class that day you’ll want to find out from your classmate which were, and read them, and also missing a class when something was handed back does not change your regrading window, so do pick up from the grad TA your handbacks at his next office hour or if that is beyond the regrading window or is too close to its end, try to arrange with him to get it back even earlier (perhaps you can ask him—ahead of the class you’ll miss—to give it at that class session, in a sealed envelope, to a friend in class to bring to you), as needed.

Related to the above, you absolutely will want to have three or four students in the class with whom you’ve exchanged email addresses and phone numbers, so that if you do have to miss a class session, you can get from them a description of what was covered. (Do not ask me or the TAs to fill you in on what you missed or send you a copy of the quiz/etc., if any, that was given; your three or four fellow classmates, mentioned above, can tell you the flavor of the quiz and probably even the answers as we’ll typically go over the answers immediately after the quiz, right in class; of course, you’d surely similarly help them if they missed a class. It is your responsibility to yourself find out what happened during any class that you miss.) However, do keep in mind that there will be quizzes almost every class, and zeros do quite bad things to averages, although we do drop the lowest three quizzes for each person. Of course, if you’ll miss a class, do make sure that, despite that, your homework (if any) due at the start of that class is handed in (electronically via BB as part of your group’s turn-in) before its deadline.

Since the class is large, please (unless when I call on you I myself have already mentioned your name) when asking a question prefix your question with your first and last name, since that will help me to (I hope) eventually learn all or most of your names.

I’ll possibly ask you to sit in a front-prefix of the room so people are closer to me and the screens.
By the way, if you have a question about some of the course material (i.e., technical content, e.g., “Does that definition imply that no DFA can have more than one start state?”) during class, it usually is a very good idea to ask your question. Probably other students have exactly the same question, and you will be doing yourself, them, and the class a big favor by asking, so we all can explore whatever issue you raise! A caveat: This is a course on certain material, not a course on how to design and teach a course on that same material. So do not ask course-design/course-logistics questions such as “Why are there so many quizzes?” or “Why can’t I use my computer, my full notes, my supersmart pet dog Fido, and our textbook during quizzes?” I don’t answer such questions. (If you have a matter of something outright broken as to BB or so on and need to inform us of that, then the address to use to report it is csc280gradta “at” cs.rochester.edu. For example, you might send an email saying, “HW 4 said to submit our pdf via BB but BB is, unlike all previous HW submission attempts, refusing to accept it saying ‘Error message 241.5 invalid storage box specifier’. ”)

A Interesting Twist Regarding Making Workshops Work The philosophy of workshop is that on most things the workshop members themselves seek and find solutions to problems—most typically, problems that they are seeing for the first time right there at the workshop. This doesn’t get to a solution as quickly as you would if the workshop leaders just gave you a solution—but it is likely to end up with you understanding the solution far, far better than if the workshop leader just tossed it his or her solution in your lap, since as we’re doing things, you will have been part of the process that arrived at the solution.

And that in general is a very good thing, and students have tended in this course to find that the workshops are a real help. However, there is a potential downside to this approach, so let me mention it, and mention a good way around it.

The worry is as follows. As a side effect of the student-led nature of workshops (itself, a very good thing), sometimes the solutions reached may not be 100% clean as the group may have had to vary and re-vary approaches to get to a good solution. And a good approach addressing that worry is that if you as workshop members are, after arriving as a group at a solution, not comfortable with the solution’s beauty or clarity or cleanness, then please, please suggest to the workshop leader right then and there that the solution seems perhaps nonoptimally clear/clean, and then the leader can (depending on time) either have the workshop members re-investigate the problem, to seek a cleaner, more beautiful solution, or (if time is tight) the leader in some cases may just jump to the cleanest solution he or she knows of. However, of those two, I think the former is the better one... and in fact, reminds me of a quote from our main course web page, namely, and this is one of my very favorite quotations in CS:

After solving a challenging problem, I solve it again from scratch, retracing only the *insight* of the earlier solution. I repeat this until the solution is as clear and direct as I can hope for. Then I look for a general rule for attacking similar problems, that *would* have led me to approach the given problem in the most efficient way the first time.

— Robert Floyd, 1978 Turing Award winner.

