ANTIRACIST TEACHING OBJECTIVES	SAMPLE PRACTICES	RESOURCES FOR AREA B Scientific Inquiry & Quantitative Reasoning (SELF-EVALUATION)
OBJECTIVE 1 Course content is inclusive/accessible for students to process with their own unique abilities and strategies.	When designing your accessible course, keep the following practices in mind: • Checking videos for correct closed captioning • Ensuring your digital content is not scanned or in exclusively graphic format • All images must include Alt-Text • Check that all software requirements of the course are accessible, or an Equally Effective Alternative Action Plan has been created. • Course is free of graphics/gifs that have flashing effects (Seizure inducing). • Required internet/software tools used to display content are available to all students. (If a student doesn't have necessary equipment or internet access, they can be referred to IT)	**Tools, Training, & Support** Write good Alt Text to describe images Creating an Equally Effective Alternate Access Plan Chico State Technology Quick Start Guide for Students Wildcat Computing Support Kurzweil Otter.ai (Chico State Knowledge Base entry)
OBJECTIVE 2 Students are offered multiple opportunities to demonstrate knowledge (via assessment strategies) in ways that are best aligned to their own unique abilities.	• When assessing students informally or formally in a given activity, provide your students with opportunities to demonstrate knowledge in multiple ways. Examples include: • Summarizing or critiquing an article via recorded response in addition to a written response. • Give students multiple options to complete a final project: recorded presentation, in class presentation, podcast assignment, videographic essay, etc.	**Tools, Training, & Support** Universal Design for Learning Guidelines Podcasting for Teaching and Learning Essential Practices To Use Podcasting As A Communication Medium Multiple Representations Assessing Equitably with All Learners in Mind
OBJECTIVE 3	• Before assessing formal assignments (large projects, essays, etc.) create a rubric that students	**Tools, Training, & Support**

Assessments and feedback are provided in such a way that allows students to self-assess their own strengths, learning gaps, and needs.	can use to evaluate their own work - BEFORE you evaluate them with the same criteria. This will allow them to self-identify their own strengths and learning gaps so that they can improve their work before final submission. • Provide students with a checklist that aligns to an assessment's guidelines and expectations. Allow students to use the checklist to self-assess their own work before submission.	V. Stallings & C. Tascoine, "Students Self-Assessment and Self-Evaluation" in The Mathematics Teacher 89.7 (1996) https://www.jstor.org/stable/27969906 "Transforming Undergraduate Teaching and Learning Through Culturally Sustaining, Active, and Asset-Based Approaches to Introductory Science Courses" https://www.nsf.gov/awardsearch/showAward?AWD_ID=1953760&HistoricalAwards=false Lesson Plan: "Silent Science: Peer Feedback on Developing Ideas" from *Composing Science* (2016)
OBJECTIVE 4 Course content, student activities, instructional strategies, and assessments emphasize and support the maintenance of students' diverse, multiple, and intersectional identities.	When discussing how your course's concepts impact matters of race, gender, sexuality, language, ability, socio-economic status (etc.) challenge students to consider how these identities intersect with one another. For example: o If examining a topic that relates to women's rights - focus on the rights of those women who have been the most oppressed - Black, Latinx, Asian American, Native American, and trans women. o In a quantitative course - When having class debates or discussions, have your students examine the unique challenges faced by BIPOC students in relation to numeracy and societal expectations.	**Tools, Training, & Support** S. Celedon-Pattichis, et al. "Asset-Based Approaches to Equitable Mathematics Education Research and Practice" Journal for Research in Mathematics Education 49.4 (2018). https://doi.org/10.5951/jresematheduc.49.4.0373. (also see Objective 6 below) D. Zaharapol "Seeing Students For Who They Are: Ensuring students from all backgrounds can access STEM" (2023) Column on Teaching & Learning blog, American Mathematical Society

