

# What can I do today to create a more inclusive community in CS?

## Start of Term:

- At the beginning of the term, ask each student to email you to introduce themselves by naming one of their core values, and one way that CS relates to or could be used in service of that core value (or write it down in class, and/or share with a neighbor in class).<sup>1</sup>
- If your class will include a significant group project, instruct students about your expectation that each member of the team contribute in both technical and non-technical components. Research has shown that in group projects in engineering classes, female students often find themselves pushed into stereotyped roles by their peers in the group.<sup>2</sup>
- Glance over your syllabus to see if it could be updated to include some of the inclusive language suggested throughout this document on matters such as pronouns, invitations to office hours, welcoming accessibility accommodations, and student parents.
- If you don't already, consider allowing pair programming on assignments.<sup>3</sup>

## Mid-Term:

- Email top performers on a recent homework or exam to congratulate them; be sure to include a diverse group.
- Provide students with clear and timely feedback, including class-wide distribution data. Women and minority students often fear the worst about their position relative to the class and can be reassured by data.<sup>4</sup>
- After a midterm exam, step through the math showing the class that students can still pass the course even if they did poorly. It's just some multiplication, but take the time to talk about it. Be factual—no need to “sugar coat”—but provide facts that will help reassure students who think things are worse than they really are.
- Reach out to students who have filed a disability accommodation form with you and ask them if their needs are being met in your class. Reaffirm your commitment to complying with their approved accommodations and your willingness to receive complaints if there is a problem.

## End of Term:

- Personally invite a woman or a minority student who did well in your class to major in CS, apply to an internship, or go to grad school. If your TAs work with small groups of students in a discussion section, have them do this as well.<sup>5</sup> The point isn't to only invite such students, but to counter unconscious biases that might otherwise lead to excluding them from invitations.

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<sup>1</sup> Research shows this intervention mitigates stereotype threat. Reduced racial gap by 30%.

<https://www.gsb.stanford.edu/insights/value-values-affirmation>

<sup>2</sup> “When working with male classmates, ... [female students] often spoke of being relegated to doing routine managerial and secretarial jobs, and of being excluded from the ‘real’ engineering work.”

<https://hbr.org/2016/08/why-do-so-many-women-who-study-engineering-leave-the-field>

<sup>3</sup> Among other research showing benefits of pair programming: Leo Porter and Beth Simon. “Retaining nearly one-third more majors with a trio of instructional best practices in CS1,” SIGCSE '13. <http://dl.acm.org/citation.cfm?id=2445248>

<sup>4</sup> These fears are related to “Imposter Syndrome”—even highly talented students from underrepresented groups fear that they are unskilled, and more unskilled than everyone else. Overview of Imposter Syndrome research:

[https://en.wikipedia.org/wiki/Impostor\\_syndrome](https://en.wikipedia.org/wiki/Impostor_syndrome)

<sup>5</sup> Holly Lord and Joanne McGrath Cohoon. “Recruiting and Retaining Women Graduate Students in Computer Science and Engineering,” 2006.

