

Inclusive Course Design Checklist: A Living Document for Faculty to Create Inclusive Classrooms

Dr. Swetha Nittala, Uber Technologies

Swetha is currently a People Science Researcher at Uber. Prior to this she worked as a Lecturer and a Science and Engineering Education Fellow at the Mechanical Engineering Department, Stanford University. She completed her PhD from the School of Engineering Education at Purdue University where she focused on identifying and developing leadership and other socio-technical capabilities among engineering students and professionals. She is passionate about improving engineering education and practice and has been working in the areas of innovation, leadership development, inclusion, ethics, and, faculty development leveraging design research and mixed methods approaches.

Dr. Sheri Sheppard, Stanford University

Sheri D. Sheppard, Ph.D., P.E., is professor of Mechanical Engineering at Stanford University. Besides teaching both undergraduate and graduate design and education related classes at Stanford University, she conducts research on engineering education and

Dr. Helen L. Chen, Stanford University

Helen L. Chen is a Research Scientist in the Designing Education Lab in Mechanical Engineering and co-founder of the Integrative Learning Portfolio Lab in Career Education at Stanford University. She earned her undergraduate degree from UCLA and her PhD in Communication with a minor in Psychology from Stanford. Her scholarship is focused on engineering and entrepreneurship education, portfolio pedagogy, reflective practices, non-degree credentials, and reimagining how learners represent themselves through their professional online presence.

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Abstract

This evidence-based practice paper highlights a framework of inclusive teaching practices and strategies developed for the mechanical engineering department at Stanford University to enable faculty to create inclusive classrooms. There is a growing consensus among educators and policymakers that inclusive learning outcomes lead to better student outcomes. Yet, there seems to be a general lack of awareness about how to create inclusive classrooms. To address this gap, we developed an inclusive and equitable course design checklist that enables faculty to proactively incorporate inclusive principles into various aspects of their course design, including syllabi, content, assessment, and pedagogy. With input from students, educators, and instructors, this checklist is primarily designed for mechanical engineering faculty, with an emphasis on aspects such as design and laboratories. Still, it can be widely applied to other engineering courses.

Furthermore, our paper seeks to shed light on the dynamic nature of such checklists. Given that our understanding of learning and human identity continues to evolve, we must continually re-evaluate how we perceive equity and inclusivity in education. Hence, we envision our checklist as a living document that requires periodic iteration and feedback. To this end, we recently conducted workshops with students and faculty members from the same university one year after the initial release of the checklist to ensure that we are up-to-date with our thinking about inclusive teaching practices.

This paper presents the inclusive course design checklist and the methodology we followed to develop and refine the framework. Our hope is for faculty and instructors to learn from and leverage this checklist to design equitable and inclusive courses, as well as to contribute their learnings to a living checklist document that can be shared more broadly beyond one institution.

Keywords: faculty development, inclusive teaching, course design

Introduction and Literature Review

There is a growing imperative for universities and faculty to create inclusive learning environments that acknowledge the diverse needs of learners and focus on creating meaningful learning experiences for all students, including underrepresented and marginalized students. In addition to enhancing DEIB (Diversity, Equity, Inclusion, and Belonging) in classrooms, recent studies have shown that inclusive learning environments lead to better student outcomes, retention, and engagement [1]–[4]. Conversely, the absence of such an environment acts as a barrier to student learning outcomes. Despite recognizing

this need, faculty may lack an awareness of inclusive practices or the best ways to integrate inclusive principles into their classrooms.

There are various ways in which educators and policymakers define inclusive teaching, with different aspects emphasized depending on their perspectives [5]. Some may prioritize serving students with disabilities, while others may focus on responding to the needs of culturally diverse students (e.g., related to race, social class, gender, and nationality). For some, it may involve improving experiences for students from marginalized groups. As a result, there are several complementary theoretical frameworks with overlapping theoretical underpinnings that contribute to our understanding of inclusive teachings, such as the culturally responsive teaching framework ([6]), universal design for learning framework (UDL) ([7]), the design justice pedagogy framework ([8]). For the purpose of this paper, we define inclusive teaching more broadly as creating a positive and meaningful learning environment for all students by fostering diversity in all forms, removing barriers for students, and increasing participation for all, including marginalized and underrepresented students [9]–[12]. We acknowledge that our work is informed by and incorporates elements from all the prior traditions and frameworks.

While taking a multi-focused approach to classroom inclusivity can have a broader impact on all students, it can also add a layer of complexity for faculty and instructors. With the increased scope of what inclusive classrooms entail, faculty may feel burdened with the task of sifting through multiple frameworks and figuring out how to operationalize them in their classrooms. Research has shown that faculty interested in pedagogical transformation are often overwhelmed by the many tools, frameworks, and theories available [13]. One of the objectives of this paper is to remove this burden on faculty and instructors by providing them with an organized checklist of inclusive teaching practices stemming from varied frameworks, along with some easy-to-use resources, strategies, and examples, all in a single resource. Further, our inclusive course design checklist is organized around the various components of teaching (e.g., writing the syllabus, selecting/training TAs, etc.) so it is (we hope) more pragmatic, accessible, and implementation-ready to educators, all the while incorporating the various frameworks and traditions of inclusive teachings. For example, we leaned heavily on UDL and culturally responsive teaching principles and frameworks to support our sections on *pedagogy* and *content* and leveraged design justice principles to support our section on *engaging students in design*.