OBJECTIVE 5 Course content, student activities, instructional strategies, and assessments foster and empower student competence, student agency and the desire to effect change.	When learning about matters of anti-blackness, racism, racial inequality, or homophobia (either internal or external to your course), provide an outlet for students to explore their interests via agency and action within the context of your field. For example: o Joining a protest o Engage in civil action or discourse o Connecting with local non-profit agencies o Developing new community resources o Starting/facilitating a grassroots organization or student club	**Tools, Training, & Support** D. Morales-Doyle, "Justice-centered science pedagogy: A catalyst for academic achievement and social transformation" (2017). https://doi.org/10.1002/sce.21305. M. Vogel "Social Justice in Science Class"
OBJECTIVE 6 Course content, student activities, instructional strategies, and assessments develop cultural knowledge that is co-constructed through students' lived experiences and that normalizes sharing, critiquing, reviewing and renewing.	• When exploring new concepts in your course, begin by having your students connect these concepts with their own lived experiences and preferred modes of storytelling or argumentation. Teach from a place that decenters "expertise" from yourself to a place of shared understanding that takes your students' experiences into consideration. • Create a space where students can safely explore, share, and renew their own understanding of your course's concepts, while critiquing each other's perspectives. • Allow students to locate and choose their own resources when exploring and unpacking a module or course concept. • Cultivate an environment that encourages constructive critiquing and adds to critical thinking.	**Tools, Training, & Support** "Recognizing Diverse Mathematicians" American Mathematical Society "Inclusive Classrooms," American Mathematical Society "I am a Scientist" resources "Career Guide: decolonizing science toolkit" *Nature* (2022)
OBJECTIVE 7 Course content, student activities, instructional strategies, and assessments are aligned to student	• Begin each course by getting to know your students (via "all about me surveys," journal activities, discussion introductions, etc.), identifying their strengths and assets, and finding	**Tools, Training, & Support** D. Morrison, P. Bell, & A. Rhinehart, "Focusing Science and Engineering

assets (content knowledge background, learning strengths, ethnicity, race, socio-economic status), resources, linguistic resources, student interests and aspirations).	patterns. Once this is done, craft your lessons in a way that builds upon these assets to support student motivation and engagement. • Give students the opportunity to explore the course's concepts in a way that draws upon their local community, culture, or family. • When working with students who are interested in healthcare or education, ask them how they can draw upon their own language backgrounds to support communities that speak the same language. • Provide comments and feedback to students in a way that draws and builds upon their assets and strengths.	Learning on Justice-Centered Phenomena across PK-12" J. Dostillo, et al. "Three Practices that Compliment an Asset-Based Approach to Teaching and Learning in Math Classrooms"
OBJECTIVE 8 Course content, student activities, instructional strategies, and assessments address student barriers (content knowledge background, learning challenges, cultural (ethnicity, race, socio-economic status) backgrounds, linguistic challenges).	• Begin each course by getting to know your students (via "all about me surveys," journal activities, discussion introductions, etc.), identifying their learning needs and finding patterns. Once this is done, craft your lessons in a way that addresses these needs to support student motivation and engagement. • Provide quick formative assessments at the beginning of the semester to learn about your student's current knowledge as it pertains to the topics that you are teaching. Find out where there might be learning gaps and address them in your course accordingly. • Learn about your students' access to educational technology and access work and study opportunities. If for example, you find that students work multiple jobs while going to school full time, take this into consideration when planning for homework tasks.	**Tools, Training, & Support** P. Sidney et al. "Who uses more strategies? Linking mathematics anxiety to adults' strategy variability and performance on fraction magnitude tasks" Thinking & Reasoning (2019). https://doi.org/10.1080/13546783.2018.1475303. M. Ashcraft, "Math Anxiety: Personal, Educational, and Cognitive Consequences" Current Directions in Psychological Science (2002). http://dx.doi.org/10.1111/1467-8721.00196.