### Any Lecture Day:

- Review today's lecture slides to make sure that stock photos and illustrations with people in them include diverse races and genders in non-stereotyped roles.<sup>6</sup>
- Review today's lecture slides for the use of arbitrary names in examples. Choose a broader selection (Juan, Neha, Maria, Minseo, Mohammed, instead of just Jane Doe and John Smith).
- Review today's lecture slides to make sure that your slides are free from gendered pronouns, especially those used in ways that conform to stereotypes (e.g., "A programmer should always write comments in *his* code, so *he* can remember how it works"). Use of "they" (and their/them) as a singular pronoun is now widely accepted as a neutral alternative, and better than the awkward "he or she" construction because it also includes genderqueer and non-binary.
- Take a moment in class today to encourage students to focus on their "slope," not their "y-intercept." That is, in the long run, it matters how fast you're growing and learning, not advantages or deficiencies in where you started.<sup>7</sup>
- Start class today by telling the students you're proud of them and how hard they are working. Tell them you are enjoying working with them this term.
- Start class today by renewing your invitation to students to come to office hours. Understand that not all students have had the mentoring necessary to know how you expect them to interact with you, so explicitly instruct your class on how to do it. For example: "You don't need to have a particular question—you're welcome to just stop by for 5 minutes to introduce yourself," or "I'm not just here for homework questions—if you are considering changing your major to CS and want to talk about it, if you want to know what it's like to work as a software engineer, or if you are thinking about applying to grad school but don't know where to begin, I'm happy to discuss that kind of thing as well."
- Look around your office and/or lab space. Consider if there are things you could add or remove that would make the space more welcoming generally, and also signal welcome to a diverse student body (e.g., remove very masculine or heavily CS-stereotyped movie posters).<sup>8</sup>
- Actually write a tally of how many times you call on students of different genders in class today. People of all genders are prone to calling on men more often. You may do this unconsciously unless you consciously do otherwise.<sup>9</sup>
- Go through today's lecture slides, and add "alt text" written descriptions of all images and diagrams. If you'll use a video clip today, transcribe it. You will need to do this for all your class materials when you have a student who requires these accommodations, so even if that doesn't apply this term, doing it now is a good head start. Make sure that students who are red-green colorblind will be able to interpret all the graphs and diagrams in your slides.
- Thinking about today's lecture, do you plan on using any examples or anecdotes about your childhood or daily life that may cause students to feel excluded for economic reasons? (e.g., talking about pricey gadgets or vacation travel as normal) Even if you know that you did not experience these things and are simply using them as an example, students don't know that and can assume you are referring to them in a normative way.

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<sup>6</sup> Women of Color in Tech blog's collection of stock photos: <https://www.wocintechchat.com/blog/wocintechphotos>

<sup>7</sup> Articulating this idea as slope/y-intercept is from Professor John Ousterhout of Stanford.

<sup>8</sup> This Wired article looks at research by Sapna Cheryan and others, showing the effect of lab decorations on retention of women in computer science and engineering.

<https://www.wired.com/2009/12/star-trek-keeps-women-computer-science/>

<sup>9</sup> Jere Brophy and Thomas Good. "Teachers' communication of differential expectations for children's classroom performance," 1970. <https://psycnet.apa.org/journals/edu/61/5/365.pdf>

### General Do and Don't Advice:

- Never say, “This UI is so easy your mom could use it” or “How would you explain this to your mom?” or other phrases that equate women with lack of tech savvy.<sup>10</sup>
- Avoid heteronormative examples (e.g., bijective function between sets “boys” and “girls”).<sup>11</sup>
- Believe that hard work and effective practice matter more than DNA. Your beliefs influence students’ beliefs and impact their performance.<sup>12</sup>
- Have very clear written expectations for student work (coding style, project components, etc.). Where possible, show sample solutions exactly as you would want a student to write them (don’t just give a “sketch” of the solution).
- When a student is speaking, wait for the student to finish then count “one one-thousand, two one-thousand” in your mind before responding. People of all genders are prone to prematurely cutting off women when they speak. You may do this unconsciously unless you consciously add that pause.<sup>13</sup>
- Actively mitigate when students may be intimidating each other. When a student uses jargon in a question (often one of those questions that is more of a boast than a real question), explicitly identify when you expect that most students will not be familiar with that jargon, and/or it is not something other students are expected to know for the class, e.g., “Thanks for your comment. For the rest of the class, I’m sure most of you aren’t familiar with some of those terms. Don’t worry, those terms are outside the scope of this class and not necessary to know.”
- Ensure that you and your TAs call each student by their preferred name and their correct gender pronoun—including allowing students to write their preferred name on homework and exams—even if these do not match their current legal or registrar records of name and sex.<sup>14</sup> Don’t single out students to inquire about correct pronouns; instead ask the whole class to specify, and be aware that the responses may include she, he, they, zie, xe, and others, as singular subjects (with accompanying object, possessive, and reflexive forms). This issue deeply affects transgender, genderqueer, and nonbinary students, and also many students who prefer to have an alternate anglicized name. You could also put a statement in your syllabus that you are committed to honoring students’ preferred name and their correct gender pronoun, as well as set a reassuring example by providing your own pronouns to the class (e.g., by announcement in the first class, in your syllabus, or in your email footer).

