

CSC 280/480: Computer Models and Limitations  
Course Information Document/Syllabus  
Spring 2023 Semester  
Version 1.1.2<sup>1</sup>  
2023/1/11 (last updated 2023/2/12/823PM)

**Instructor:** Lane A. Hemaspaandra.

**Grad TAs:** Hanjia (Bruce) Lyu and Hecong (Alan) Wang.

**Workshop (aka Recitation) Leaders:** Ethan Ferland (eferland “at” u.rochester.edu), Ian Harding (iharding “at” u.rochester.edu), and Henry Welles (hwelles “at” u.rochester.edu).

**Office-Hour (OOH/ROH)/In-Class TAs:** Zihao (Ziggy) Lin (zlin22 “at” u.rochester.edu), Quan Luu (qluu2 “at” u.rochester.edu), and Vuong Ho (vho7 “at” u.rochester.edu). (Also, Ethan will do some office hours.)

**Address for Course-Related Email:** If you have any questions about the course, *you should see or Zoom-see a human during office hours or at weekly workshop*; there generally are office hours every day, Monday through Friday (starting 450PM on the second day of our course, January 18; see later in this document for the special set of office hours between the first and second class sessions), and in almost every week you’ll have a workshop on Wednesday evening or Thursday, and on many weeks you’ll have a ROH (required office hour, which I’ll usually pronounce like the word “roe”) during the week. The office hours have been spread as to times to assure that there is a rich range of times. *We will not be using email as a way of accepting questions; we will be using (only) (gasp!) Zoom-in-person (or face-to-face, in-person) human conversations. Really.* The reason behind this is we are devoting the course staff’s time very heavily to human contact, since interactive, Zoom-face-to-Zoom-face conversations and face-to-face conversations are a very powerful way to identify and clarify issues. (There are some very, very limited exceptions to the nothing-by-email rule. If a TA or workshop leader or I asked you to email them directly, then of course you may email for whatever purpose was requested of you. For example, this syllabus mentions below issues regarding religious holidays and regarding ADA accommodations, and gives you email addresses to use regarding those.) If your questions are about course logistics, Zoom-see or see a grad TA at their office hours (or by appointment if their office hours are all conflicts for you), or also Bruce will probably be at each class session (with perhaps a very few exceptions) so perhaps you could talk with him there if it is a quick issue, 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 support/practice/exam-grading; and also, some rules are related to ADA-accommodation issues.) (Note: If you have a matter of something outright broken as to Blackboard or so on and need to inform us of that, then the address to use to report it is csc280staff “at” cs.rochester.edu.)

**Location of Class, Workshops, and Office Hours:** The main class lecture will be live in Wegmans 1400, and the recitations will be live in their assigned on-campus rooms. All ROHs (whether ROH or OOH/ROH), and all OOHs that are listed as OOH/ROH will be via Zoom; for OOHs listed as “OOH” (i.e., they are not “OOH/ROH”s), the office hour table will either list them as in-person and give their location, or will list them as Zoom (and the Zoom URL will be available, before they occur, via the course’s Zoom Meeting Manager area).

To find your way to a Zoom meeting (such as any OOH, ROH, or OOH/ROH that is via Zoom), *always* use the link for that event in the Zoom Meeting Manager (sometimes referred to in this document as ZMM) area of our course in Blackboard. That area can be reached (once it is created and starts being populated, which will probably happen shortly before the January 18th class, except January 16 Zoom office hours will appear there before January 16) in our BB area via, within “BB Parts of Course Content,” the link “Zoom Meeting Manager: Your springboard to all our Zoom meetings.” Using that link, which usually builds in the meeting’s password, will in most cases avoid you having problems getting in. UnivIT says that from some devices, the password doesn’t pass through from the links correctly

---

<sup>1</sup>Any substantially updated versions of this document will be announced as the course goes on via Blackboard and made available on the course home page.

and you'll have to know the meeting password. In our BB area, as a visible comment right under the header "Zoom Meeting Manager: Your springboard to all our Zoom meetings," you can find the password information for all the password-protected Zoom meetings of this course (and generally all meetings are password-protected, to try to avoid Zoom-bombing).

**Class Time:** M/W 325PM–440PM, Wegmans Hall 1400. Attendance will be taken (using Qwickly) during class, and will be part of the course grade; see later in this syllabus for more details.

**Office Hours:** There generally are office hours each day, Monday through Friday, starting on the second day of our class (January 18, 2023).

*Office Hours From January 11–January 20:* [This is now in semi-invisible print, since 1/20 has passed so it no longer is relevant!]

The days up to 1/20 will have a potentially somewhat different office hours schedule than other weeks will. During that time, 1/11–1/20, the (only) office hours will be:

1. Wed 1/11, 740-840PM, Alan Wang.  
Location: Wegmans 2215.
2. Thu 1/12, 450-550PM, Alan Wang.  
Location: Wegmans 2215.
3. Fri 1/13, noon-1PM, Ethan Ferland.  
Location: Wegmans 2215.
4. Mon 1/16 is MLK Day and so there are no classes. However, Bruce and I this term will have weekly Zoom office hours on Monday; and so that you have a chance to see us between the first and second classes if you have questions one of the other office hours hasn't answered (or if you just want to meet us), we both will have office hours from 615-715PM on Monday, 1/16. The link to his and to my office hours that day is in the course's Zoom Meeting Manager within Blackboard. (Note added: Due to a time-zone Zoom confusion—our sincere apologies—and as announced at the last second and then some, Bruce on 1/16 held his Zoom office hour not at 615PM but at 915PM.)
5. Tue 1/17, 615-715PM, Alan Wang.  
Location: Wegmans 2215.
6. Wed 1/18, 740-840PM, Alan Wang.  
Location: Wegmans 2215.
7. Thu 1/19, 450-550PM, Alan Wang.  
Location: Wegmans 2215.
8. Fri 1/20, noon-1PM, Ethan Ferland.  
Location: Wegmans 2215.

*Office Hours From January 20 onward:* **Table 1 gives those office hours, listed by time.** (Note: Office hours exist only on days when regular classes are in session, so not during MLK Day (except to have staff office hours be available to students every weekday between between the first two class sessions, Bruce and I will hold an evening office hour on MLK Day), and not during Spring Break, and also not after our course's last class session; so the last office hours of this term will be (under UR's current plans) the ones on Tuesday, April 25, 2023. It is possible that immediately after the two midterms, some office hours—or possibly even workshops—might be canceled; see, close to the time of those, the Zoom Meeting Manager's list of meetings to see if any such cancellations happen. *Because during ROH weeks all students will be signed up for 1/2 hour slots, the office hours (at least those relate to ROHs) all come in 1/2-hour chunks, though many are back-to-back so you can in effect use them during nonROH weeks as a 1-hour office hour.*

**Workshop Sessions:** There will be workshops (note: in registrar-speak and CDCS these are "recitations"). These are required. Each student must be signed up (via the registrar) for (exactly) one of the (currently eight) workshop sections. You are expected to attend your workshop section every week and participate well at it. (Your first workshop will be 1/11 if you're in a Wednesday workshop and 1/12 if you're in a Thursday workshop; there are no workshops after the final class session or during Spring Break; some other weeks might also be announced during the course as nonworkshop weeks. 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 the midterms than you would have done had you attended the workshops. The workshop section section-nicknames-I-might-use-in-class, section, and leaders are (the rooms for each can be found in CDCS, at <https://cdcs.ur.rochester.edu>, via the section numbers; be careful... sometimes the registrar changes rooms shortly before the start of the term or even at the start, so do check during the first week or two to make sure the registrar has not done a last-minute switch):

1. "Wednesday 1650 Ethan," 280-2/480-2 Wednesdays 450PM–605PM.  
Workshop Leader: Ethan Ferland.