*Even professors sometimes—more often than they would like to admit—don’t understand talks/lectures, even in their own areas! Here is a cute, relevant anecdote from Moshe Vardi’s introduction to the September 2011 issue of CACM, where he mentions asking, at a top theoretical computer science conference, how many people understood at least N% of at least N% of the papers—to get 50% of the people to say yes, he had to drop N down to 50. Understanding lectures is a nontrivial challenge, and requires a lot of focus!
So please don’t be at all shy about urging your workshop leader to let you, like the late Prof. Floyd, seek the most lovely, insightful solution to a problem, through rethinking an initial solution. It certainly worked well for Prof. Floyd!

**Grading:** This is not a class where you ignore the material for much of the course, then just before the exams cram like crazy, and (maybe) learn (or learn to fake) the material for a day. Rather, this course expects each student to work hard throughout the course. And the grading system reflects that, by putting most of the grading weight on the day-to-day things (quizzes and homeworks) that ensure that you are staying on top of the material. You also get a workshop grade determined mostly by your attendance, but also with a potential bonus from the quality of your participation.

Your quiz grade counts for 50% of your course grade. Your homework grade counts for 25% of your course grade. Your workshop grade counts for 25% of your course grade. Note that as mentioned above the emphasis here is not on learning things the day before some midterm/final exam and forgetting them the day after, but rather is on having/gaining/sustaining day-after-day and week-after-week performance, competence, and with luck mastery, as reflected in your quizzes and your homeworks. It is a 14-week course, not a 150-minute course.

At the end of the course, we will when computing your homework grade drop your lowest homework set and average the other sets. At the end of the course, we will when computing your quiz grade drop your three lowest quizzes and average the other quizzes. However, do put your best effort into all parts of the course (all the homeworks and all the quizzes too!); that may help your grade and, more importantly, it may help you learn lots too.

Your workshop grade will start at 100%, but for each workshop you miss beyond two missed, will drop by 10%. And then your workshop leader will at the end of the term be allowed to raise the grade that attendance portion yields by up to an extra (additive) 15 percentage points, based on strong participation. So for example, if you miss 1 workshop but your workshop leader at the end of the term adds 5%, your workshop grade would be a 105%. Yes, a 105% is above 100%, and yes, we’ll really average in the 105% when computing the weighted average of your three components.

Regarding the workshop grade computation above, you will be credited for attending a week’s workshop only if you attend the one workshop session you are registered for; you will not get credit for attending any of the other four; there will be no exceptions to this (except regarding issues of religious holidays, discussed long in advance). The one exception is that for the 1/18 and 1/19 workshops, though you should try to attend the one you are registered for, you will get credit for that week as long as you attend at least one of that week’s five workshops. In all other weeks, you may if you can’t make the workshop that you are registered for attend one of the other four, and that is a good idea, but that will not (regardless of how good your reason is for not attending your own workshop) be counted as having attended that week’s workshops for the purpose of the workshop grade computation. Also, you may—for example if you are having particular problems with the current material—in a week choose to attend more than one of the workshop sessions, e.g., your “home” one and another one (perhaps given by the other workshop leader).

Not being registered for a workshop section does not mean you don’t need to attend workshops. You are required, as part of taking this course, to be registered for a workshop session. If you are not, I’ll likely have the registrar remove you from the course; but even if I don’t catch your workshop nonregistration, the workshop nonattendance would surely destroy your course average.
Your course grade will be based on the resulting weighted average as mentioned above, with the instructor also keeping in mind your class participation. Note that final grades are not based on any fixed curve/scale, but are based on the instructor’s judgment of what the given performance deserves.

Again, note that, very informally put, the “homework/quiz”-dropping and “workshop-missing” rules in effect covers you for one homework and three quizzes and two workshops of misses. However, I would emphatically urge each of you to (except when sick) attend every class/workshop, and do and hand in every homework; you will learn far more and enjoy the course far more; and that will let the drops for example just end up dropping whichever quizzes or homeworks you happened not to do well on, rather than ones you skipped outright. Do keep in mind that those drops/misses are a bow to sicknesses, broken cars, family tragedies, sport teams, scholastic teams, and all other compelling and noncompelling excuses.

**Academic Honesty:** You should read and follow the school’s academic honesty rules. Violating them is a severe mistake, and will throw you into a process that you very much don’t want to get thrown into—and violating the honesty rules just plain isn’t the right way to operate. The rules from earlier in this document as to how and from whom and from where you can (and cannot) seek help/answers or work with are a very important part of the academic honesty policy of this course, as are the rules on what notes/etc. you can/cannot have during quizzes.