Methodology

Positionality Statement

The objective of this positionality statement is to acknowledge and disclose our worldviews and influences as authors relating to inclusive teaching and learning. The first author identifies as an Asian female and an engineering education researcher. Her experiences as a minority and an international student spurred her interest to work on research projects and initiatives that improve ethics, diversity, and inclusion in engineering classrooms. The second author identifies as a white female who has been an engineering educator for over three

decades. In that period, she has been involved in designing and delivering numerous courses & workshops on teaching and professional development, always with an eye on increasing diversity in engineering. The third author identifies as an Asian-American female whose research activities have maintained the importance of a learner-centered focus when designing curricular activities and pedagogical approaches in courses and programs in engineering education and higher education contexts.

As a group of educators and researchers, we strongly believe that learning should be equitable and meaningful to all students involved. While we acknowledge that our personal and professional experiences may have influenced the development and validation of the inclusive checklist, we tried to mitigate any potential biases by seeking continuous feedback and perspectives from diverse groups of students, educators, and instructors throughout the process. Engaging in this project has helped us broaden our understanding of inclusive teaching, and we believe that it will continue to evolve further.

How did we develop the checklist?

We designed and developed the checklist based on data gathered from various sources. We employed varied methods to collect and curate data from multiple sources. These methods include

- a. **Literature Review:** As the first step in designing the checklist, we conducted a literature review on inclusive classrooms in order to familiarize ourselves with the existing theories and frameworks on inclusive teaching (e.g., [8], [14]–[16]) as well as the practices on inclusive teaching in STEM education (e.g., [17]–[19]) as noted in the earlier section. In addition to peer-reviewed theory papers, we also reviewed publicly available resources and inclusive teaching strategies shared by Centers of Teaching and Learning across different universities (e.g., [20]–[23])
- b. **Design Thinking Session:** We conducted a 45-minute long design thinking session with a group of approximately 16 participants comprising students and instructors, all affiliated with the Designing Education Lab [DEL] at Stanford University. The participant group had a diverse set of educational and professional backgrounds and included undergraduates (N=3), graduate students and postdoctoral scholars (N=4), visiting student researchers (N=5), academic staff (N=1), and experienced faculty members (N=3).

As a part of the session, the participants were asked to reflect and respond to two questions: 1) *As an instructor, what is a teaching strategy or practice that you use to create a more inclusive and equitable classroom (i.e., to help students feel like they belong and are supported)?* 2) *As a student, what is a teaching strategy or practice that you wish your instructors used to create a better learning environment for you?* These responses were collated and used as input to the preliminary checklist design.

- c. **One-on-one Interviews with Instructors and Students:** We spoke with approximately ten faculty members and graduate students, primarily from the Stanford Mechanical Engineering department, along with a few representing other engineering departments. These individuals were either part of the Diversity, Equity, Inclusion, and Belonging (DEIB) committees within their departments or had proactively engaged in developing inclusive classrooms. The participants were identified and selected for 1:1 conversations using purposeful and snowball sampling approaches. The primary objective of these conversations was to capture and crowdsource best practices, strategies, and resources that seem to have worked in the Stanford context. The leading question that guided the one on one conversations with instructors or teaching faculty was: *As an instructor, what are some ways you helped make your class more inclusive, and what worked for you?* Similarly, for the students, a sample guiding question included:- *As a student, what are some ways in which your faculty (if any) helped promote an inclusive classroom?* The feedback from the participants helped us document and incorporate Mechanical Engineering and Stanford University-specific resources and strategies into the checklist.
- d. **Inputs from the Broader Education Community:** In addition to gathering best practices from within the university, we also sought to understand what strategies instructors at other universities adopt to create inclusive classrooms. To this end, the authors attended and reviewed sessions from a couple of inclusive teaching conferences and workshops, including the Course Design Institute, a multi-day program sponsored by the Stanford Center for Teaching and Learning, and the Peralta Online Equity Conference hosted by the Peralta Community College District's Online Equity Initiative. These community-based sessions helped us gather and crowdsource best practices and strategies from other faculty members from various departments and universities (see [24], [25]).

Inputs from the above sources helped us formulate our initial checklist. Our analysis revealed that faculty and students have considered inclusive teaching principles throughout the course design and delivery process, from pre-course preparations to content to end-of-class logistics. Upon further review, we were able to group the strategies into ten categories related to course design and delivery, which are described in detail in Table 1. Not surprisingly, most of these categories also align with critical aspects of effective course design described in prior frameworks (e.g., [26]–[30]). We conducted interviews and feedback sessions until we reached saturation, and no new categories emerged.

Results

The Inclusive Course Design Checklist

Table 1 provides a high-level overview of the checklist with sample strategies for each of the ten categories. The full checklist in its current form is presented in the paper's appendix.