---

<sup>2</sup>My office hours, which will be by Zoom, will start on those 615PM Mondays on which our class meets, and I'll always stay until at least fifteen minutes in, and starting then I'll stay on as long as people are there (until 630PM or perhaps longer). So to see me during my office hours, please make sure to arrive no later than 630PM.

Day	Time	(Who, Type, Room if not by Zoom)
Mondays	04:50 PM–05:50 PM	(Alan, OOH in Wegmans 2215)
Mondays	06:15 PM–07:15 PM	(Bruce, OOH)
Mondays	06:15 PM–07:15 PM <sup>2</sup>	(Lane, OOH)
Mondays	07:30 PM–08:00 PM	(Ziggy, OOH/ROH)
Mondays	08:00 PM–08:30 PM	(Ziggy, OOH/ROH)
Mondays	08:30 PM–09:00 PM	(Quan, ROH)
Mondays	09:00 PM–09:30 PM	(Vuong, ROH)
Mondays	09:30 PM–10:00 PM	(Vuong, ROH)
Tuesdays	12:30 PM–01:00 PM	(Alan, ROH)
Tuesdays	01:00 PM–01:30 PM	(Vuong, ROH)
Tuesdays	04:50 PM–05:20 PM	(Quan, OOH/ROH)
Tuesdays	05:20 PM–05:50 PM	(Quan, OOH/ROH)
Tuesdays	06:15 PM–07:15 PM	(Alan, OOH in Wegmans 2215)
Tuesdays	06:15 PM–06:45 PM	(Ziggy, ROH)
Tuesdays	06:45 PM–07:15 PM	(Quan, ROH)
Wednesdays	10:30 AM–11:00 AM	(Quan, ROH)
Wednesdays	11:00 AM–11:30 AM	(Ziggy, OOH/ROH)
Wednesdays	12:30 PM–01:00 PM	(Vuong, OOH/ROH)
Wednesdays	01:00 PM–01:30 PM	(Vuong, ROH)
Wednesdays	05:20 PM–05:50 PM	(Alan, ROH)
Wednesdays	06:15 PM–07:15 PM	(Bruce, OOH)
Wednesdays	06:15 PM–06:45 PM	(Ziggy, ROH)
Wednesdays	06:45 PM–07:15 PM	(Ziggy, ROH)
Wednesdays	07:40 PM–08:40 PM	(Alan, OOH in Wegmans 2215)
Thursdays	10:30 AM–11:00 AM	(Quan, ROH)
Thursdays	11:00 AM–11:30 AM	(Quan, ROH)
Thursdays	12:30 PM–01:00 PM	(Vuong, OOH/ROH)
Thursdays	01:00 PM–01:30 PM	(Vuong, OOH/ROH)
Thursdays	04:50 PM–05:50 PM	(Alan, OOH in Wegmans 2215)
Fridays	11:00 AM–11:30 AM	(Quan, OOH/ROH)
Fridays	12:00 PM–01:00 PM	(Ethan, OOH in Wegmans 2215)
Fridays	02:00 PM–02:30 PM	(Ziggy, ROH)
Fridays	02:30 PM–03:00 PM	(Ziggy, ROH)

Table 1: Office Hours by Time (note the caveats in the text, e.g., the purely ROH office hours—those that do not say OOH/ROH but do say ROH—won’t exist in nonROH weeks). ROHs of everyone will be by Zoom. OOH/ROHs of everyone will be by Zoom. But **“pure” OOHs (i.e., items that are listed here NOT as OOH/ROHs but as OOHs) will be in the room listed beside them if one is and otherwise will be by Zoom. On the other hand, to get to a Zoom meeting, use the Zoom Meeting Manager within the BB Parts of Course Content part of our BB site.**

2. “Wednesday 1650 Ian,” 280-11/480-10 [sic] Wednesdays 450PM–605PM.  
Workshop Leader: Ian Harding.
3. “Wednesday 1815 Ian,” 280-3/480-3 Wednesdays 615PM–730PM.  
Workshop Leader: Ian Harding.
4. “Wednesday 1815 Henry,” 280-7/480-7 Wednesdays 615PM–730PM.  
Workshop Leader: Henry Welles.
5. “Thursday 1525 Henry,” 280-9/480-9 Thursdays 325PM–440PM.  
Workshop Leader: Henry Welles.
6. “Thursday 1650 Henry,” 280-4/480-4 Thursdays 450PM–605PM.  
Workshop Leader: Henry Welles.

7. “Thursday 1815 Ethan,” 280-5/480-5) Thursdays 615PM–730PM.  
Workshop Leader: Ethan Ferland.
8. “Thursday 1940 Ian,” 280-8/480-8 Thursdays 740PM–855PM.  
Workshop Leader: Ian Harding.

If any time on or after January 11th you use an add/drop to change which workshop you are in, you are (this is related to the fact that you only can get workshop attendance credit for attending the one workshop you are officially enrolled in; we often use the section rosters to make the attendance list used at each recitation section) *required* to immediately send an email to csc280staff “at” cs.rochester.edu stating clearly which workshop you dropped and which you added (e.g., “I have just now dropped Thursday 1815 Ethan 280-5, and have replaced it with Thursday 1650 Henry 280-4”).

**OOHs and ROHs: What They Are, and Times and Locations:** Locations first: All OOHs (I might pronounce this like “oh-s” but often I’ll just “pronounce” it like “non-rose,” i.e., nonROHs) and ROHs (I’ll pronounce this like “rose”) and OOH/ROHs are always by Zoom. As to OOHs, (I might pronounce this like “oh-s” but often I’ll just “pronounce” it like “non-rose,” i.e., nonROHs), the table here will list which are in-person (and if so, where they are), and which are by Zoom (and if so our ZMM will have the URL/link for it).

ROH stands for Required Office Hour. OOH stands for Open Office Hour.

Very early in the term, there will be a ROH sign-up period, in which each student signs up for a 30-minute ROH slot that will be that student’s ROH slot for the entire term. Signing up on time, and attending the one you signed up for, are required, and your ROH attendance will be part of your course grade.

You’ll be, in your ROH, with the same TA, and the same ROH-mates, all term long. We expect that all or almost all ROH slots will have at most three students in them, and some (perhaps many) people might end up in tutoring sessions with just one or two students in them.

The ROH sessions will variously be used to review skills, work on a problem, touch base on how you are doing, etc.

Times/meetings on this document’s office-hour list coded “ROH” are generally time slots/office hours that exist only in ROH weeks.

Times/meetings on this document’s office-hour list coded “OOH/ROH” are generally time slots/office hours that will exist basically every week (possible exceptions are that after exams they might be removed from the schedule, well ahead of time, if those TAs are UG TAs being used to grade the exams). In ROH weeks such slots will function as ROH slots, and in other weeks, they are open office hours for you to attend for support and help if you wish to.

Times/meetings on this document’s office-hour list coded “OOH” are generally time slots/office hours that will exist basically every week (even in ROH weeks) as open office hours; however, these slots never can be used for ROH attendance credit (rather, you must attend in the ROH slot you are signed up for as to attendance credit); but these slots are opportunities to come in for extra help, as also are the “OOH/ROH” slots during nonROH weeks, and as also is the possibility of attending (in addition to your home ROH, of course) an extra ROH, during ROH weeks.