**Disability Accommodations**  If you are entitled to and wish ADA-related accommodations (for example, regarding extended-time arrangements), please *immediately* contact CETL Disability Resources to both (1) confirm extended time arrangements and (2) have them send me (ideally by email) an accommodation letter (they have a “Letter to Faculty” form on their web site—https://www.rochester.edu/college/cetl/disability/current.html—to guide that process). If taking a quiz under extended time, you will take the quiz at CETL earlier in the day on the same day the class will be taking it. Each quiz is gone over in class right after it is given, so you may not take it after the given class—only before, and on the same day. (Note: CETL opens at 8AM on Mondays and Wednesdays, its location is Dewey 1-154, and their testing room is generally Dewey 1-160B, but again.) If you are entitled to and wish the ADA-related accommodation of extended time, please also make sure to, right away after you’ve asked CETL to send me an accommodation letter and confirmed with them your extended-time arrangements, send an email to csc280gradta “at” cs.rochester.edu noting that you’ll be taking the quizzes at CETL. (Please remember all three: (1) Confirm extended time arrangements with CETL, (2) Have CETL send me an accommodation letter, (3) [For those accommodations that mean you’ll be taking the quizzes at CETL, also:] Send the above-mentioned email to csc280gradta.) Students who have taken a quiz at CETL may take that quiz again in class, but we will grade and count only the one you took at CETL.

**Class Attendance:** Required.

**Quizzes, (and again) Homeworks:** No makeups. No exceptions (except for observance of religious holidays, discussed long in advance or unless you have a letter from a convincing Dean

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4To be explicit: You must, no later than January 26, noon, send an email to csc280gradta “at” cs.rochester.edu (note: The email address csc280gradta will, at least in the early part of the term—the time when the CETL accommodations and declaration of religious holidays are being conveyed—and possibly for more of or all the term, go to both the graduate TA and me) if any of the class days or days of workshops to which you are assigned fall on days where due to observance of a religious holiday you will not be able to attend; in that email, please let us know all such days for the entire term. This regards quizzes and workshop attendance (if you have a religious conflict told
(i.e., one with the authority to mandate exceptions to course policies). As a bow to sick, broken cars, tragedies, and other compelling excuses, each 280 student student will have his or her lowest homework and three lowest quizzes dropped (but no more, even with good excuses, unless you have a letter from a convincing Dean as mentioned above; this dropping rule builds in and covers all sick, disasters, and so on). The quizzes will usually be surprise quizzes. It is possible that on some days we might have more than one quiz, although often one of them in such cases will be a take-home quiz.

There will be neither midterms nor a final. (However, since you may naturally want something that is midterm-like in flavor, to help you yourself evaluate whether you’ve picked up well a given big unit, we may well have one or two homeworks that in their nature are very much like midterms, in that they’d be covering a big portion of the course in a big-picture overview way. These will be regular homeworks and will count just like all the other homeworks, including being drop-able if one is your lowest homework grade. I might make these be “Lone Wolf” homeworks that you have to do individually, or I might make them be done in small groups, as may well be the case with most homeworks. However, even if working in a group, you might want to first try all the problems yourself, just as feedback to yourself.)

People sometimes email requests for extensions or to be excused from deadlines/exams/etc., and sometimes think that not getting a reply means they have permission. To avoid such... confusion... let me state the reply to all such email requests right now: no extensions, no excuses... and this reply is so fixed that you won’t get a reply... both because the reply is pre-set and because, as mentioned earlier, in this course, students will not be using email for questions about the course; if you have questions, you should see a human during an office hour.

All (in-class) quizzes are closed-book unless they explicitly say otherwise. The (in-class) quizzes are also closed notes, except for the one 8.5-by-11 sheet (writing on both sides is allowed; you may alternatively bring two 8.5-by-11 sheets on which each has one side with handwritten notes and one side that is totally blank) of cram-notes hand-prepared by yourself, as discussed elsewhere. (If taking the quiz at CETL, they will have you photocopy your above-mentioned cram-notes before starting each quiz and you may have the photocopy (but not the original) out during the quiz; the photocopy will be turned in with the quiz (but not counted at all in the grading, and there is no promise it will be returned); the original will remain in your possession, so you can use it for future purposes.)

