Assessment Plan	Scientific Reasoning
Definition	Scientific reasoning denotes systematic, logical thought patterns employed during the process of scientific inquiry. A citizen leader can apply the methods of science to the acquisition of knowledge, the evaluation of the validity of information, and the appreciation of major contributions of science to the solution of contemporary problems w/ regard to social, cultural and/or ethical considerations.
Outcome(s)	At the completion of the Pillar course, students will be able to • use scientific theories, scientific models, and empirical evidence to describe and make predictions about natural phenomena; • use the scientific method, which includes making objective observations, asking scientific questions, formulating hypotheses, identifying relevant variables, planning and carrying out investigations, evaluating data, and drawing evidence-based conclusions; (NOTE: This outcome was revised and approved in 2021-22. The original outcome was "use appropriate scientific practices, including making objective observations, asking scientific questions, formulating hypotheses, identifying relevant variables, planning and carrying out investigations, evaluating data, and drawing evidence-based conclusions"); • evaluate the quality and validity of scientific information on the basis of its source and the methods used to generate it; • describe how scientific reasoning is used to address significant contemporary issues with regard to social, cultural, and/or ethical considerations.
Goal(s)	The overall (all courses aggregated) average score on relevant questions for each of the 4 SLOs meets or exceeds a student average of 70%.
Method(s)	Scientific reasoning is specifically addressed in the outcomes of all Scientific Reasoning Pillar courses. All students are required to take a SR course of their choice to satisfy Foundation requirements. The direct measure is carried out by utilizing a valid, reliable, and widely available selected-response assessment instrument: the Madison Assessment SR Test. The segment of the student population targeted by the proposed assessment are those students who are enrolled in fall/spring SR Pillar courses.
Schedule of data collection	Beginning 2018-19, two consecutive years of data were collected in the last weeks of the fall and spring semesters before exams began. Data analysis and identification of needed improvements in student learning occurred in the spring semesters. Year three focus is on faculty professional development associated with the identified areas of improvement. Due to SR faculty lead turnover and in-depth investigation of test and SLO alignment, professional development and implementation of strategies has been extended into 2021-22. Two cycles of data collection and analysis will follow in 2022-23 and 2023-24.
Communication of findings	Once the test data are made available by the Madison Assessment contractual agency, the Director of Core Curriculum, the SR Faculty Leader and staff of Office of Assessment and Institutional Research at Longwood are to 1) conduct preliminary analysis 2) report and disseminate the findings to the SR Pillar instructors and 3) coordinate further discussion among the faculty members who participated in the SR assessment, the members of the Core Curriculum Committee, and chief academic officers. The discussion will focus on: • Summarizing the findings • Identifying the area(s) in need of improvement • Developing strategies for improvement • Developing strategies for assessing improvement
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