OBJECTIVE 9 Course content, student activities, instructional strategies, and assessments are developed through a lens that: A) Explores racial justice issues; B) Provides opportunities for students to think critically about race and racism and their intersections with the course's central concepts; C) Confronts and disrupts racial inequities (in the classroom and as related to the course's central concept); D) Normalizes a critical lens; E) Actively de-centers whiteness.	• Investigates how central topics in your course can lead to the systemic fair treatment of all races through proactive and preventative measures. For example, discuss the importance of including a diversity of voices in science-related policy making; discuss the uses of quantitative methods to support initiatives that address inequities. • Explore and interrogate stories related to your course's topics that are connected to matters of race, racial inequality, and/or racism. • Provide opportunities for your students to critique the status quo as it pertains to your courses' central concepts. Ex - The ways in which data can be used to negatively skew debates and argumentation. • Actively help your students understand how your course's topics directly impact communities of color. Ex - including scholarly and non-scholarly perspectives of persons of colors in your syllabus in the forms of peer-reviewed journal articles, news articles, podcasts, guest speakers, etc.	**Tools, Training, & Support** British Library Histfest, "Horizons: A Global History of Science" talk by author Dr. James Poskett youtube link "Science and Culturally Relevant Teaching," in *Teaching Science to English Language Learners*, B. Nutta, et. al. https://ebookcentral.proquest.com/lib/csuchico/reader.action?docID=565422&ppg=94. J. Aguirre & M. Zavala "Making culturally responsive mathematics teaching explicit: a lesson analysis tool" Pedagogies: An International Journal (2013). http://dx.doi.org/10.1080/1554480X.2013.768518.
OBJECTIVE 10 Instructors interrogate, confront, abolish, and redevelop course content, student activities, instructional strategies, and assessments that are steeped in white supremacist, oppressive, deficit-oriented, and racist underpinnings.	• Reflect on your course and complete a curriculum audit that identifies resources, teaching practices, and assessments that are informed by white supremacy. • Reflect on your course and complete a curriculum audit that identifies resources, assessments, and teaching practices that may represent bias or dominant narrative. • Ex 1: In writing components of a quantitative course focusing too much on "writing skills" (grammar, sentence structure, word choice,	**Tools, Training, & Support** Stamborski, et al. "Anti-Racist Educator Self-Examination Questionnaire + Rubric" 500 Women Scientists Leadership, "Silence is Never Neutral; Neither is Science" *Scientific American,* 2020. Dimick, A.S. "Student empowerment in an environmental science classroom: Toward

	formatting, etc.) that are informed by the rules of Standard English - even if your students can demonstrate your module's learning objectives. • Ex 2: Teaching in a way that centers all knowledge and expertise on you, the educator, instead of acknowledging that your students too can be part of the knowledge construction experience. • Ex 3: You police the language, communications, and norms in your class that oppress students' cultural identities. Such as - reprimanding your students' usage of colloquial language in any oral communication assignments. • Ex 4: The resources in your course reflect a "single story" that is often dominated by a cisgender white narrative, as opposed to reflecting a variety of voices, narratives, and perspectives. • Ex 5: When teaching controversial topics, or communicating with students, instructors shy away from "uncomfortable" topics that directly impact the lives of those who have been historically marginalized or minimize the impact of such marginalization.	a framework for social justice science education," Science Education (2012). https://doi.org/10.1002/sce.21035. "Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability--A joint position statement from the National Council of Supervisors of Mathematics and TODOS: Mathematics for ALL." J. Aguirre, et al. "Equity Within Mathematics Education Research as a Political Act: Moving From Choice to Intentional Collective Professional Responsibility" Journal for Research in Mathematics Education (2017) https://www.jstor.org/stable/10.5951/jresematheduc.48.2.0124. "Responses to 10 Common Criticisms of Anti-Racism Action in STEM" (PDF) D. Battery & L. Leyva, "A Framework for Understanding Whiteness in Mathematics Education" (2016) *Journal of Urban Mathematics Education*
OBJECTIVE 11 Courses have a space that allows students to critique and challenge, and provide feedback to instructors when students face oppression, or are not represented or heard.	• Provide students with opportunities for feedback - such as weekly or quarterly anonymous feedback forms. • Create a space where you acknowledge that mistakes will occur, but that you are ready to learn from it.	**Tools, Training, & Support** Why Professors Should Ask Students For Feedback Long Before the Semester Is Over

	• Welcome feedback and criticism and try to not be reactive when students call you out. • Adapt an Early-Term Feedback Survey as an opportunity for students to provide feedback.	Addressing microaggressions in the classroom Recognizing Microaggressions and the Messages They Send Sample Questions for Anonymous and Mid-semester Feedback Surveys Using Feedback to Support Equity and Inclusion in your Classroom