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**Colorado Learning about Science Survey for Experimental Physics (E-CLASS)**

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In response to national calls to better align physics laboratory courses with the way physicists engage in research, we have developed an epistemology and expectations survey to assess how students perceive the nature of physics experiments in the contexts of laboratory courses and the professional research laboratory. The E-CLASS evaluates students' shifts in epistemology and affect at the beginning and end of a semester. Also, at the end of the semester, the E-CLASS assesses students' reflections on their course's expectations for earning a good grade. By basing survey statements on widely embraced learning goals and common critiques of teaching labs, the E-CLASS serves as an assessment tool for lab courses across the undergraduate curriculum and as a tool for PER research. We present the development, evidence of validation, and initial formative assessment results from a sample that includes 45 classes at 20 institutions.