Invitation to STEM-US Faculty 2023

In-Person Course-Based Undergraduate Research Experience (CURE) Workshop

CUREs are high impact learning-teaching activities in which students conduct authentic science investigations in the context of a laboratory course. We invite you (and a colleague, teams of 2 from a given institution) to participate in a CURE development workshop as part of the STEM-US Conference September 7-9, 2023 at Morehouse College, Atlanta. Participants in this workshop will begin developing a CURE activity that they will implement at their home institution and conduct education research on their CURE implementation.

Even if you previously participated in the STEM-US CURE workshop at a past conference or participated in the STEM-US workshop Introduction to Education Research led by Dr. Danielle Dickens, this invitation is open to you.

Each team accepted to this project in 2023 will participate in the development (or refinement) of a CURE. Following the 2023 workshop, each team will present their CURE plans at the STEM-US conference being held September 7-9, 2023. Subsequently, monthly group meetings will be held to develop an education research plan, report on your CURE development progress and to assist each team in overcoming challenges. The education research you conduct on a new CURE at your own institution may be on the research focus of your choice but should be conceived within the PVEST framework (brief description attached). An education research proposal will be prepared by each team. The education research proposal will be implemented as each team implements in their new CURE. Each team will be mentored on both conducting the research and preparing a manuscript for publication.

The new CURE activity may be in any area of STEM and at least one of the two faculty on your team must be directly involved in developing and teaching the new CURE. Following the implementation of a new CURE, each team will prepare a research poster documenting the implementation of your new CURE to be presented at a research conference, other than the STEM-US conference (for example: the Association for Biology Laboratory Education annual conference).

STEM-US CURE Workshop

Workshop participants will arrive in Atlanta in the morning of Thursday 7 September and the workshop will begin on Thursday 7 September meeting from 1:00pm – 5:45pm. Friday 8 September we will work from 8:30-5:30. A CURE plan poster developed by each team at this workshop will be presented in the STEM-US Conference on Friday evening 8 September or Saturday morning 9 September, 2023. The STEM-US Conference will end at Noon on Saturday 9 September.

Registration, room-board, and transportation costs will be covered by the STEM-US program. Both team members must attend the entire 1.5-day workshop and subsequent conference.

Preference will be given to applications from teams of two (from the same institution). Workshop participants will also be registered for the STEM-US Conference at Morehouse College.

Participant Deliverables and Stipends

Stipend for submitting education research proposal draft and final version $250/team

Stipend for presenting CURE plan poster at STEM-US Conference and subsequently submitting Implemented CURE poster draft and final version $250/team

Completing education research data collection, stipend $1000 for each team member (pair).
Includes collection of Analytic Hub data and data specific to team research question.

Apply by clicking on the link: Register Now

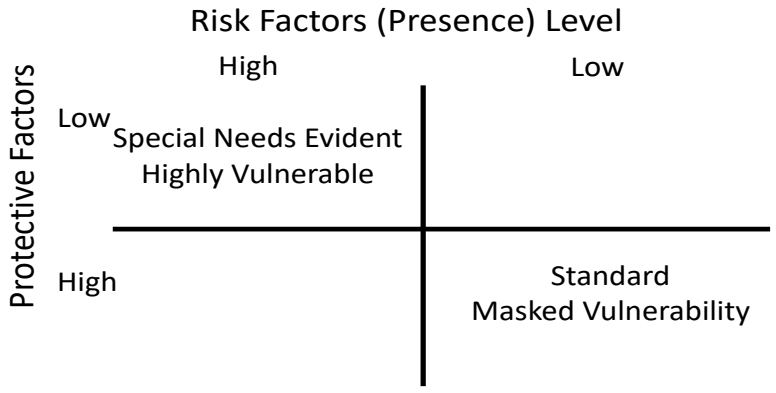
Applications for this workshop must be received no later than 1 September 2023.

PVEST Theoretical Framework for Research on Student Success

We will guide you on the preparation of an education research study, and the over-arching theory we use is PVEST. PVEST assumes that our students are not all the same. Their past experiences and the environment from which they come influences how they will respond in our classes and whether they will succeed in their STEM major. PVEST (Phenomenological Variant of Ecological Systems Theory, developed by Dr. Margaret B. Spencer) is a framework for investigating questions about individual development, and seeks to understand the conditions, activities, and interventions that best support learners based on their prior educational experiences.

In its essence, PVEST focuses on risk/support factors that affect learning. Furthermore, PVEST invites us to explore student learning based on prior risk and support structures. This framework allows researchers to explore learning interventions among students with similar risk and support factors. The matrix below describes how these two factors will vary among our students.

Vulnerability Level and Resilience Prediction
(MB Spencer 2018, Adapted from James Anthony 1974)



A PVEST informed education research study may be a study that identifies and attempts to describe our students as they arrive in our courses and uses that information to reduce risks and/or improve protective factors to improve student success. An objective of this STEM-US project is to foster investigations on the impact of CUREs at HBCUs with different academic and social profiles. Using the PVEST theoretical framework, the specific ways that CUREs attenuate risks to STEM undergraduate success and augment relevant supports may be investigated. Examples of research questions that could be addressed are: 1) Which components of CUREs, if any, should be adjusted for specific student populations, across HBCUs and why? 2) What role does a student's background characteristics (socioeconomic, academic behaviors, intrinsic motivation and academic self-efficacy, and prior science experience) play in their successful engagement with CUREs at HBCUs? 3) What role does the instructor play in terms of student

engagement in CUREs at HBCUs? 4) How important are methodological considerations (laboratory environment/resources, number of students in a class section, scheduled laboratory time commitment, student evaluation methods, and the relationship between lecture and laboratory courses) for successful implementation of CUREs at HBCUs?