*Heads-up: In ZMM, we will use recurring meetings to put the OOH/ROH office hours in as recurring meetings for basically the entire term. That is straightforward. But we will initially use recurring meetings to put the ROH office hours in as recurring meetings for basically the entire term, and then for those weeks that are nonROH weeks, will remove them after the decision is made that the week will be a nonROH week. Since which week is a ROH week and which is a nonROH week is made based on class flow and progress, those are not known long ahead of time (and will appear when known in the “ROH” subsection of our course home page).*

To make it easy for you to find which ROH you are in, if you forget, after the ROH sign-up period is over, we’ll post the ROHs everyone is in, within our BB area, in an entry labeled something like “ROH Assignments,” that will itself be located inside the folder “BB Parts of the Course.”

As mentioned above, your ROH in a given ROH week will likely be a group of you and one or two (or perhaps slightly more or fewer) other students meeting with a TA (office hours listed in our table as OOHs are not usable as to fulfilling the ROH requirement: only ROH and OOH/ROH listings are usable, and indeed only the ROH you signed up for).<sup>3</sup>

During ROH weeks you may attend ROHs other than the one you are signed up for *if that ROH leader agrees to let you attend*; just Zoom in at the start, and ask if the leader will let you; typically, they might let one or two students join

---

<sup>3</sup>Since the TAs often have multiple office half-hours in sequence, they may choose to end a half-hour office hour a few minutes before the full half hour is reached.

in for extra help, but will try to keep the total number of students small, perhaps at most around four or five. But as to your attendance grade for ROH attendance that week, it is *only* your assigned ROH that gives you your attendance grade for that week's ROH attendance grade. Going to other ROHs is just to get extra help (which is a wise thing to do if you are having problems).

**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, and NP-completeness.”

Well, that is the course catalog blurb. And what it means is 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 we also will be (probably somewhat lightly, depending on how time goes) introducing P, NP, and NP-completeness, and possible things in complexity even beyond those. (I typically put up the slides for Chapters 1–5 at or near the start of the course, but please be 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. *Also, much of the basics of regular sets and CFLs was covered in CSC 173, and for much of that we won't teach it in lecture a second time since you already know it, but will likely assign reading in Sipser on it to refresh your memory, perhaps with also a lightning pass over it on the slides in class*; but some aspects of what was done in CSC 173 will be repeated, due to being complex or covered only lightly or partially in CSC 173; so for example, regarding DFAs/NFAs/RegExps, we will rely on CSC 173 and reading in Sipser for their equivalence, and we will start our detailed coverage on the pumping lemma, and then will cover some more challenging issues as to classifying sets as to whether they are or are not regular. Of course, anything that is either touched in class or in the readings is in concept in scope on the midterms; but—though this is not a formal statement or promise but rather is an informal guess/prediction—the midterms are unlikely to dwell very intensely on 173-ish material that was in our readings, except for the parts of such that we ourselves put focus/coverage on. Typically, I'll as a midterm draws near put up on our home page, and announce, a link (located in the home page's Other Important Links/Info/Resources area) to a web page discussing what the scope is of a given midterm; that is your best source as to scope, and I'll generally if asked questions about a midterm's scope point to that since that page is equally available to all students; I in general do not make available a “sample/previous” midterm exam. For our 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 BS core undergraduate CS curriculum here, I'll teach it in a very hands-on way. The weekly workshops are a key vehicle for small(ish)-group hands-on problem-solving, and your ROHs will have you and another (or two other) students interacting for half an hour with your ROH TA, so that also is a setting with an even smaller group, and in those too you will often be discussing/presenting your solutions or working on new problems given to you by your ROH leader (or me). And many times, in even the main class session, we may 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, or to tackle some challenging problem in small groups right there in class (often, we'll have course TAs rotating around to visit the groups and see how you are doing or answer questions; often, we'll typically have around 3–4 TAs attending such hands-on-work class course sessions).

Partly to make some time for this, and partly to allow the rest of the material to be less rushed, 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. (The readings will be assigned via being listed on our course home page in the list of assigned readings; usually any reading assigned on a given day will be listed on the site that same day, before midnight, so please do check the page to find the assigned reading; I will often though not always also mention in class the reading assignments.)

Indeed, following the lead of Sipser, we won't in class be wildly 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. *Really* really. If you have not taken and passed both, you'll need to drop the course now and come back in a future term after you have passed both of those. They are not co-requisites, they are prerequisites, and essential ones.

**The Flow of the Course, Including a Discussion of ROHs and Workshops and How They Fit In:** The general flow of the course will be as follows.

In a given week, there will be material presented in class, or exercises and examples done in class (by you or by me), on Monday and Wednesday (class attendance is required). If it is a ROH week, you'll have signed up near the start of the term for your required 1/2-hour ROH office hour slot, which will be some time on one of the days Mon/Tue/Wed/Thu/Fri, and will attend your assigned ROH session. And on Wednesday or Thursday you will have your (required, scheduled) workshop.

Sometimes, I may give you exercises that you will be expected to work on before either a coming ROH or workshop; those will be posted in the "Exercises/Problems" part of the course home page (on the web), along with a clear description of by when you are supposed to do them (and I'll try to remember to mention in class or by a Blackboard announcement that exercises are posted—but please yourself do check the homepage for whether ones are posted). For such problems, you should work on them so you can come into your ROH or workshop with (written down) either a solution or at least your partial work that failed to get to a solution, on the given problem. Even if the latter case holds, having worked on the problem, and thus knowing what its obstacles and challenges are, will help you understand the solution far more deeply when it is reached at your ROH or workshop.

Sometimes, the ROHs and workshops will be about you working on problems (that the ROH or workshop leader knows the answers to) together with your ROH and workshop colleagues, with the ROH or workshop leader of course helping with the process, and perhaps presenting an answer if the group doesn't get to one.

Sometimes, the ROHs and workshops will be you and the ROH or workshop leader working together on a problem that I assigned that even the leader does not know an answer to, and that will be gone over in a coming class. On such problems, your group will be working jointly with your ROH/workshop leader, usually a more experienced undergraduate, and so you'll be able to observe how that leader approaches solving a fresh problem. (If you are in the *N*th ROH or *N*th workshop the leader has led that is on that problem, the leader may already know a solution, and if so, likely will hold back a bit and try to not get in the way of your approaching the problem, although perhaps giving hints if the group seems stuck.)

Sometimes, ROHs and workshops will be the ROH or workshop leader showing you some material, or running some examples so that you see some.

And sometimes, ROHs and workshops will be a mixture of the various things above.

It is perfectly legal, and indeed is a good idea, to take notes at the ROH or workshop. It is totally typical and ok—except if there were exercises for which I asked you to come in with written answers<sup>4</sup>—to come into the ROH workshop and to right then and there be given problems to solve; that will be very common, and in some sense the ROHs and workshops to a large extent *are* the exercises and homeworks of this course—real hands-on, medium- and quite-small-group problem-solving. However, it is not ok to come in to a ROH or workshop without having reviewed what was covered in the course, e.g., in that week's lectures and in any readings that were due before the time of the ROH or workshop.