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<sup>10</sup> This sexist trope is something women have been working to expunge from our vocabulary. Unfortunately, it is still often seen in discussion of UI design. [https://geekfeminism.wikia.com/wiki/So\\_simple\\_your\\_mother\\_could\\_do\\_it](https://geekfeminism.wikia.com/wiki/So_simple_your_mother_could_do_it)

<sup>11</sup> More CS-specific examples of being LGBTIQ+-inclusive are here:

<https://docs.google.com/document/d/1ftgyL9t6vZrFRZ-QLJcTFNutzk4yVZx09RkuSGrkfoM/>

<sup>12</sup> Carol Dweck. “The New Psychology of Success.” <https://s3.amazonaws.com/ebasp/pdf/mindsett.pdf> This research shows that minority students perform worse in classes where the professor believes in a “fixed mindset” (talent is innate) when compared to performance in classes where professor has a “growth mindset” (talent can be developed through effort). See also CS-specific work on mindsets: Laurie Murphy and Lynda Thomas. “Dangers of a fixed mindset: implications of self-theories research for computer science education.” ITICSE 2008.

<sup>13</sup> Occasioned by a news item about a panel discussion in Silicon Valley, NYTimes reviews research on women being interrupted when speaking:

<https://nytlive.nytimes.com/womenintheworld/2015/03/19/google-chief-blasted-for-repeatedly-interrupting-female-governments-official/>

<sup>14</sup> Faculty at institutions in the US should note that in May 2016, the US Department of Justice and the US Department of Education released a Dear Colleagues letter requiring such accommodation of transgender students’ gender identities, in connection with Title IX obligations.

<https://www2.ed.gov/about/offices/list/ocr/letters/colleague-201605-title-ix-transgender.pdf>

- Consider adding a paragraph to your syllabus addressing the needs of students who are parenting young children. Even a simple acknowledgement of student-parents can be affirming.<sup>15</sup>
- 1 in 5 women (but by no means only women) will be sexually assaulted in college. If a student requests course accommodation (in the US, this may be done through the Title IX office<sup>16</sup>), do everything necessary to accommodate that student. If you are wondering what is appropriate to say in response to a student, simply “I believe you” and “I know you know this, but I want to tell you that it wasn’t your fault,” are the two things most assault survivors most need to hear.

#### Using This List:

- This list is designed so you can put it on the wall where you can glance at it from time to time and see one thing you could work on. You don’t need to do everything at once.
- Nobody is perfect. We have all seen news stories and opinion pieces about tense campus climates and instances where allegations of bad faculty behavior flare up. As a faculty member, perhaps you’ve feared that something like that could happen to you, or maybe it already has. If someone, especially a student, brings to your attention a misstep such as an inappropriate comment, oversight, or microaggression, Step 1 is to listen (attentively, and for the entire duration, without interrupting to explain or question). Do not deny, minimize, or otherwise respond defensively, even if you think that the person is misinterpreting or overreacting. Step 2 is to acknowledge to a student that it took courage for them to approach you. Step 3 is to let them know that you appreciate feedback (even when it is hard to hear) because that is what will help you improve. It may be best to ask that the conversation end (or pause) there to give you time to reflect on the feedback. More effective than *saying*, “I am not [racist/sexist/etc] and didn’t mean it that way and would never want to hurt anyone,” is *showing* that by saying, “I am so sorry that my actions caused pain to anyone, especially to a group that already deals with more than their share, and I’m going to do everything I can to do better.” If appropriate (e.g., you made an insensitively worded comment in lecture), publicly acknowledge it to the class, framed as a learning opportunity for students to see healthy humility and lifelong learning modeled for them.
- **Encourage your colleagues to do the items on this list. Advertise your good example by bringing up your performance of these items in conversations with other faculty.**

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<sup>15</sup> Dr. Melissa Cheyney wrote some suggested syllabus language speaking to the needs of student parents. <https://studentlife.oregonstate.edu/childcare/family-friendly-syllabi-examples>

<sup>16</sup> Faculty at institutions in the US should know that if a student is reporting an assault to you, you may have legal obligations to make an official report under Title IX.

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