

INCLUSIVE TEACHING IN THE SCIENCES: COURSE CHECKLIST

STRATEGIES FOR COURSE DESIGN, ASSESSMENT, AND TEACHING IN SCIENTIFIC DISCIPLINES

Using this checklist: This resource has been developed as a tool to help instructors utilize specific strategies in their teaching and course design in order to better foster an inclusive classroom environment. Identify which strategies you have not yet incorporated, and try experimenting with different strategies each term. Articulate these efforts in your promotion and tenure files to evidence your inclusive teaching practices.

INCLUSIVE COURSE DESIGN		
Backwards Design with Active Learning	Identify important course learning outcomes, plan assessments that evidence achievement of these learning outcomes, and plan for active and engaging activities to help students prepare for each assessment and receive feedback as they learn. Shift the focus from what you are doing in class to what your students are doing, and strive to incorporate group activities and peer discussion as much as possible.	<input type="checkbox"/>
Textbook Selection	Featured scientists/researchers and images of students in textbooks are diverse and include women and underrepresented minorities integrated throughout (not in a separate section). This includes e-books or texts with ancillary materials such as animations that supplement the text.	<input type="checkbox"/>
Additional Materials	Research papers, articles, and any other course materials also feature a diverse representation of scientists and researchers. Biographical information with photos are included where available to further showcase diversity in the sciences.	<input type="checkbox"/>
Syllabus Language	Tone, language, and course policies convey a welcoming, supportive, and encouraging climate for all students. The value of the course is communicated, and information is clear and well-organized.	<input type="checkbox"/>
Prior Knowledge Assessment	Course prerequisites should be transparent as evidenced through course syllabi and learning outcomes for individual courses and across a department's curriculum along the pathway to major. Prior knowledge assessments across courses (in particular sequenced courses) will help identify gaps and misconceptions that are either not addressed in prior courses, or where information or skills have not been retained. Additionally, prior knowledge assessments help individual instructors avoid assumption-making about student knowledge, preventing unrealistic expectations for learning. Such assessments can be provided as an anonymous pre-course survey or initial low-stakes assignment. They should be framed as tools to help the instructor teach more effectively, not as a graded evaluation of student learning and not as a "weed-out" instrument.	<input type="checkbox"/>
Grading Policies	Grading policies reflect an outcomes-based achievement approach, where students are given ample opportunities for feedback en route to mastering the learning outcomes. "Re-dos" are permitted within reason at the instructor's discretion. Classes are not designed to "weed-out" underperformers, instead the assumption is that all students with the required course prerequisites are capable of being successful in the course. Grades are based on learning, not ranking students. Normalizing scores on assignments (by adding points) can be used to correct for potentially flawed assessment (homework, quiz, test) questions.	<input type="checkbox"/>