Table 1: Inclusive Checklist Categories with Sample Strategies

Category	Category Description	Sample Strategies
Pre-Course Preparation	This section includes strategies and resources to help faculty become familiar with inclusive teaching and how they can begin to think about incorporating inclusive teaching principles into their classroom design.	<ul style="list-style-type: none"> <input type="checkbox"/> Engage in conversations with students who reach out with special requests/needs and tune the course accordingly to suit their needs, particularly relating to assignment deadlines, project guidelines, etc.
Teaching Assistant (TA) Selections	This section provides guidelines for faculty to consider aspects of equity and biases when selecting TAs. It also offers strategies for selecting TAs who can support faculty in creating an inclusive classroom environment.	<ul style="list-style-type: none"> <input type="checkbox"/> Select TA's who can support you in creating inclusive classrooms by including a question or two on DEIB in the Teaching Assistant (TA) selection process. Sample Question: <ul style="list-style-type: none"> - How do you plan to support a welcoming classroom environment as a TA?
Teaching Assistant Interactions	This section offers strategies for faculty on how they can better interact with TAs as part of creating an inclusive environment for the teaching team.	<ul style="list-style-type: none"> <input type="checkbox"/> Work with the TAs to identify roles and responsibilities in accommodating students with various needs <ul style="list-style-type: none"> - Work with the Office of Accessible Education to identify support and training for TAs to be able to better accommodate the needs of the students
Course Syllabi and First-Day Instruction	This section provides guidance for faculty on how to design inclusive course syllabi and recommendations for creating an inclusive environment on the first day of class.	<ul style="list-style-type: none"> <input type="checkbox"/> Include a diversity/inclusive statement and land acknowledgment in your course syllabi <input type="checkbox"/> Clarify the role of the instructor during your first-day instruction -- as a facilitator of learning as opposed to an authority figure
Content	This section contains strategies for embedding inclusive teaching principles into the content of the course. These strategies are aimed at enabling all students to feel engaged with the content	<ul style="list-style-type: none"> <input type="checkbox"/> Have a diverse set of readings and guest speakers representing varied demographic perspectives (gender, race, ethnicity, career path, academic path.) <ul style="list-style-type: none"> - If diverse perspectives are not available, acknowledge and share with students that there is a gap and, perhaps, set up a small discussion on how to address it
Assessment	This section offers strategies for developing assessments that promote a healthy and equitable learning environment for students. These strategies focus on promoting flexibility for students and supporting diverse ways of demonstrating knowledge and understanding.	<ul style="list-style-type: none"> <input type="checkbox"/> Provide students with the flexibility to choose from a set of assessment options that measure their learning in different ways <input type="checkbox"/> Make grading standards transparent and ensure the expectations (for both individual assessments and overall grade components) are clearly communicated to the students beforehand
Pedagogy	This section provides a list of student-centric pedagogies that can improve student outcomes and promote inclusive classrooms.	<ul style="list-style-type: none"> <input type="checkbox"/> Incorporate a variety of teaching modes throughout the course (e.g., talking, lecturing, graphic modes, anecdotal narratives, slide

		<p>shows) to get students more engaged and excited for the classes</p> <ul style="list-style-type: none"> ❑ Avoid stereotyping (related to socioeconomic status, gender, age, race, ethnicity, disability) language and/or humor in the classroom
Course Logistics	This section provides guidance to faculty on how to support students by suggesting ways to collect and incorporate feedback from students in their courses.	<ul style="list-style-type: none"> ❑ Collect feedback from students throughout the quarter regarding the course <ul style="list-style-type: none"> - Sample questions: What is going well about the class? What needs improvement?
Engaging Students in Design	This section pertains to Mechanical Engineering courses where design is a critical component. The section provides faculty with insights on how to best support students in design related courses and make it a meaningful learning experience.	<ul style="list-style-type: none"> ❑ Ensure that students don't feel obligated to spend more money on projects in order to get better grades <ul style="list-style-type: none"> - Emphasize to the students that the amount they spend on the project (i.e., costs for the material, etc.) does not correlate to a better course grade
Laboratories	This section also pertains to Mechanical Engineering courses. The section details specific strategies and resources to make laboratory experiences engaging and inclusive.	<ul style="list-style-type: none"> ❑ Take steps to promote students' engagement and confidence in hands-on lab/workshop activities; the hypervisibility of lab settings can cause disengagement and low self-efficacy among a certain population of students when using unfamiliar machines and tools <ul style="list-style-type: none"> - Avoid assumptions about students' comfort levels using machinery and tools during the initial lab sessions

The latest version of the inclusive checklist is available for everyone to view on the Designing Education Lab [website](#). We hope the checklist will be a “living document” where educators and students can interact and add comments and feedback relating to any challenges they encounter with the suggested strategies or if they have other ideas to add to the list. We hope to update the checklist at a regular cadence based on the feedback we receive.

How did we revise and validate the checklist?

We revisited the checklist and validated its relevance one year after its initial development since our understanding of inclusivity and belonging continues to evolve over time [31]. To this end, we reached out to several students and instructors to gather feedback on the checklist. The feedback was primarily collected via two design thinking workshop sessions. In the first session, we invited teaching assistants (N = 10) to review the checklist and provide feedback as a part of the Mechanical Engineering Teaching Assistant (TA) program in the first quarter of 2023. TAs that supported both undergraduate and graduate Mechanical Engineering courses were part of the workshop.