Note that a quiz may be on material that is related to homework/class/etc. but that you have not seen before. Often, quizzes will be related to the workshop material that came recently before, or the homework that you just did, or a reading that you just did; so a good approach to quizzes is to do all the work and stay on top of everything. You should not at all assume that quizzes will be mechanical playback of information. Some might be, but others may expect you to apply and/or extend and/or demonstrate creativity and insight. Somewhat relatedly, some quizzes may be easy and some may be hard. Again, coming in prepared is always a good idea (and is expected). Some quizzes may be take-home exercises that ask you to do something, such as coming to an office hour and demonstrating your skill in some technique.

to me by the above date, I’ll usually for quizzes give you a makeup oral quiz or possibly will simply try to avoid having a quiz on that day; and for workshops the grad TA will let your workshop leader know to please not penalize you regarding attendance credit that week even if you don’t attend your section, though you are urged to and very welcome to attend one of the other workshops that week if one does not conflict with the religious holiday). If a homework falls due on a religious holiday, you should take that into account and ensure that your group hands it in early enough to meet its deadline.
As to in-class quizzes, ideally you’ll do those in black or blue pen, but if you truly feel that writing in pencil is far better for you than using pen, you may do your in-class quizzes in (black, number 2) pencil (but if it is a smudgy, erased-and-overwritten mess you’ll likely get no points).

No questions may be asked during quizzes, and none will be answered; the process breaks the flow and concentration of the class, can be unfair as to who gets what information due to having asked or not having asked questions (even if one tells the whole class something about a problem in the middle of the exam in response to a question, such as a correction/change to a problem, some people may have already spent/wasted time on that flawed problem and some may have not, and the former group will be put at a disadvantage just due to the order they tackled the questions in), and can be unfair to students who took it earlier due to reasonable accommodations. If you see on a quiz something that you’re sure makes solving the problem impossible (or equivalent to something such as resolving P versus NP that is something I wouldn’t possibly ask you on a quiz—I save your Turing-Award-level challenges for the homeworks!) or makes the problem meaningless or incoherent, what you should do is that as part of your answer you should clearly explains what you have noticed, and why it seems to make the problem impossible or meaningless or incoherent. If what you notice seems to be a very minor technical typo and you are sure it is and you see the correction, you probably should note that, fix it, and solved the fixed problem (but if the original one was really what was meant, you probably won’t get credit if you change it to a different problem; and just noticing for example a spelling error or a missed “the” doesn’t get you out of having to solve a problem). Also, if a quiz says “N minutes,” we really will give you (just) N minutes to do it.

Regrading and Administrative Error Corrections and Blackboard and Other Logistics

If you want something regraded, you must notify the grad TA of that by email (to csc280gradta “at” cs.rochester.edu, not to his personal address) within (except if we are within 10 calendar days of the end of the term, in which case the time period discussed later for that case is what holds) 48 weekday hours (so Sat. and Sun. do not count against those) of it being given back (this holds even if you did not attend the class at which it was given back), along with an emailed explanation of what you feel was graded incorrectly. You must include as an attachment to the email a good-quality color scan of the entire quiz/homework (not just the problem you are asking to have regraded). Late regrade requests will not be honored. Note that the entire thing (e.g., the whole homework set or the whole quiz or etc.) that you are asking to be regraded may be regraded (not just the issue about which you are asking), and the grade may move either up or down, e.g., if I (or a TA) discover that a TA (or I) missed some errors, or just graded overgenerously relative to what the regrader thinks during the regrading. (Note that some or all the regrades may be done by me, and although your TAs are excellent and sharp-eyed, I’m perhaps even more sharp-eyed and perhaps far more demanding, especially regarding having clean, clear, complete answers; like most professors, I spend much of my research time finding flaws in my own and in other professor’s argument lines, and so we tend to want arguments to be complete, clear, and error-free. And I am not a fan of partial credit for flawed proofs—proofs are right or are wrong; one flaw opens lets in a universe of invalid conclusions.) Note that if on a group homework one person asks for a regrade, that does NOT trigger a regrade for the groupmates; each must individually, if he or she wants a regrade, do the above process (otherwise, one group member could ask for a grade of a 96% HW, the regrade might lower the grade to a 70%, and the groupmates would find their grade lowered though they had not requested a regrade). We will typically have your regraded paper back to you within one or two weeks.
We will be using Blackboard to maintain the course grades. If the grade we wrote on your homework set (or quiz) differs from the one that we recorded in Blackboard, you must inform us of that (and email the TAs and provide them with a copy of the graded item as paper at their office hours or by emailing it as pdf) within 48 weekday hours (Sat. and Sun. do not count against those) of it being given back (grades will typically be available in Blackboard by the time the item is given back, as we use Blackboard to hold your grades) (of course, for the case of us merely correcting, within the allowed window, a grade that is misrecorded in Blackboard, your request that we do that does not trigger a regrade of your item). A corollary is, you are expected to, frequently and routinely, check Blackboard to check on your grades and to make sure to catch any such errors. Grade problems after the 48-hour window won’t be changed; it is your responsibility to keep in such close touch with Blackboard that you catch errors within the time frame noted (and as a side effect, you’ll become quickly aware of any overall drift in your grades, since Blackboard will show you all your grades so far in the course); in brief, when you get something back, immediately check within Blackboard that we didn’t misrecord its grade in Blackboard.