The goal of the course is not to compete with each other, and, indeed, in real research, collaborative work is very common. And as fellow learners, the class's students can be great helps to each other. After all, the primary goal is getting to a state of better understanding of the material. For this reason, I am at least initially setting the rules on working together to be very permissive. You may discuss and work on at-home exercises together with groups (even large groups) of your classmates, as long as that work happens "face-to-face" in the sense that that has in this time of health uncertainty, by which I mean you should meet either in person, or by Zoom or Skype or some other similar service where you are directly seeing the people you are working with; in particular, you may NOT simply email around answers to each other (since that does not involve only face-to-face activities). You in fact may discuss the exercises

---

<sup>4</sup>...in which case you should; they will not be collected or graded, but as time permits the problems will typically be gone over and some students will get to present their written solutions, most especially so in ROHs as those are often just two (or three) students. However, if the ROH or workshop leaders let me know there is a pattern of students coming in unprepared as to written material or as to having reviewed the class material and done the readings, I may change the setup away from having ROHs and workshops simply counting based on attendance (except for the fact that workshop leaders have up to two possible bonus points on the workshop attendance score that they can give, see later in this document). If I have to change the setup at some point, then for example, for all at-that-point-still-to-come ones, the workshop leaders might test/judge you and give a grade to you based on what skill you displayed; or to grade you simply based on whether you even do have something to turn in plus whether you are there, e.g., 0% if you don't attend, 20% if you attend but don't have a turn-in solving or hitting a dead end on the problem, and otherwise 100%. However, for those components of the course, I'd much rather the components be supportive rather than judgment-y/grade-y; it is a nicer, kinder, better dynamic, as long as the class's students put in the concern and effort to use that set-up well. That does not mean there is no judgment-y/grade-y aspect to the course; rather, the midterms are that, but the ROHs and workshops—and your focus and effort on them and the course—are a key tool in helping you build your skills so that you can to do well on the midterms (and, more importantly, have those skills and knowledge).

with any UR students. You may look at books to help learn the material.

However, it is cheating to electronically post or distribute or share your answers to problems (e.g., if I assign a problem to work on and write up before a ROH, it is cheating to put up a solution on your web site or even to *email* it to a friend; but you can discuss the problem and its solution with a friend or multiple ones, as long as the discussion is face-to-face, and for this term Zoom/Skype/etc. will count as face-to-face for that particular purpose). It is cheating to create an electronic forum for discussing the problems and their answers; you must do that face-to-face (which for this includes Zoom/etc.) and only with fellow UR students. It is cheating to grab answers electronically (whether from a fellow student or from the web<sup>5</sup>).

By the way, the above even extends, to some extent, to written material. That is, sort of restating the above footnote about the web to now be phrased in terms of both texts and the web: When doing some exercise I gave you, 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 exercise/problem; doing so is cheating. If you by accident stumble on a web page (or textbook page) that happens to explicitly solve an in-progress exercise/problem, that in itself is not cheating. But as mentioned above 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; again, this is not a course about web-searching for answers. So as noted before, Googling/etc. to find an exercise answer is soooooo not allowed; and to expand things a bit further still, it also holds that looking for or getting exercise answers from earlier versions of this course or courses elsewhere or textbooks or etc. is also not allowed. (If you are wondering why I basically said this twice, it is because you will both be cheating, and will lose much of the value of the course, if you approach problems by trying to look up the answers rather than working on the problems yourself. Even if you personally work on a problem and *fail* to find a solution, your failed efforts will let you know what the challenges were and will let you appreciate and *far* better understand the solution when you do see it.)

At least initially, since such exercises are not formal, graded homeworks and their answers are not graded as to correctness, and at least as far as I am concerned it is not an academic honesty violation to even get help on understanding problems from UR-student tutors at the CSUG Tutoring Center (if that exists during this term). (However, under their policy regarding homeworks, and as these are not insanely far from being homework though they actually are pretty far from it, tutors may quite reasonable decide to decline to touch an in-progress exercise/problem, and you should respect that if they do. And I would suggest that if you go to the tutoring center because you want help on some concept/technique, you try to avoid doing any exercise that currently is in-hand and active—because doing that with the tutor cheats you of the chance to solve it. So, instead ask for a different similar problem from the tutor. And with the skills you learn from that, you'll be with luck ready to tackle the problem that previously was giving you problems.)

If there were exercises to be done at-home for a particular ROH or workshop session, you of course should at that session ask about any such that you did not get to an answer to, so your session-mate(s) or the leader can share/discuss solutions and help you understand the problem and answer (the leaders probably will routinely cover such, but in case they are assuming that you found an answer, you should try to communicate well with them about what you do and don't follow, e.g., at a given ROH if there as a two-part problem to be done and brought in, it is possible all students there will quickly agree that they all totally follow the first part, but that they really need to go over the second part). If even after that you have questions, the best places to next ask are a grad TAs' office hours (there will be grad TA office hours basically every weekday), or the other office hours, or at whatever next ROH or workshop you have, or with a classmate, or (if it exists) at the CSUG Tutoring Center.

I said this above, but since this is an item that can easily lead to academic honesty cases, let me repeat it for emphasis. It is cheating to solicit help for in-progress exercises from anyone other than UR students. And even regarding UR students, although there is the allowed "face-to-face" path mentioned above, it is cheating to use any electronic forum for discussion or work together (except face-to-face things such as Zoom or Skype), 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; remember: "face-to-face (in our this-term-sense-as-regards-this-issue that includes Zoom and Skype)."

Of course, none of my faculty colleagues can excuse you from this course's classes, workshops, ROHs, midterms, etc.

---

<sup>5</sup>If when browsing the web by bad luck you by no fault of your own bump into a solution to an in-progress problem, simply stop looking at it the moment you realize that that is what it is. The goal here is for *you* to build the skill of solving the problem; the goal is not to test your ability to look up answers with Google. Most problems will be given and done right in ROH and workshop of course, and so you won't have a chance to even try to look them up ahead of time; but even if problems are in-hand, you learn better and more by doing them yourselves, not by using Google to look up an answer.

By the way, I try to never give out answers to in-progress for-work-at-home exercises; so you certainly won't get me to solve your in-progress exercises for you. And if you want clarification of what a question means, well, a big part of solving problems is understanding them and understanding what is appropriate as a solution to them (if a problem is from Sipser, looking at the Sipser chapter or section it is attached to will typically clarify any issues of what notations mean and so on). And recall that we do not answer questions via email; the course is about face-to-face (in person or at times via Zoom or Skype) interaction. But if you are so confused as to be quite lost about what a problem even means, the natural thing to do is to ask about it at a grad TA's office hours, or other office hours, or your workshop, or your ROH, or to ask a classmate (if you have left things to the very last minute, that last path may be your only path).

So, if you ask me questions via email (such as asking for answers or even clarifications on in-progress exercises), you are likely to get either no reply or the answer "no comment" (perhaps with a pointer to this document)—most likely the former. 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 or the ROH sessions to ask questions about or better learn about that material. We also don't answer emailed questions about either course content (rather, see a human during Zoom office hours) or course logistics (except if it is something broken such as "Blackboard does not have a column that by now should be up"; but course-design questions/rule-change-requests we don't answer by email or in (real-world or Zoom-)person, as described elsewhere) and so please consider each such email to be implicitly answered by this sentence itself, when/if I don't reply to it.

I do expect you to use the office hours and other such availabilities to the full extent needed to do well in the course. There generally 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 doing poorly 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; or if not, you can make a separate appointment with a grad TA. Also, 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.

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 may help me to (I hope) learn your names.

### **Synchronous Course, Recordings, Required Attendance, Etc.:**

ROHs are all synchronous via Zoom, and attendance is required and part of the grading basis (see the grading basis). (But see the "drops"-allowance discussion.)

Class and workshops are live, attendance will be taken. We won't have a Zoom connection to the main class or workshops; however, we will try (that is not a promise or guarantee; but we plan to try) to record the main class session, and one or two workshop session(s) each week. Those who miss class or workshop will want to view those recordings (which will be in BB/Panopto); however, you do not get attendance credit for watching those—you have to be in class.

If you miss a class session or workshop, you are expected to view it via the recording (if a recording was made and posted; we will be trying to do that for each class and one or two workshops each week); again, viewing the recording does not count towards the attendance part of the course grade. OOHs (Open Office Hours) and ROHs (Required Office Hours) will not be recorded, as per the school's guidance about recording office hours.