The second session was conducted with members of DEL one year after the initial development session. There were about 13 participants in this session, some of whom also contributed to the initial development of the checklist. Similar to the initial session conducted

at DEL, the participant group had a diverse set of educational and professional backgrounds and included undergraduates (N=1), graduate students and postdoctoral scholars (N=4), visiting student research scholars (N=4), academic staff (N=2), and experienced faculty members (N=2).

In addition to seeking direct feedback on the checklist, in one of the sessions, we also asked participants to reflect and share their experiences on two prompts:

- *Think back on your education....broadly defined.... to a moment when you felt you really belonged. After you have the instant, try to identify what may have been happening.*
- *Think back on your education....broadly defined.... to a moment when you felt you didn't belong and where it was not resolved satisfactorily.*

This activity gave us another lens to review the checklist. The lived experiences shared by the participants helped us identify gaps in the checklist. We reviewed all the responses to the prompts to validate if the strategies listed in the checklist addressed the circumstances shared by the participants or if we needed to add new topics to the list. The following table provides a few examples of how we mapped students' lived experiences to an existing strategy or an addition of a new strategy to the checklist.

Table 2: Mapping Workshop Participants' Lived Experiences of Belonging in Classrooms to Inclusive Course Design Checklist Strategies

Lived Experience	Checklist Category	Strategy
One participant took Qualitative Research Methods in [department]. They expressed feeling that they were seen and included since they had the opportunity to explore methods to study the experiences of Arab students	Content	Include readings and content from a diverse range of authors/scholars who represent varied demographic perspectives (gender, socio-economic backgrounds, race, ethnicity)
A participant shared how they had positive educational experiences in two courses where lecturers and TAs were inclusive and energetic. They brought energy and wanted you to engage with them and answer their questions	TA Selection	Select TA's who can support you in creating inclusive classrooms by including a question or two on DEIB in the Teaching Assistant (TA) selection process. Sample Question: - How do you plan to support a welcoming classroom environment as a TA?
A Ph.D. student was studying for a qualifying exam and was told by one of the faculty that their questions were "too basic." This was a negative experience.	Pedagogy	Avoid passing judgment on the level of difficulty of the course content based on your own perception. - Avoid phrases "This is easy,"; "You have learned this in high school,"; "It took me only 5min,"; "It shouldn't take you longer than that"

For one participant's project, the professor gave feedback only given to the male team member even though the female members had done the bulk of the work.	Assessment	For team or group-based projects, provide feedback to the collective group rather than a single individual
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In addition, we sought feedback from four experienced faculty members at the university who are vocal advocates for creating inclusive classrooms but were not involved in the checklist's initial development to gather a fresh perspective. We collected feedback asynchronously by asking the educators to engage with the checklist and provide suggestions for the document. Their feedback was incorporated into the latest version of the checklist.

Discussion

How can faculty and educators use the checklist?

This course design checklist brings a holistic approach to creating inclusive classrooms by encouraging instructors to proactively incorporate inclusive principles in various aspects of their course design, such as syllabi, content, assessment, pedagogy, and laboratories. By doing so, they can help students feel included and promote their sense of belonging. While the comprehensiveness and breadth of the checklist may seem overwhelming, course instructors and faculty members are encouraged to read through the checklist and consider incorporating practices and strategies as they see fit for their courses and context. Alternatively, an instructor might choose just one of the categories listed in the framework and see what course changes might be possible with a more focused approach. The checklist includes elements of inclusive teaching practices that can be referred to during both the course design process and class sessions.

While the checklist, along with its resources and strategies, has been developed for Mechanical Engineering and Stanford University faculty, most of it can be utilized by engineering faculty across different universities. However, it is essential to note that the operationalization of specific strategies and resources can be influenced by the context, such as the type of university or department [32]. For example, the Center for Teaching and Learning (CTL) at Stanford University offers inclusive teaching workshops for educators, TA training workshops, and even services to help faculty gather student feedback about the classroom at regular intervals via focus groups or surveys. Accordingly, the checklist is designed to incorporate these institutional-specific resources, which might not be fully transferable to other universities. Therefore, we encourage educators and policymakers to customize the checklist by building or adding resources and strategies that suit their specific organizational needs. They can follow a similar methodology as described in this paper.

A living checklist that will continue to evolve over time...

This checklist was compiled based on successful practices for enhancing inclusion from various faculty, students, and the literature. However, we acknowledge that it is not exhaustive and will benefit from further input and discussion. The feedback we received during the validation phase of the checklist supports our belief that we can never be too

certain of its comprehensiveness. Interestingly, participants who contributed to the initial development of the checklist had additional ideas to share when revisiting it a year later, which were not captured in the initial versions. These additions may reflect the participants' continued learning of concepts related to teaching and inclusivity. Hence, we refer to this as a "living checklist." This approach aligns with how some scholars view the nature of DEIB concepts and literature - as evolving with time [31], [33], [34].