FYI, I’ll typically label grade-items by their dates (so a typical grade-item label might be “1/23 Quiz” for a quiz on January 23, or “1/1819 Wkshp” for the workshops that for each of you will fall on January 18 or 19, or “1/18 HW1” if the first homework is assigned on 1/18). (Note: Often, I’ll make a grade-item placeholder in Blackboard before we’ve graded what will go in that location, so you may sometimes see grade-items (with no grades in them) for things that are not yet collected or even not yet assigned. In fact, I’ll often make columns for anything we might have coming, namely, I’ll perhaps make quiz columns ahead of time for each class, and then if we do not have a surprise quiz on that given day, I’ll just delete the column. Having (or note having) a quiz column for a future date does not guarantee there will be a quiz—it says little or nothing about whether we’ll have one... except we’ll have short quizzes at the start of most classes, I’d expect. On the other hand, often columns—such as quizzes and turned-in homeworks—will be hidden until all the grades are entered for them in Blackboard.)

Your attendance at each workshop will be a column in Blackboard, so you should check that too, along the lines of the above. The attendance column for a given week’s workshops will probably be a text grade that will be a Y if you attended and N if you didn’t attend your workshop session that week (since Blackboard requires a point total even for text grades, but then mishandles those for text grades, I’ll make the workshop attendance columns be 0-point columns in the eyes of Blackboard; but do remember please that as per the grading formula mentioned earlier in this document, workshop attendance counts tremendously much, using the formula discussed earlier; the 0-point setting in Blackboard is just because Blackboard does not understand how to handle text with respect to points and so might do crazy things). As to whether you get a Y or a N if you come in 5 seconds or 5 minutes late, I’ll leave up to the workshop leaders how to handle people who are late to their workshops, but since you are expected to be at the workshop on time, the wise thing to do, not just for grades but for the learning, is to be there safely and completely on time each week. (If you attended your workshop appropriately and the column says you did not, then the 48-hour window mentioned above holds regarding bringing that to our attention—by email to csc280gradta “at” cs.rochester.edu, but with your letter explicitly mentioning which workshop you are registered for, e.g., “early-Wednesday Shir”; to avoid any lack of clarity about time, the 48 hour window will start at 1159pm on the day of your registered-for workshop, so at 1159pm Wednesday or 1159pm Thursday.)

We may sometimes enter in Blackboard for you a grade of 0.1% on items on which your actual
score was a 0%. This isn’t to give you a slight bonus for showing up, even if you get a zero, though you actually will get that very, very slight effect. But, typically, we’ll enter 0.1% if you handed in the homework/quiz but got a 0% (or actually any got any score less than or equal to 0.1%) and we’ll enter a 0% in Blackboard if you didn’t hand in the homework/quiz. That will help me and the TAs notice if/when someone has stopped handing things in.