This is your notification that you should assume that you are being recorded at all class sessions and at all workshop sessions. (In reality, we'll try to record two workshops each week, 280-3 and 280-4,<sup>6</sup> and will post the recording of one or perhaps both; and we will record both class sessions. Note that recordings sometimes fail, or lack audio, and you are expected to, if a recording failed to be made or lacked audio, consult a classmate to catch up on what was covered. I suggest you arrange in class with partners to do this for each other, see the next paragraph!)

Related to the above, you absolutely will want to have three or four students or friends in the class with whom you've exchanged email addresses and phone numbers, so that if you do have to miss a class session/etc., you can chat with them about it (either before or after you view the recording, though it might be nicer to your friends if you view the video first, rather than trying to have them perfectly recite 75 minutes of what happened), and who can be of help if for some reason a recording wasn't made.

The recordings are automated and not just the ones of the main class session but also the ones of the workshops should be autodeposited (with some clear naming scheme set by ECM and its affiliates) in the Panopto directory related to our main course, 280-1. Due to video processing times, there is a delay between the recording and when it

---

<sup>6</sup>If recordings fail or there are other problems or TA substitutions or other reasons, other workshops might be recorded and posted.



automatically appears in the Panopto folder. The delay can be as short as about 15-to-90 minutes or as long as 30 hours (if something that one would expect to have been taped does not show up within 30 hours, please feel invited to email csc280staff “at” cs.rochester.edu to let us know of that so we can look into it).

ECM/UIT’s advice on how to get to our course’s Panopto folder is, “Students can find the videos in your Blackboard course site by going to: (1)Access to Tools, and then (2)Panopto Content.” (It is possible that doing so won’t do anything happy until we have at least one recording; I got sent into an infinite redirect with pop-ups loop when I tried it!)

By the way, as alluded to in part above, 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 good idea to ask your question. Probably other students have exactly the same question,<sup>7</sup> 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. I don’t answer such questions. (If you have a matter of something outright broken as to Blackboard or so on and need to inform us of that, then the address to use to report it is csc280staff “at” cs.rochester.edu.)

### **A Interesting Twist Regarding Making Workshops Work (and in Large Part This Applies also to the ROHs)**

The philosophy of the workshop is that on many 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 their 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 class-student-driven nature of workshops (itself, a very good thing), sometimes the solutions reached may not be 100% clean, since 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 they know 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.

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:** Your course grade has the following components.

Your workshop attendance grade (which as mentioned below isn’t all about attendance; good participation at workshops can get you some bonus points in this part of your average; this is a slight exception to some comments made earlier in this document) counts for 11% of your course grade. Your ROH attendance grade counts for 7% of your course grade. Your class attendance grade counts for 18% of your course grade. Your midterms count for 64% of your course grade. There is no final exam.

Those grade components’ values are computed as follows.

---

<sup>7</sup>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!

Your midterm component, which counts for 64% of your course grade, is the average of your Midterm I and Midterm II grades (so each of those counts for 32% of your course grade).

The other components are a bit more complex to describe.

At each class session (except during the two midterms, and I during the course might announce some other sessions as not counting toward the class attendance calculation<sup>8</sup>) you will get a 0% if you are not recorded as attending and a 100% if we record you as attending. (We likely will use Qwickly to take attendance at the 3:25PM class sessions. So you will need to have available during class a smartphone or laptop that will let you via Blackboard/Qwickly be counted as attending. Electronics are forbidden to have out in class (during any in-Wegmans-1400 class sessions) and indeed having electronics out will be an academic honesty violation; however, this is the exception (and another exception is if under ADA DR has granted you and informed me that you may use some certain electronics during class): At one point—sometimes the very start but perhaps sometimes elsewhere—during class, I'll pause, give you the code you need to be counted as attending, and you can use your smartphone or computer to via going to Qwickly within our course area in BB be recorded as attending class (in fact, since this may often be done at the very start of class, you can and should start the class with whatever device you use to report the pin-code to Blackboard/Qwickly turned on and logged into BB and at our course's area in BB). It is academic dishonesty to try to circumvent this system—such as by texting the code to a friend or being texted the code by a friend. And if you happen to not be at the lesson at the time when we do this, then you will be counted as not attending even though you attended much of the lesson.<sup>9</sup>

The average of those class-attendance grades, but with the 8 lowest ones dropped if you are taking this as 280 and the 4 lowest ones dropped if you are taking this as 480, is your class attendance grade (the numbers 8 and 4 are set much, much larger than usual, due to the possible cold/flu/COVID/illness-disrupted nature of this term). (I will add Qwickly as an item in our course menu within BB. You can use that link to check your attendance record and to enter the secret code I give when taking attendance so that Qwickly records you as being there.) But Qwickly will not itself do any dropping of lowest grades; fyi, I generally have Qwickly push into BB Grade Center so you can see it there a column showing how many absences you have had during days when attendance was taken in main-class-session, however that will be a raw number from Qwickly without any drops built in. The staff and I will as needed by hand at the end of the course, based on the Qwickly data, compute your correct class attendance average. During the term, you can and should in the Qwickly part of Blackboard for the course check to make sure that nothing is crazy such as you being registered yet not even existing in Qwickly; but as just mentioned, do keep in mind that Qwickly is not internally doing droppings and so on, so any average column it shows is not relevant—basically all that is relevant is the number of absences and the number of attendances, and whether you are signed up for the course under the 280 number or under the 480 number.)

At each ROH (during weeks when we have ROHs, and I during the course might—though it is not too likely—announce some other ROHs as also not counting toward the ROH attendance calculation) you will get a 0% if you do not attend or you arrive late, and otherwise you will get a 100%. The average of those grades, but with the 4 lowest ones dropped if you are taking this as 280 and the 2 lowest ones dropped if you are taking this as 480, is your ROH attendance grade (the numbers 4 and 2 are set much larger than usual, due to the possible disrupted nature of this term). ROHs will not use Qwickly but rather the attendance will be hand-added to Grade Center by your ROH TA.

Regarding the ROH grade computation above, you will be credited for attending a week's ROH only if you attend the ROH session you are assigned to; you will not get credit for attending any of the other ones. There will be no

---

<sup>8</sup>For example, for the Spring 2023 CSC 280/480, whether the April 24 class session will be counted toward the class attendance calculation will be announced at (or perhaps shortly before) the April 24 class session, and whether the April 26 class session will be counted toward the class attendance calculation will be announced at (or perhaps shortly before) the April 26 class session.

<sup>9</sup>In the (one would hope) unlikely case that you are at class (in Wegmans 1400) and have connection or login troubles (e.g., if you can't get into BB; note: you are responsible for having a wifi or cell connection, and for instantly handling issues such as stale handles and your BB login having timed out from disuse; so if you can't wifi connect, you'll not be marked as being here... so DO make sure to be connected) you also must do precisely to following to seek to get credit:

What you *must* do is *attendance is being taken* (not later—the email I am about to mention has to happen (to be done and be at least handed off from your machine to the next machine in the email delivery chain) right during attendance-taking for you to be able to get attendance credit; since the email mentioned might take a minute to write, we'll allow up to precisely three minutes after the end of the attendance-taking period for your email to reach the “next machine” mentioned above, but not a second more than that) (a) send a very brief email to [csc280gradta@cs.rochester.edu](mailto:csc280gradta@cs.rochester.edu) stating what the issue is (e.g., “Am at class. Qwickly attendance code is 1248. Can't put it into Qwickly because [your brief reason would go here in your actual email]—Jane Doe.”