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Design for Multiple Feedback Opportunities	A plan is established for periodically offering opportunities for students to provide the instructor feedback on their experience of the course prior to the end of the quarter. This could be as simple as using the exit slip method at the end of each class (additional information below), sprinkling optional short survey questions into your CCLE course site (use the feedback or questionnaire tool), implementing a mid-quarter student survey (see below), or appointing a few student representatives that can share feedback with you anonymously on behalf of other students.	<input type="checkbox"/>
INCLUSIVE ASSESSMENT DESIGN		
Assignment Instructions	Instructions and assessment criteria for every assignment are outlined clearly. Consistently employ well developed rubrics (such as the VALUE rubrics available through AAC&U) that students can access as a tool for self-assessment and peer evaluation prior to submitting assignments. Examples of exemplary assignments are provided as a model when appropriate. Examples of assignments that “miss the mark” with explanation are also helpful.	<input type="checkbox"/>
Scaffolding of Assignments	Assignments are designed so that students have the opportunity to receive feedback and incorporate that feedback into future learning. Avoid having a large percentage of the grade depend on a few <i>summative feedback</i> assignments (where students are evaluated at the end of learning and before moving something new). Instead, break-down assignments so that students receive <i>formative feedback</i> (where learning is re-assessed over time) and can make adjustments based on learning from their misconceptions.	<input type="checkbox"/>
Multiple Choice Question Development	Questions are clearly framed and do not provide an advantage to students who may have had advanced test prep training on multiple-choice questions. During exams, students are encouraged to ask for clarity on what the question is asking if they are unsure due to how the question is framed. Important: After you administer any assignment take time to analyze the results to evaluate the quality, difficulty-level, and clarity of your questions. Revise poorly written questions and make adjustments to grades where appropriate. <i>(Contact OI&L if you would like support with item-analysis for closed-ended assessments like multiple choice exams.)</i>	<input type="checkbox"/>
INCLUSIVE CLASSROOM CLIMATE		
Pre-Course Survey	Use a pre-course survey to get to know your students - their reasons for taking the course and potential career aspirations. Consider asking them what they plan to do to be successful in the course, as well as what you may be able to do to help them be successful. (see Dunlosky <i>et al.</i> , 2013, for recommendations about successful study habits) Use what you’ve learned on the first day to communicate your interest in your students and to facilitate community through warm-up or introductory activities.	<input type="checkbox"/>
Facilitate Relationship Building	Help students form bonds with other students by using simple low-stakes group activities during the first week(s) of class. “Getting to know you” activities will help students feel more comfortable with each other which may help increase overall student engagement. Consider in particular first-year students who are experiencing college courses for the first time and may not know the students sitting next to them. Plan for	<input type="checkbox"/>

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	group work and/or other activities that allow students time to interact with and learn from each other. Emphasize that science is collaborative.	
Communicate that you embrace feedback	Verbalize to your students that you want them all to be successful, that you are striving to create an equitable and inclusive classroom. Share that you may not be aware of individual challenges they are experiencing in the course, and that you (and the Teaching Assistants) are open to feedback at any time about ways to help them learn and be more successful in the course. Review the structure you have designed to receive feedback formally as well as informally.	<input type="checkbox"/>
Acknowledge first-day disparity issues	If you walk into your class and there are very few women, acknowledge this elephant in the room. If you had limited textbook options and you chose one that has stereotyped stock photo images, let the students know that you are disappointed in the publisher choices and you know it is not representative or inclusive, and provide supplemental material if possible.	<input type="checkbox"/>
Use a mid-quarter feedback survey	CEILS has developed a mid-quarter feedback survey that you can use and customize to get feedback prior to the end-of-course teaching evaluations administered through OID. You can email media@ceils.ucla.edu for more information about getting access. Use this or another anonymous survey in order to test your own hypotheses around how students are learning in your course. Once you receive the feedback, openly acknowledge and address what changes you will incorporate based on the feedback provided.	<input type="checkbox"/>
INCLUSIVE TEACHING STRATEGIES		
Calling on Students During Class	Rather than calling on students who raise their hand, consider creating a deck of index cards with student names to make calling on students random. If you are concerned about putting students on the spot, let them know they can say “pass” if they wish. This strategy addresses issues related to gender/cultural norms around volunteering, comfort with public speaking, and instructor bias in calling on some specific student populations disproportionately more than others. An alternative strategy is starting with a “think-pair-share” (as noted below) where you have students discuss with their neighbors before you cold-call individuals to report out. This will allow students the opportunity to confirm their answers with peers privately before sharing publicly.	<input type="checkbox"/>
Increase Your Wait Time	When you pose a question to the class, be patient and provide prompts to encourage more hand raising. You could say “this is a tough question, take your time” or “I’ll give everyone another minute and let’s see if we can get more hands up.” After establishing this culture of participation , using non-verbal cues that you are waiting will also be effective.	<input type="checkbox"/>
Think-Pair-Share or Minute Writing	Same hands going up or same students calling out responses (the “peanut gallery in front”) every time? After posing a question tell students to turn and discuss with their neighbors. Alternatively, ask students to take a minute to write out their responses before reporting out, allowing time for reflection and for them to articulate their answers on paper first.	<input type="checkbox"/>