You should not view the class as a competition against your fellow students. The class is not graded on a fixed curve. Indeed, ideal would be if everyone did very well and got a very good grade. However, as a limited concession to the desire of some to know how they did comparatively on a given item, we set Blackboard to show the average/median of most or, typically, all grade columns (well, except the workshop ones as those are text grades). On the other hand, we will have Blackboard not show at all a “Total” column—not just because such a total would give you an incorrect impression, given that the course grading systems is far more complicated that a simple totaling, but also because in this course the goal is learning, and even regarding grades, the course is not at all about competing with classmates... indeed, ideally, at the workshops, and even in letting you do some or most homeworks in groups (see the rules on each homework), you’ll very often be cooperating with classmates to help each other learn better than you would alone.

So, to recap in part, as to grades (and what is made public and what is not), each student gets his or her own grade on each individual item (and of course I assume and expect that you will keep each given-back item), can typically read the average/median info from Blackboard page on individual items (except workshop attendance columns), and at the end of the course will receive his or her course grade either from the registrar or from me. However, I in general do not give out grade/distribution/cutoff info beyond that (or provide guesses of what letter grade a student is “headed toward”), though of course if a student wishes to share with some classmate his or her grades on some items or the course, that is up to him or her.

This class is available for audit, but please do speak with me if you want to do that (and do be aware it won’t be any help toward your CS major requirements if you take it as an audit).

The only exception to this document’s 48-nonweekend-hour time limits is that during the last 10 calendar days before the last day of classes (i.e., from April 23 onward), anything on which you want a regrade has a single 24-calendar-hour-after-the-class-where-it-was-available-for-return time limit for being submitted for regrading (so look over things given back during the last ten days within the first 24 hours of getting them back, please).

**Textbook:** The required text is:


  **Note 1:** Do not confuse the 3rd edition named above with the Third Edition (International Edition), as that has different problems/problem numbering in some places; if you use the Third Edition’s “International Edition” version, you’ll probably sometimes get 0 points due to doing the wrong problems due to the sometimes different numbering.

  **Note 2:** Do not confuse the 3rd edition with any of the earlier editions! If you use the second or first or preliminary edition, beware, as problem-numbers and pages and sections and even the core meaning of some notions may differ, so you will really want to use the third edition.

**Books on Reserve:** On reserve, for this course, at Carlson Library, are quite a few books, including our Sipser textbook (make sure to use the 3rd edition, even if I also put earlier editions
on reserve), texts covering some or all of course’s topics, some more advanced (and less advanced) textbooks, some review books on discrete mathematics, and some just-plain-interesting books that I thought you might enjoy as developing computer scientists. You can get to the reserve list directly from the link to it within our course’s area within Blackboard.

Among the on-reserve books that provide many worked examples are: (a) (In the course we may refer to this as MAR, though I doubt we’ll draw on it much or at all—SIP is quite excellent itself) J. Martin, Introduction to Languages and the Theory of Computation, McGraw Hill and (b) Daniel I.A. Cohen, Introduction to Computer Theory, Wiley. But beware: Different books use different notations and different models/pictures/conventions, and that can be confusing.

WWW Site: You are expected, as part of taking this course, to visit the course web site

http://www.cs.rochester.edu/u/www/u/lane/=courses/=CSC280/

regularly (i.e., daily, so that, for example, you see and do the reading and homework assignments that will be listed on that web site). Be very, very, very careful to make sure your browser isn’t caching and showing you an old version (browsers love to do that). The web site also provides a copy of the slides (and warmest thanks to Prof. Ogihara, who created the original version of most of them), has various other important links (such as regarding academic honesty information), and (near the bottom of the page) has tidbits of advice. This web site, however, does not have day-to-day announcements. Those will be transmitted using the Blackboard “Announcements” feature.

Blackboard Announcements: Most day-to-day announcements, if any, will be transmitted using the Blackboard “Announcements” feature. You can see these announcements within Blackboard, and I will try to have each sent to you as email by Blackboard.

However, in case on one of them I don’t remember to check the “mail-to-all” box, I strongly recommend that you make the slightly tricky change to your Blackboard settings that will cause Blackboard to send to you by email all course announcements. Here is how to do that, with my thanks to the UR Blackboard Administrator who provided this: In your main BlackBoard screen, click on the caret near your name in the upper-right, then choose Settings, then choose Edit Notification Settings. Fixing your general settings won’t save you; the course ones override it in a bad way. So under Edit Individual Course Settings, select this course, and then check the Email box at the top of the email column, and then make sure to click on Submit. (If you get an error message, retry it, or wait a hour and retry it, and with luck it will work.)