

What is a CURE?

A Course-based Undergraduate Research Experience (CURE) is a course designed around a research question or system in which the students participate as true researchers, often designing hypotheses and experiments and answering questions for which no one yet knows the answer (reviewed in [1]).

Examples of successful CUREs, most of which are biology-focused:

- Howard Hughes Medical Institute’s SEA Phage [2],
- NSF-supported Genomics Education Partnership [3],
- NSF-supported Genome Consortium for Active Teaching [4],
- Maize transposons [5],
- Small World Initiative [7], and
- NSF-support CUREnet network [6].

CURE #1: Native Bees of Arizona: Pollinator Networks in Urban Landscapes.



Fall 2016: Included biology, applied computing and statistics majors

CURE #2: Capsaicin Analysis in Hot Peppers



Student Population

Student Population at ASU-West

- ASU – West is a Hispanic Serving Institution (HSI).
- 55% first generation college students, the largest percentage of any College at ASU.
- Undergraduate only, no graduate program.

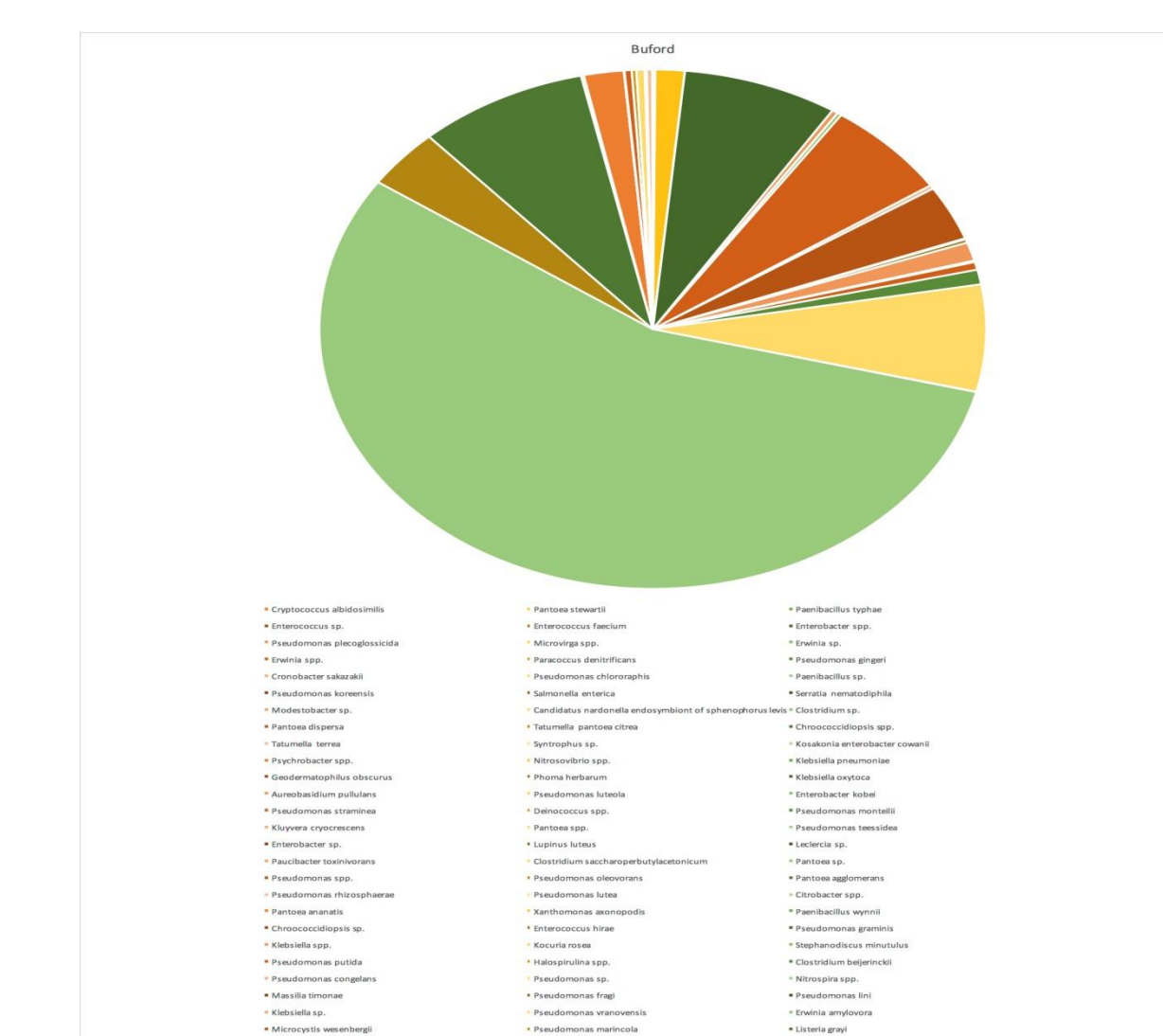
Student Population in CUREs:

- Open to all students interested in a course-based undergraduate research experience, regardless of career goals. INTERDISCIPLINARY by design.
- Freshman biology sequence prerequisite for the Biology, Environmental Science, and Forensic Science majors, the of BIO181/182,
- No prerequisite for applied math, computing, and statistics majors.

CURE #3: Phytotoxicity and Phytoremediation of Mine Site Soils



CURE #4: Topics in Environmental Microbiology



Evaluation

Evaluation Questions (External Evaluator – RMC Research Corporation Dr. John Sutton)

- To what extent does the universal CURE framework help to standardize **teaching of common components of scientific inquiry across modules?**
- To what extent have CURE **classes been integrated into the degree programs?**
- To what extent does CURE classes **broaden participation of underrepresented groups?**

We will test this with a several field tested, published universally available instruments so we can directly assess our CURE modules, comparing them to each other, students at West campus who have not enrolled in an CURE, and other programs in the United States, as suggested by Beck et al. [8]

Project Objectives

- Increase CURE students’ understanding of the scientific method, experimental design, and data analysis and inspire research focused career goals.
- Develop a universal framework any CURE can utilize for maximum learning and disseminate via CURE conference in Spring 2020.
- Transform the institution to one that supports high numbers and levels of engaged STEM students, particularly first-generation and under-represented groups in STEM.
- Science majors will synergize with the quantitative majors to develop excellent peer rapport and peer-peer teaching.
- Publish results of the CURE projects with student co-authors.

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