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Assigning Groups	Never assign groups by gender. Use the count-off technique in smaller classes. In larger classes designed with stadium seating, ask students to sit in a different seat with different peers each class so they can get to know as many students as possible during the quarter. CATME, great resource for assigning and managing group work, can be found at http://info.catme.org/ . Work with your TAs to establish and maintain the groups in class and discussion or laboratory sections, even encouraging groups to work together on homework or projects outside of class.	<input type="checkbox"/>
Humor & Pop-Culture Use	When using humor or pop-culture references, be thoughtful and do not make assumptions about what your students know or do not know. For pop-culture references, go ahead and explain the reference. Avoid pop-culture/humor on exams, as students who may not get the referenced may feel excluded and could be at a disadvantage. Consider international students who may have not have the same exposure to American media, or students from less affluent backgrounds that may not have experienced some assumed activities that more affluent students have had (like traveling to another country or taking a family vacation, for example).	<input type="checkbox"/>
Use Exit Slips	Distribute a blank notecard to students and ask them to respond to one question on the card before leaving. The question could be “share something new you learned today” or more feedback oriented such as “share one thing I am doing well to support your learning and any suggestions for something I might do differently to better support your learning.”	<input type="checkbox"/>
IMPORTANT!		
IMPORTANT! Respond to feedback when you receive it	All of these strategies will help you learn more about your students and make your teaching and classroom climate more inclusive. HOWEVER, if you do not communicate with you students your intention to do so, and you do not follow-up and share how their feedback is being incorporated or addressed, then students may feel that it is not genuine attempt at listening to them. Ask for feedback often, but once you get it you must also report back to your students on what you heard from them. Often feedback will be mixed and sometimes contradictory, and that is okay. The point is to ask for it, hear it, share back what you have heard, and make adjustments to your course design and teaching accordingly.	<input type="checkbox"/>
IMPORTANT! Mentor your TAs on inclusive teaching	Share and discuss these strategies with your TAs and encourage all graduate students to attend professional development opportunities (many offered through CEILS) to develop skills and knowledge around inclusive teaching practices. Establish a culture of participation and inclusion as a classroom norm.	<input type="checkbox"/>

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FEATURED RESOURCES

- Center for Education Innovation & Learning in the Sciences (CEILS) website: ceils.ucla.edu
- Enhancing Student Success and Building Inclusive Classrooms at UCLA. Available at evc.ucla.edu/reports
- UCLA Office of Equity, Diversity, and Inclusion Website (see “educational materials” section): <https://equity.ucla.edu/programs-resources/educational-materials/>
- [Measuring the Promise: A Valid and Reliable Syllabus Rubric Guide to Assessing the Focus of Syllabi](#), Michael Palmer, Dorothe Bach, & Adriana Streifer University of Virginia, Teaching Resource Center
- [Kimberly Tanner \(2013\) Structure Matters: Twenty-One Teaching Strategies to Promote Student Engagement and Cultivate Classroom Equity](#)
- The Center for the Integration of research, Teaching, and Learning (CIRTL) Website resources: CIRTL provides several resources on inclusive teaching practices on their website: www.cirtl.net/diversityresources
- CIRTL Online Course, “An Introduction to Evidence-Based Undergraduate STEM Teaching”: <http://stemteachingcourse.org>
See Module 6 - “Inclusive Teaching”.
- [American Association of Colleges and Universities \(AAC&U\) VALUE Rubrics](#)
<https://www.aacu.org/value-rubrics> *You will need to “check-out” to access rubrics, but all are free to use and customize.
- Dunlosky J, Rawson KA, Marsh EJ, Nathan MJ, and Willingham DT (2013) Improving students’ learning with effective learning techniques: promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest* 14(1): 4-58.