Limitations and Next Steps

One of the significant limitations of the checklist is the lack of empirical evidence to demonstrate the impact of all the strategies listed. Additionally, we do not fully understand the challenges faculty face when implementing any of the strategies in their courses. To this end, as the next steps, we hope to identify a few faculty implementing one or more of the listed strategies in their classrooms and measure the impact from both the faculty and student perspectives. We also want to invite people to share their experiences implementing the strategies - what worked well and what did not. Eventually, we would like to see the *living document* develop into a community bulletin board where faculty can view the checklist and understand how to operationalize the strategies in their classrooms.

Another limitation of this study, which might be beyond the scope of the paper, is the lack of strategies for student interactions within the classroom. While we do not have much understanding of the role of faculty in moderating student interactions, we see it as a critical component in creating an inclusive classroom. The lived educational experiences of the workshop participants, particularly those of students, suggest that how they interact with one another impacts their feeling of belonging in the course. Similarly, we also lack an understanding of what tools or strategies students have to process their experiences and contribute positively to the classroom. In another paper, we hope to tackle this gap by examining and providing a checklist designed for students to improve their educational experiences and strategies they can adopt to help build an inclusive classroom for their peers.

As for the project's next steps, we are primarily focused on improving the checklist's format. We received feedback that the current format might be overwhelming for faculty. To make the checklist more accessible, we plan to experiment with new formats, such as an interactive tool or other options. Additionally, we are exploring alternate ways to curate and present the checklist to ensure that it continues to reflect its "living" nature. This might include discussions and setting a cadence for revisiting the checklist regularly.

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Appendix

The Inclusive Course Design Checklist

Pre-Course Preparation

- ❑ Familiarize yourself with the latest on inclusive teaching by ...
 - Engaging in discussions with other educators, course TAs, and [advisors](#) from [Center of Teaching and Learning \(CTL\)](#) and [Office of Faculty Development](#)
 - Attending [equity and inclusive teaching workshops](#)
 - Read articles on inclusive teaching (e.g., [On faculty development of STEM inclusive teaching practices \(Dewsbury, 2017\)](#); [The Research Basis for Inclusive Teaching](#))
 - Watching the video "[What I Wish My Professor Knew](#)" to understand what your students might be experiencing:
 - ... They might be tired because they were working a late shift
 - ... Asking for help may be intimidating on its own
 - ... Not everyone had a room and a family at home
 - Self-identifying your perceptions, assumptions, and biases about teaching and learning
 - Resources: [Instructor Self Reflection \(the University of Utah Center for Teaching & Learning Excellence\)](#); [Self-Development Checklist \(Tufts University\)](#)
- ❑ If possible, administer a pre-class survey to gauge if students need any accommodations during the class and tune your course to suite the
 - Sample items could include questions related to food allergies and/or other accommodations needed (e.g., extra time needed for assignments due to financial or other restrictions, needing a review session on relevant math/physics prerequisites, needing assistance to purchase textbooks, etc.)
 - While the survey could be anonymous, students could be provided with an encouraging note to reach out to the instructor or the TA team personally if they needed any major accommodations not listed in the survey
 - The survey could also prompt and encourage students to seek out the [OAE \(Office of Accessible Education\)](#) and get approval letters, if necessary, at the beginning of the course
 - If possible, choose a classroom that is accessible (e.g., wheelchair accessible) and flexible to accommodate different learners' needs based on the survey inputs
 - Resources: [Using a Student Survey to Inform your Remote Teaching Planning \(Stanford ME-TLC\)](#)

Teaching Assistant (TA) Selection

- ❑ Select TA's who can support you in creating inclusive classrooms by including a question or two on DEIB in the TA selection process
 - Sample Questions:
 - As a student, how have your instructors created a welcoming classroom environment? How do you plan to support a welcoming classroom environment as a TA? What practices have you observed that are unwelcoming?
 - If a student contacted you asking for an extension on an assignment due to struggles with mental health, what steps would you take? How would you respond to the student?
 - The instructor continually mispronounces the name of a student in your class and the student has expressed frustration to you. How might you address this with the instructor?
 - A student is concerned about their grade after the midterm and asks to talk to you. What questions would you ask the student? What advice would you give?
- ❑ Broaden your search to attract a diverse set of candidates for the TA team
 - Share your TA posting with various groups of interest, such as [BEGSA](#), [SOLE](#), [MEWG](#), [FLI](#)
- ❑ Avoid personal biases in selecting the TA team
 - Include an objective selection process (e.g., anonymizing the candidates' application material to minimize personal bias, include a predetermined rubric to evaluate the candidates in the interviews, see "[Nailing the TA interview](#)" by [Leyzberg et al, 2017](#))