Try to bring multiple devices, or ideally as backup even a cell-connected device; and at the start of each class, before 325PM, do check to make sure you can wi-fi (or cell) connect; consider sitting near someone with whom you have arranged that if one of you cannot connect to BB or wi-fi then when the other is done the person having problems can attempt to on that person's device very, very quickly (strictly within the time frames of this footnote) zip off to [csc280gradta](mailto:csc280gradta)—perhaps using your mail service's web email interface—an email of the type mentioned here).

exceptions to this, except regarding issues of religious holidays, discussed long in advance, see later in this document. If you miss a ROH, you'll have missed your chance to chat there about the material, but you still will have the course office hours as a useful resource if you have questions, and as mentioned above, you can attend other ROHs that week if that ROH's leader allows you to (but that will not count toward your ROH attendance computation).

Both ROHs (see above) and workshops (see below) give you a 0% if you skip or "are late." But how strict will the ROH leaders and workshop leaders be as to deciding whether it counts as "late" if you come in 3 seconds or 3 minutes late? I'll leave up to those leaders how to draw the threshold as to what counts as late.<sup>10</sup> However, since you are expected to be at those meetings on time, the wise thing to do, not just for grades but for the learning and out of respect for your groupmates and leader, is to be there safely and completely on time each week. Naturally, we expect you as part of attending things to stay until the earlier of when their time period ends and when the leader says it is over; except... for some or all ROHs, I may via a posting set a minimum amount of time you must spend to avoid getting a 0%; on such days, if the amount of time I specify is  $N$  minutes— $N$  will never be more than 30 of course—then you will get a 0% unless you stay until  $\min(30 \text{ minutes in, } \max(N \text{ minutes in, whenever the ROH leader says things are done}))$ . (During weeks that have such an  $N$  specified, you and the ROH leaders will know of  $N$ , but if your leader forgets and tries to push you out the door at time less than  $N$  minutes in, remind the leader of the applicable  $N$  and spend the time between then and  $N$  minutes in in discussion of material/problems/etc. If people are acting responsibly and things are flowing well, I likely will not specify such an  $N$ .)

At each workshop (during weeks when we have workshops, and I during the course might announce some other workshops as also not counting toward the workshop attendance calculation) you will get a 0% if you do not attend or you arrive late, and if you arrive nonlate and attend then you will get a 100% for that day. The average of those grades, but with the 4 lowest ones dropped if you are taking this as 280 and the 2 lowest one dropped if you are taking this as 480, is an intermediate result on the way to your workshop attendance average (the numbers 4 and 2 are set much larger than usual, due to the potentially disrupted nature of this term).

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) 2 points, based on strong participation. So for example, if you miss 1 workshop but your workshop leader at the end of the term adds 2 points, your workshop grade would be a 102%. Yes, a 102% is above 100%, and yes, we'll really average in the 102% when computing the weighted average of your various grade 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 seven<sup>11</sup>; there will be no exceptions to this (except regarding issues of religious holidays, discussed long in advance).

You may if you can't make the workshop that you are registered for attend one of the other eight, 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 a different 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 (actually, the registrar these days usually tries to force workshop registration in parallel with course registration, which in concept should avoid such a case in the first place, but in any case, you must workshop-register and attend); but even if I don't catch your workshop nonregistration, the workshop nonattendance would surely severely lower your course average.

On some weeks we may simply not have workshops and ROHs. We for example *might* not have ROHs (and perhaps even not workshops) during the final week—or perhaps even two—of the term (but do not assume that that is the case unless it is announced or for Zoom meetings if our Zoom Meeting Manager removes those meetings from the list of meetings). Such days simply won't generate any column that participates in the relevant items' attendance averaging. Times when there will not be WSs or ROHs will be clearly announced via Blackboard or more likely on the home page in the list of the nature of each week (as ROH, or nonROH, or exceptional as to not having WS, etc.). For Zoom meetings, we'll remove them from ZMM if they have been canceled. The same holds for the main lecture as to

<sup>10</sup>Except, as to ROHs, I've told the ROH TAs that 5.000 minutes or more late certainly does count as being late (i.e., yields a 0%), and that they have discretion in the range 0.001-4.999 minute late as to if the lateness yields a 0% or a 100%.

<sup>11</sup>Special Spring 2023 Exception: For the January 11–12 workshop, I ask you to attend your official WS (so you get to know the people you will be working with all term, and your WS TA), *but* if you need to, you can instead get WS attendance credit that week only for attending a different WS than your official one.

appearing in ZMM: We'll probably put it in ZMM with entries for the whole term, but then when UR changes back to in-person instruction, will cancel all the main-class entries from ZMM (i.e., it will be meeting in Wegmans 1400).

Your course grade will be based on the resulting weighted average, from the components. If you would like to know what letter grade you will get (though focusing on grades is the wrong thing to do; the ideal thing to focus on is to learn as much and as well as one as one can), here is the scale the course will use (consider each of these to be of infinite accuracy, i.e., 90.0 means 90.000000000000..., so an 89.999999999, if that were even possible to end up with, would not count as being greater than or equal to 90.0):

FOR CSC 280:

A starts at 95.0%  
A- starts at 90.0%,  
B+ starts at 86.6% (so, yes, 86.63% would get a B+),  
B starts at 83.3% (so, yes, 83.31% would get a B),  
B- starts at 80.0%,  
C+ starts at 76.6%,  
C starts at 73.3%,  
C- starts at 70.0%,  
D starts at 66.6%,  
and lower is E.

FOR CSC 480:

A starts at 95.0%,  
A- starts at 90.0%,  
B+ starts at 86.6% (so, yes, 86.63% would get a B+),  
B starts at 83.3% (so, yes, 83.31% would get a B),  
B- starts at 80.0%,  
C starts at 73.3% (this is not a typo; there is no graduate grade of C+),  
and lower is E.

I will use the above 280 scale for the midterm warning reports to the Dean that (via the Dean) undergraduates get, based on the grades on all items up to Spring Break, but using in my calculation the dropping of just the prorated portion of grade-drops, so 4 classes and 2 workshops and 2 ROHs. Aside from that, I do not give predictions of grades. However, you at any point are of course free to yourself use the above to do the calculation. (I mention that I will not give you a grade lower than that which the above listing specifies. Although it is extremely unlikely and I won't comment on this ahead of time, I do leave myself the freedom to, if I think that following the above scale is not appropriately reflecting the quality of the class's work, shift the boundary values to more generous ones; again, this is extremely unlikely and you would be exceedingly unwise to hope for or plan on it.) Note that I do not give "extra credit" opportunities; the grading basis and components are simply the ones stated above (slight caveat: it is not completely impossible that one or both midterm exams might make it possible to earn a bit more than 100% on them; my mentioning that is in no way a commitment that one or both will, and you should not plan on either of them maxing out at more than 100%; and there of course is the up to two extra additive points that can be given by your WS leader as to the WS grade, see above for more details on that).

Again, note that, very informally put, the "class/ROH/workshop-missing" rules in effect covers you for eight class days and four ROHs and four workshops of misses in 280 (in each case, half of that if are taking this as 480). However, *I would emphatically urge each of you to (except when sick) attend every class/ROH/workshop; you will learn far more and enjoy the course far more*; and that will let the drops for example just end up dropping whichever days you were truly sick/etc. on, rather than ones you skipped outright in the hope that you would not later get sick or have other needed misses. Do keep in mind that the stated numbers drops/misses are a bow to sicknesses,<sup>12</sup> family tragedies, sport teams, scholastic teams, and *all* other compelling (or noncompelling) reasons for missing; you do not get more, not matter how many reasons you have or how good they are (except see later the comments about letters of exception from an appropriate Dean).

