

TABLE S-1 Goals, Objectives, and Indicators to Monitor Progress in Undergraduate STEM Education

Conceptual Framework	Objective	Indicator
Goal 1: Increase Students' Mastery of STEM Concepts and Skills by Engaging Them in Evidence-Based STEM Educational Practices and Programs		
Process	1.1 Use of evidence-based STEM educational practices both in and outside of classrooms	1.1.1 Use of evidence-based STEM educational practices in course development and delivery 1.1.2 Use of evidence-based STEM educational practices outside the classroom
Environment	1.2 Existence and use of supports that help STEM instructors use evidence-based educational practices	1.2.1 Extent of instructors' involvement in professional development 1.2.2 Availability of support or incentives for evidence-based course development or course redesign
Environment	1.3 An institutional culture that values undergraduate STEM instruction	1.3.1 Use of valid measures of teaching effectiveness 1.3.2 Consideration of evidence-based teaching in personnel decisions by departments and institutions
Process	1.4 Continuous improvement in STEM teaching and learning	No indicators: see "Challenges of Measuring Continuous Improvement" in Chapter 2.
Goal 2: Strive for Equity, Diversity, and Inclusion of STEM Students and Instructors by Providing Equitable Opportunities for Access and Success		
Input	2.1 Equity of access to high-quality undergraduate STEM educational programs and experiences	2.1.1 Institutional structures, policies, and practices that strengthen STEM readiness for entering and enrolled college students 2.1.2 Entrance to and persistence in STEM academic programs 2.1.3 Equitable student participation in evidence-based STEM educational practices

Outcome	2.2 Representational diversity among STEM credential earners	<p>2.2.1 Diversity of STEM degree and certificate earners in comparison with diversity of degree and certificate earners in all fields</p> <p>2.2.2 Diversity of students who transfer from 2- to 4-year STEM programs in comparison with diversity of students in 2-year STEM programs</p> <p>2.2.3 Time to degree for students in STEM academic programs</p>
Environment	2.3 Representational diversity among STEM instructors	<p>2.3.1 Diversity of STEM instructors in comparison with diversity of STEM graduate degree holders</p> <p>2.3.2 Diversity of STEM graduate student instructors in comparison with diversity of STEM graduate students</p>
Environment	2.4 Inclusive environments in institutions and STEM departments	<p>2.4.1 Students pursuing STEM credentials feel included and supported in their academic programs and departments</p> <p>2.4.2 Instructors teaching courses in STEM disciplines feel supported and included in their departments</p> <p>2.4.3 Institutional practices are culturally responsive, inclusive, and consistent across the institution</p>
Goal 3: Ensure Adequate Numbers of STEM Professionals		
Process	3.1 Foundational preparation for STEM for all students	3.1.1 Completion of foundational courses, including developmental education courses, to ensure STEM program readiness
Process	3.2 Successful navigation into and through STEM programs of study	<p>3.2.1 Retention in STEM programs, course to course and year to year</p> <p>3.2.2 Transfers from 2- to 4-year STEM programs in comparison with transfers to all 4-year programs</p>
Outcome	3.3 STEM credential attainment	3.3.1 Number of students who attain STEM credentials over time, disaggregated by institution type, transfer status, and demographic characteristics