TA Interactions

- ❑ Clarify and communicate expectations with your TAs about their responsibilities in general and to each specific class session
 - Resources: [Teaching Assistant Responsibilities Form \(Stanford CTL\)](#)
- ❑ At the beginning of the quarter, work with TAs to understand what their goals are and design responsibilities aligning with their goals
 - Instructors could also emphasize the marketable skills TAs gain from teaching (e.g, organization, coordination, performance evaluation, informal presentations, etc.)
 - Consider scheduling a mid-quarter check-in and/or end-of-quarter reflection so the teaching team can consider how the TAs can more effectively progress toward their goals
- ❑ Involve experienced TAs in the design or redesign process of the course
 - If their employment agreement does not compensate them for work beyond the scope of the quarter, you can apply for a [Teaching Advancement Grant \(Stanford CTL\)](#) to defray the costs of graduate assistance with course (re)design
- ❑ Ensure your TAs know how you can be reached
 - Consider scheduling regular teaching team meetings and/or setting up a Slack channel or other means of asynchronous communication
 - Resources: [Working Effectively with Teaching Assistants Online \(Stanford CTL\)](#)
- ❑ Encourage DEI training for the selected candidates

- Encourage TAs to enroll in the TA training courses/workshops offered by the department or the CTL (e.g., [Workshops & Courses](#), [TA Orientation](#))
- ❑ Apply for the [Stanford iPads for Teaching and Learning Program](#) to borrow iPads for your CAs and the instruction team
- ❑ Work with the TAs to identify roles and responsibilities in accommodating students with various needs
 - Work with the Office of Accessible Education to identify support and training for CAs to be able to better accommodate the needs of the students
 - Determine if students need additional assistance and encourage TAs to provide additional support and accommodation. Prepare the CAs to work with students who may need additional assistance and/or accommodations (e.g. for students who work remotely, who do not have access to the internet or other required equipment, or with English as a Second Language (ESL))
- ❑ Break bread: Encourage your students to reach out to the TAs or yourself for a meet and greet (e.g., [coffee with a prof/TA program](#)). This would potentially create space for open conversations between the students and instructors.

Course Syllabi and First Day of Class

- ❑ Include a diversity/inclusive statement and land acknowledgment in your course syllabi
 - Make course names and descriptions inclusive so they correspond with everyone
 - Add pronouns and inclusive language to syllabus - but not as separate thing, as integrated into the syllabus so it becomes normalized (and talk about it)
 - Resources: [Sample Inclusive Teaching Statements for the Course Syllabus](#)
- ❑ Clarify the role of the instructor during your first-day instruction -- as a facilitator of learning as opposed to an authority figure
 - Share your personal story and motivation with the class - go beyond your professional titles. Students tend to feel connected with instructors who are willing to present their authentic/human side to the class.
 - Resources: [First Day Teaching Practices: Tips for Fostering an Inclusive Classroom from the Start \(Stanford CTL\)](#)
- ❑ Identify and share resources (e.g. grants, fellowships, supports) with all students
 - These resources could cater to a variety of demographics including low-income students, underrepresented minorities, international students, ESL students, and/or students with disabilities to enable a better learning environment (refer to the [Resources](#) section for some available resources at Stanford)
- ❑ Consider co-creating values (e.g., fairness, respect) and shared norms you would like to foster in the class with the students on your first day and share the values statement with the class to formalize the shared agreement.
 - Welcome everyone on the first day and get to know the class better
 - Make explicit statements during your first day of instruction regarding how you intend to make the class more inclusive. What is expected of the student to uphold and what is expected of the instructional team
 - Take time to have a small workshop where the students ideate with sticky notes (or other ways) on what would make them feel like they belong to the class - this way you hear their opinions

- Resources: [Class Community Commitments \(Stanford CTL\)](#)

Content

- ❑ Avoid assumptions about students' prior knowledge on the subject (e.g., assuming everyone had an AP class experience) and incorporate refresher content for all students with or without the prior knowledge
- ❑ Make content relatable to the students
 - Include readings from a diverse range of authors/scholars who represent varied demographic perspectives (gender, socio-economic backgrounds, race, ethnicity, etc.)
 - Have a diverse set of guest speakers who represent varied demographic perspectives (gender, race, ethnicity, career path, academic path etc.)
 - If diverse perspectives are not available, acknowledge and share with students that there is a gap and perhaps, set up a small discussion on how to address it
 - (If talking about history of the field) explore and talk about concepts beyond what is already known (i.e. Promote artifacts and provide diverse class examples from across cultures)
- ❑ Make course content more accessible to the students:
 - Provide a variety of content formats for the students (printed, auditory, visual etc.)
 - Have clear speaker notes/image descriptions for PowerPoint slides and turn on closed-captioning on recorded lectures, if possible (make PowerPoint accessible and text-reader-friendly)
 - If possible, record your lectures and share content online for students to review later
 - Ensure content shared is accessible and compatible with all device types (e.g., mobile responsiveness)
 - If possible, share content to be covered in the class prior the session
 - Resources: [Universal Design for Learning \(UDL\) guidelines](#)
- ❑ Provide a variety of adaptable activities for students to engage with the class
 - For example, give students the option to either stand-up or raise their hand to respond to a comment - Not everyone might be comfortable with standing up.