**Academic Honesty:** You should read and follow the school's academic honesty rules. Violating them is a severe

<sup>12</sup>This framework does not mean you should attend class if ill or worried that you are ill with flu/COVID/cold or any other infectious disease. You of course should not attend class in such cases. But the case of illnesses is the largest part of *why* I am allowing such a huge numbers of missed-attendances. However, please use them only when you really need to, such as when you are ill or afraid you are ill, or for family tragedies, or other compelling reasons; attending classes is usually very, very central to doing well in this difficult course.

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.

**Disability Accommodations** If you are entitled to and wish ADA-related accommodations (for example, regarding extended-time arrangements on the midterms), please *immediately* contact the Office of Disability Resources to both (1) confirm extended time arrangements and (2) have them send me (ideally by email) an accommodation letter (in many terms, they had a “Letter to Faculty” form on their web site to guide that process). 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 Disability Resources to send me an accommodation letter and confirmed with them that extended-time arrangements have been approved, send an email to (be careful; this is a special address to use ONLY for that and two or three other exceptional situations mentioned in this syllabus; only the grad TAs get those emails, and I get a cc) csc280gradta “at” cs.rochester.edu noting the extended time (so we can make sure that we catch things if Disability Resource's letter did not reach me).

If you have and we have been informed by Disability Resources of an accommodation that lets you use a laptop or tablet or so on during class or during exams, please make sure that in addition to the notification from Disability Resources both the TAs and I know what you look like so that we don't mistakenly enforce the no-electronics rule against you while proctoring the class sessions or the midterms; the best way to do that is simply, perhaps along with a forward of the Disability Resources email that went to you and me so the TAs know what you are allowed to use, email to csc280staff “at” cs.rochester.edu a picture of yourself with a sentence mentioning that as per the Disability Resources email you are allowed to use electronics in class (if you just let us know verbally then given the size of the class we may not have good enough memories to capture and remember your face throughout the term, but an email from you will help us to perfectly implement the accommodation, as we of course are committed to doing and want to do well and right.

**Class Attendance:** Required.

**Missed Days as to Attendance Grades (of All Three Types) and Missed Midterms:** No makeups. No lateness. No exceptions (except for observance of religious holidays, discussed long in advance<sup>13</sup> or unless you have a letter from a convincing Dean (i.e., one with the authority to mandate exceptions to course policies; here and elsewhere in this document, references to letters implicitly include letters from university officials, such as various CCAS staff members, who have the delegated authority of a dean or director having such authority). Again: As a bow to sicknesses, tragedies, and other compelling reasons, each 280 student will have their lowest eight class-attendance grades, four ROH-attendance grades, and four workshop-attendance grades dropped (but no more, even with good reasons, unless you have a letter from a convincing Dean as mentioned above; this dropping rule builds in and covers all reasons on; we do not make exceptions, so do not ask for an exception). For 480 students, the same holds except the number of drops are respectively not 8, 4, and 4, but 4, 2, and 2.

There will be no final. Note that missing a midterm means you got a 0% on 32% of the course's grade, and so if it is the first midterm you'd need to withdraw (you'd be from that alone only a whisker above an E), and if it is the second you likely will fail the course. (In fairness to those student who would have liked and benefited from more preparation time but knew the rules and so showed up and did their best, I do not give incompletes to people for missing the second midterm; that comment is subject to the previous paragraph's exceptions on midterm misses and makeups for the case when a letter from an appropriate authority excuses the miss, and the letter is for an event whose time frame makes a makeup within the term not possible.) (Special Spring 2023 exception (to some of the above) regarding the two midterm exams: However, for the Spring 2023 term, if you have an infectious disease (such as COVID or the

---

<sup>13</sup>To be explicit: You must, no later than January 20, 5PM, send an email having as its title—since we may be doing a search for exactly this subject field—*utterly exactly* (but without the quotation marks) “Religious Holiday and CSC280/480” to csc280staff “at” cs.rochester.edu if any of the class days or of your ROH days or 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, and also at the same time let us know if the midterm dates below are such a conflict. Regarding class/ROH/workshop attendance, if you have a religious conflict told to us using the above path by the above-specified date, your email will thus let your workshop leader know to 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; for the case of ROHs and class sessions, you will similarly be marked as having attended on such days; in such cases, please if at all possible do any take-home exercises and then see or Zoom-see a grad TA, to chat about it and have your questions answered, at one of their office hours). If your religious holiday conflicts with the date of one of the midterms, though I know of no such potential conflicts, I'll of course set up some way of handling that.

flu) and have seen UHS and gotten in writing ahead of the time of the midterm their recommendation that you curtail activities/not take the midterm in person<sup>14</sup> (and have immediately upon getting it sent a copy of that in-writing item from UHS via emailing it to “csc280gradta” at “cs.rochester.edu”) then we will arrange you either remotely taking, video-proctored, the same exam at the same time as the class, if you are up to doing that and it go to us early enough that we have ample time to arrange that, or I will make some alternative arrangement (which I for example might make an oral exam, or a written exam, or something else, though I usually choose oral exams in such cases.)

People sometimes email requests for exceptions or to be excused from attendances/deadlines/exams/etc. (in ways not consistent with this document, i.e., in ways not about a religious holiday, ADA, or the narrow COVID exception), and sometimes think that not getting a reply means they have permission. To avoid such confusions let me state the implicit reply to all such email requests right now: no exceptions, no excuses... and this reply is so fixed that you won't get a reply... both because the reply is preset 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 or Zoom-see a human during an office hour (or ROH or workshop).

Both midterm exams will be in-class, in Wegmans 1400, closed book, closed notes except that you may prepare and use 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 *handwritten* cram-notes hand-prepared by yourself. (If taking the midterm at Disability Resources, typically they will have you photocopy your above-mentioned cram-notes before starting the midterm and you may have the photocopy (but not the original) out during the midterm; the photocopy will be turned in with the midterm (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: No questions may be asked during the midterms, 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 if due to reasonable-accommodation issues the exam is taken at different times by different people. If you see on a midterm 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 intentionally ask you on a midterm) or makes the problem meaningless or incoherent, what you should do is that as part of your answer (if the exam is of a format that allows such interjections; otherwise, you'll need to within the answer format the exam allows answer within that format) you should clearly explain 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 should (again, if in an exam format that allows such interjections to be written into answers) note that, fix it, and then solve 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).

**Midterm Dates** The Spring 2023 dates of the midterms will be Wednesday, March 1 for Midterm I and Wednesday, April 19 for Midterm II, in class in Wegmans 1400.

**Regrading and Administrative Error Corrections and Blackboard and Other Logistics** If you want a midterm regraded, you must notify the staff of that by email (to csc280staff “at” cs.rochester.edu, not to our personal addresses) within 48 weekday hours (so Sat. and Sun. do not count against those) of it being given back, along with an emailed crystal-clear 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* midterm (not just the problem you are asking to have regraded, unless of course we returned the exam to you electronically or have your fully-graded exam ourselves electronically). Late regrade requests will not be honored. Note that *the entire thing* (e.g., the whole midterm) 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 on some days perhaps even more sharp-eyed and perhaps more demanding, especially regarding having

---

<sup>14</sup>Their policy is, “If the student's UHS provider determines the student should curtail activities in the coming days or weeks, the provider will give the student written instructions with specific recommendations,” and that is what I am referring to; you can if you wish, for privacy, obfuscate the parts of their instructions other than your identity and their curtailment of exam-taking-or-contact-with-others recommendation.

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 lets in a universe of invalid conclusions.) We will typically have your regraded paper back to you within one or two weeks.