Assessment

- ❑ Provide students with the flexibility to choose from a set of assessment options that measure their learning in different ways
- ❑ Offer flexible assignment policies:
 - Allow students more time to take exams
 - Extend submission deadlines by a few days
 - Allow students to take exams in a quiet environment (if such an accommodation is needed)
 - Offer exams in different formats - some students do better on paper, some on PC etc.
- ❑ Offer constructive feedback on assignments and projects
 - Constructive feedback would encompass feedback that is specific, timely, frequent, understandable, actionable, and non-threatening

- With rubrics, consider how to be asset-based rather than deficit-based: for example, “yes, meets expectation” and “not yet,” rather than “no, does not meet expectations.”
- ❑ Incorporate peer feedback or self-assessment with a rubric wherever possible during the assessment process (examples: [Peer evaluation form for group work](#), [Peer evaluation form template](#))
- ❑ Provide opportunities for feedback through formative assessments where students can demonstrate their learning and understanding of the content without the fear of grade penalties
 - Resources: [Formative Assessment \(Great Schools Partnership\)](#)
- ❑ Make grading standards transparent and ensure the expectations (for both individual assessments and overall grade components) are clearly communicated to the students beforehand.
 - Share authentic models of exemplary work to increase transparency and clarity of expectations
- ❑ For team-based classes/project-based classes, offer a class grade as part of the overall grade that measures the performance of the overall class and fosters team collaboration
- ❑ Incorporate classroom assessment techniques (CATs), assessment techniques that are simple and non-graded to provide more real-time feedback to both the student and the instructors
 - Examples of CATs include minute papers, muddiest points, background knowledge probe, etc.
 - Resources: [Classroom Assessment Techniques \(Vanderbilt University Center for Teaching\)](#); [Classroom Assessment Techniques Handbook \(Angelo & Cross\)](#)

Pedagogy

- ❑ Empower student learning by creating a safe space for students
 - Recognize and address power disparities (stemming from race, culture, ethnicity, socio-economic backgrounds etc.) in classrooms and how they impact student learning.
 - Avoid stereotyping language and/or humor in the classroom.
 - Be respectful of students’ gender identity, expression, and pronouns
 - Avoid undermining student learning capabilities. Refrain from using phrases: “this is easy”.. “you have learned this in high school”.... “it took me only 5min, it shouldn’t take you longer than that” etc.
 - Seek understanding before responding to ensure individuals feel heard. Paraphrase what you hear someone say and ask clarifying questions such as: What led you to believe that? or Can you elaborate/explain more?
 - Build on the comment by adding information or correcting misinformation and open it to the class for other thoughts (if needed)
 - Avoid calling out students for not participating. Instead, reach out to them in a personal setting (at the end of the class or via email) and ask if everything is okay and what you can do to help them.

- Resources: [Respectful Pedagogy for Stanford Instructors: Gender Identity, Expression, & Pronouns \(Gender Inclusive Stanford\)](#) ; [Empower Student Learning \(Stanford CTL\)](#); [Culturally responsive curriculum](#))
- ❑ Adopt active learning strategies (non-traditional) lecture format, i.e., group discussions, peer teaching, think-pair share, case studies, etc.) to improve learned outcomes for all students
 - Resources: [Active learning narrows achievement gaps for underrepresented students in undergraduate science, technology, engineering, and math \(Theobald et al, 2020\)](#)
- ❑ Incorporate a variety of teaching modes throughout the course (e.g., talking, lecturing, graphic modes, anecdotal narratives, slide shows, etc.) to get students more engaged and excited for the classes
- ❑ Facilitate group discussions and study group formations based on student preferences and needs
 - Leverage teaming technologies such as [CATME](#)
 - Refer to the [following template](#) for an idea on how to facilitate the group formations¹
- ❑ Evaluate and seek feedback from students on teaming structures
 - Leverage technologies and/or tools such as CATME, [I like.I wish.I wonder](#), to promote and measure diversity and inclusion in your teams. (Example: [I like, I wish, I may” team feedback template](#)²)
 - Refer to [Towles and Wood \(2021\)](#) for guidance on how to use CATME effectively
- ❑ Have inclusive policies related to the use of technologies in classrooms (e.g., instructors might have a no-laptop policy but could make exceptions for students who need assistance using laptops)

Engaging Students in Design

- ❑ Ensure that students don't feel obligated to spend more money on projects in order to get better grades
 - Emphasize to the students that the amount they spend on the project (i.e., costs for the material, etc.) does not correlate to a better course grade
 - Gather as many resources as possible and make them publicly available to all students
 - Guide students on how much time they are expected to spend outside of class to prepare for a design challenge. Be considerate of students who can't afford to spend much time outside of class.
- ❑ Making clear what physical spaces and other resources may help students, especially first-year students (and first-gen students) for whom it may not be obvious where to go beyond their dorm room.
- ❑ Focus on developing cognitive empathy and perspective-taking in students
 - Facilitate social identity-sharing activities (e.g., [Social Identity Wheel](#))
 - Integrate real-time case studies on empathy and perspective taking into the class sessions

¹ Please reach out to Dr. Irene Lo for further guidance on how to use the template

² Please reach out to Jeff Woods and Dr. Joe Towles for further guidance on how to use the template