Missing a class when a midterm is handed back does not change your regrading window, so if you miss the class at which a midterm is given back, you'll need to immediately (before class or during that class session; I'll typically announce ahead of time which class session will be the one where an exam is returned) write to csc280gradta "at" cs.rochester.edu to arrange to get it back (perhaps via the TA emailing it to you or perhaps via you getting it at an in-person office hour; but in any case, your regrading window starts not then but whenever it was made available in class for return, even if you were not at that class session to get it; caveat: if we give a midterm back to the entire class by emailing each person in the class their scanned, graded exam, the regrading window starts when we send that email, and indeed in such cases we might—for example if UR due to a COVID uptick had ended in-person contacts/classes/etc.—not give the paper versions back at all).

We will be using Blackboard to maintain the course grades. If the grade we wrote on your midterm (e.g., if it is returned as paper with a written grade on it) differs from the one that we recorded in Blackboard, you must inform us of that (and email the TAs at the "csc280staff" address and include a scanned copy of the graded item 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 pattern grades such as lots of missed classes/workshops/ROHs, since Blackboard—or Qwickly for the case of class attendance—will show you all your grades so far in the course); in brief, when you get something back (or know a grade was due to come up), 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 "2/1516 Wkshp" for the workshops that for each of you will fall on February 15 or 16). (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.)

Your daily attendance scores for class/workshops/ROHs will be columns in Blackboard (class attendance is a partial exception; that should be tracked via the Qwickly Attendance link in our BB area), so you should check that too (workshops and ROHs in grade center and class attendance via Qwickly), along the lines of the above. We will put up the grade for each class/workshop/ROH by the end of the calendar day on which it happened (and so the 48-hour clock of asking for corrections of misrecordings will be viewed as starting at 11:59:59PM on the day of that item). So you should put into your smartphone a reminder to check (in Grade Center or Qwickly, as appropriate to the case), one day after each class/workshop/ROH, that your attendance was correctly recorded, so that in the (we hope very rare) case that it was not you can get your correction in before the deadline for such requests has passed.

If you attended your workshop/class/ROH 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 csc280staff "at" cs.rochester.edu, but with your letter needing to explicitly mention which workshop you are registered for, e.g., "Wednesday 1650 Ethan"; again, to avoid any lack of clarity about time, the 48 hour window will start at 1159pm on the day of your item, so for workshops, at 1159pm Wednesday or 1159pm Thursday; similarly for ROHs, explicitly mention who your leader is and what your day/time are. (Classroom attendance generally—unless we find that Qwickly has somehow broken down—can't be appealed as it is done precisely and via Qwickly, and so if you were there and did the right thing at the right time, you should have been recorded.) My apologies in advance if any attendance grade of yours is left blank even at 11:59PM; but in that case too, please make sure to email us (at csc280staff "at" cs.rochester.edu) within the 48-hour window noting the error and asking that it be corrected.

*You should not view the class as a competition against your fellow students. The class is not graded on a fixed portion-curve such as "only the top BLORT percent of the students can get an A." 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 the midterm-exam columns. On the other hand, we will not have Blackboard show 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 than 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 discuss exercises in (face-to-face or Zoom-face-to-face) groups (see the rules on that), 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 their own grade on each individual item and can typically read the average/median info from Blackboard page for both exams (but not on attendance columns or workshop bonus points), and at the end of the course will receive their course grade either from the registrar or from me. In general I *do not* give out (regarding individual items or the course letter grade) grade/distribution/cutoff info beyond what is mentioned above in this document (or provide guesses of what letter grade a student is "headed toward," though again, see the numbers/cutoffs given above regarding that, and you are free to do the calculations yourself in light of those), though of course if a student wishes to share with some classmate their grades on some items or the course, that is up to them.

This class is not available for 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 16 onward), any attendance score on which you want to request a correction has a single 24-calendar-hour-after-it-was-up-in-Blackboard time limit for being submitted for regrading (so look over attendance grades during the last ten days within the first 24 hours after 11:59PM of the day of the activity). However, that 24-calendar-hour exception does *not* apply to the second midterm; even though it will be given back during the last 10 days most likely, you still get 48 weekday hours to ask for a regrade. There is one more exception: The attendance grade for the last two classes (for those among those two classes that are not excluded from counting toward the attendance grade) will not be subject to correction as I will right in class read off what is in the column and that will be your one and only chance to ask for a correction for those.

**No-Show TA Handling:** The TAs know how very important each ROH, workshop, and office hour is, and know they need to arrange coverage if for some extraordinary reason they cannot make it to a session. However, in the case—which should ideally never happen, and our deepest apologies if it ever does happen—that you show up for a ROH, a workshop, or an office hour and (fully) six minutes after its scheduled start time the TA is not there, please go to our course home page's "Other Important Links" section, and click on the item there "What to do if your TA does not show up at workshop, ROH, or office hours" and follow the steps listed there. (Please do be aware that if you get to a Zoom meeting before the "host" connects to the meeting, you might be in a waiting status until the host signs in (or you might not, depending on how the meeting was configured). That does not mean the meeting will not happen. It just means that the host has not signed in yet. Please wait six minutes, and then follow the instructions pointed to above.) (As to if I am the No-Show, if that ever (very unlikely, I'd expect) happens unexpectedly—if it is known I'd have arranged coverage of course—I guess the grad TA would on-the-spot either cover the class session or would (perhaps take Qwickly attendance and then) dismiss the class.)

**Textbook:** The required text is:

- (In the course we will sometimes refer to this as SIP.) Michael Sipser, Introduction to the Theory of Computation, Third Edition, ISBN-10: 113318779X, ISBN-13: 978-1133187790, Course Technology/Cengage, 2013.

*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 do 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.*

FYI, at least as of when I am writing this, Amazon was renting Sipser's 3rd edition as an eTextbook for a term for \$36.31 (and selling it for about \$89). (Do remember, though, if you buy a used or new version from Amazon or some other seller, to make sure to not end up accidentally getting an earlier edition or getting the 3rd International edition; as per the above two Notes, both of those are not what our course is based on.)

**Books on Reserve:** I've put in a reserve request, for this course, at Carlson Library, for quite a few books, including our Sipser textbook (make sure to use the 3rd edition, even if I also put earlier editions on reserve), other 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. After the library processes the list (which they say can at times take weeks), you will probably be able to get to the reserve list directly from a link to it within our course's area within Blackboard, if the library creates one and sends it to me (as I've asked and as they sometimes have done in the past).

Among the books I plan to put on reserve are these two, which provide many worked examples: (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 any exercises-to-prepare 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 will be where you can find which week are or are not ROH weeks, has various other information (such as reading assignments, and sometimes exercises, and sometimes pdfs/slides/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, and Blackboard also will provide the Chapter 0-5 slides (and warmest thanks to Mitsu Ogihara, who created a slide-set that most of these have evolved from).

**Blackboard Announcements:** As noted above, 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 (also, TAs when sending announcements might well not check that box), I very 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 (unless Blackboard has transformed itself again—it is a moving target, it just wildly changed in fact, and in any case faculty see a different view than you do), with my thanks to a 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.)

**Conclusion:** This document contained quite a few rules and details on logistics. And those all are important—both to doing well in the course and to not falling afoul regarding academic honesty. So please do keep those all in mind, and refer to this document for those if you are uncertain about rules and logistics. But please do keep in mind the content big-picture of this course: We're learning about, as the course title says, computer models and their (powers and) limitations! And, insofar as one can in such a large class, we also are trying to give you hands-on experience at doing this, in settings ranging from few-person ROHs to ten-person workshops to our rather large full class meetings. Underpinning it all is a desire to help you have a better sense of what models look like and how to understand or even prove or construct things within them, and relatedly, a desire to help you be more experienced and confident about tackling problems (even ones that are phrased in somewhat formal ways). And even if the rest of your career is not spent in theory—and most of you will be in other areas—my hope and belief is that those skills, and having the confidence that you can handle formalism and solve problems, will help you throughout your career.