- Resources: [Cognitive Empathy in Design Course for a More Inclusive Mechanical Engineering \(Wong et al, 2016\)](#); [Fostering Empathy in an Undergraduate Mechanical Engineering Course \(Walther et al, 2016\)](#)
- ❑ Integrate aspects/concepts of design justice into the courses
 - Include case studies/examples of ethics, equity, and social responsibility relevant to the field of the topic
 - Have students focus on a specific group of people to design for, and with, to help make connections for students to empathize and think outside of their own experience
 - Resources: [Design Justice by Sasha Costanza-Chock](#); [Read the Principles — Design Justice Network](#)

Courses with Laboratories³

- ❑ Provide necessary arrangements/assistance for students with disabilities to get a better experiential learning experience
 - Assign a TA to accommodate the needs of students
 - Reach out to the Office of Accessible Education who can help/support the need for extra supervision related to disabilities and safety in lab environments
- ❑ Delegate responsibilities in lab-focused group projects based on students' preferences/needs
- ❑ Be creative in redesigning the making activities appropriate for students with special needs
- ❑ Ensure measures to build harmony among team members in labs where the student team members stay the same
 - Resources: [Strategies for Developing Students' Group Work Skills in the Laboratory Class \(University of Michigan Center for Research on Learning & Teaching\)](#)
- ❑ Take steps to promote students' engagement and confidence in hands-on lab/workshop activities; the hypervisibility of lab settings can cause disengagement and low self-efficacy among a certain population of students when using unfamiliar machines and tools
 - Avoid assumptions about students' comfort levels using machinery and tools during the initial lab sessions.
 - Acknowledge that failures are a part of the learning process and promote a failure-tolerant culture in the labs so students are not constantly worried about making mistakes but are focused on learning and persisting.
 - Do not punish students for breaking tools/equipment; instead, acknowledge that it is a part of the learning process and say something like, "This is a teaching lab. Mistakes are a normal, necessary, and desirable part of learning. If you break something, please let us know. We will replace or repair whatever breaks at no charge and no disgrace to you. Remember, we celebrate failure."
 - Train the TAs to be welcoming to the students and have the TAs demonstrate each small step before asking the students to undertake it; taking very small steps, in the beginning, is very critical to instill confidence in students

³ Many of the strategies suggested in this section have been inspired by and are representative of learned practices of the [Product Realization Lab](#) courses at Stanford University. Please reach out to Professor David Beach in case you want additional assistance or resources regarding inclusive teaching practices and strategies in lab settings. Also, since this is a living document, we encourage other instructors to add and share their practices to the list as well.

- Have the TAs check in on the students individually and frequently with care to ensure students feel comfortable
- Offer supplement lab sessions to build familiarity with the tools and other lab equipment for students who are interested in learning (e.g., “[Build Night](#)”, an engagement activity to help marginalized students gain more confidence in using laboratory equipment)
- Emphasize communication regarding safety to help students feel physically safe
- Build a culture of safety, productivity, and a sense of community by also dedicating time towards the end of the sessions for cleaning-up and organizing
- ❑ Create group coaching sessions consisting of students and TAs
 - View the TAs as partners with students, rather than experts who know the right answer to every question
 - Provide sufficient group time to allow students to offer ideas among their group
 - Have students meet with the same specific groups to build peer relationships
 - Facilitate TA group check-ins and introductions to launch each meeting and find elements of the student’s presented work which can be praised
 - Provide additional resources and lateral thinking driven ideas for the path forward at the end of coaching meetings

Course Logistics

- ❑ Provide free and accessible reading materials, softwares, textbooks to help reduce financial burden on the students
- ❑ Collect feedback from students throughout the quarter regarding the course
 - Sample questions: What is going well about the class? What needs improvement?
 - Reach out to the CTL team to gather feedback to ensure student anonymity and/or use the [CTL feedback request form](#) for gathering feedback
 - Resources: [Seek student feedback \(Stanford Teaching Commons\)](#)
- ❑ Conduct a survey at the beginning of the course to understand students’ backgrounds/goals, expectations, and time commitment to ensure the course objectives are aligned with student expectations
- ❑ Gather feedback on DE&I in the classroom in course evaluations

Sample questions:

 - To what extent do you agree with the following: I felt comfortable raising concerns with the teaching team.
 - 4-point scale response (strongly agree, agree, disagree, strongly disagree)
 - Did you find the course material accessible? (e.g. affordability, technology requirement, timing, etc.)
 - 4-point scale response (very, somewhat, not very, not at all)
 - What could instructors do to make the class environment more inclusive?
 - Text box response
- ❑ Encourage students to attend office hours
 - Clarify the purpose of office hours, particularly for first-year students who may be unfamiliar with the purpose and format of office hours
 - Offer flexible hours and structures; combine physical and asynchronous modes of meeting setups

- Consider an open office hour format (such as a round table discussion) and a collaborative environment to ensure students don't feel intimidated by authority and are comfortable asking questions
- Use tools such as Slack to foster collaborations between students, and between students and their TAs
- Additional Stanford CTL resources for online/virtual Classrooms
 - [Creating Inclusive and Equitable Online Learning Environments](#)
 - [Engaging Online Discussions](#)
 - [10 Strategies for Making Virtual Office Hours More Effective](#)