EPSCoR

iUTAH

Workforce Development

Purpose & Vision

- Enhance the STEM workforce by developing programs that will inspire students to choose STEM careers, promote retention in STEM degrees, and enhance success of faculty in STEM disciplines

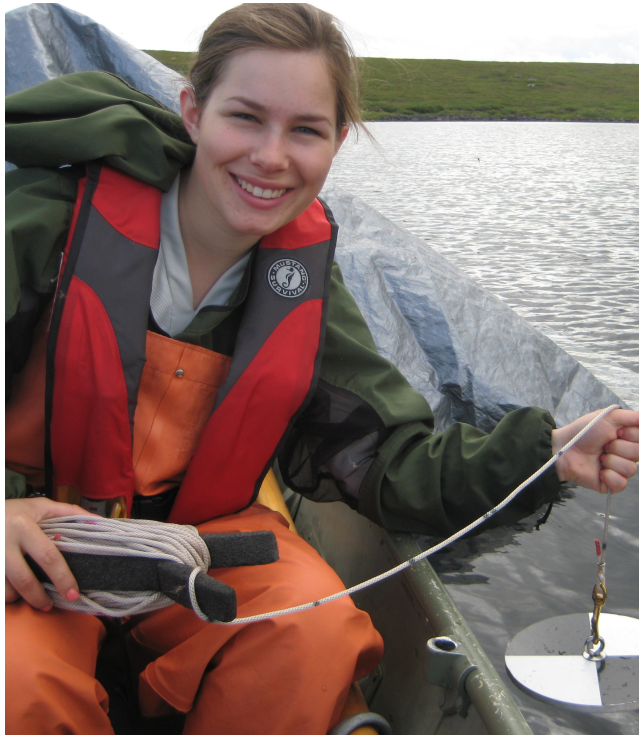
- A strong STEM workforce is critical to building and sustaining research capacity and economic growth.

People

- Team Leads
  - Tami Goetz (coordinator)
  - Holly Godsey (EAST-like program)
  - Bob Ramsey/Chris Keleher (industry internships)
  - Louise Stark (Summer Institutes)
  - Brian Avery (undergraduate research)
  - Todd Crowl (Faculty Research Fellowships)
- Researchers at R1 and PUI institutions
- Industry partners

Goals

- Integrate research and education
- Create near-peer mentoring
- Encourage diversity
- Build public-private partnerships



Objectives

- K-12 students: Engage at least 200 students annually
- K-12 teachers: Engage at least 40 teachers annually
- Undergraduate students: Engage at least 30 undergraduate students annually

Objectives, cont.

- Graduate students: Engage at least 20 graduate students annually
- Postdoctoral researchers: Engage at least 3 postdoctoral scientists annually
- Faculty: Provide research funds for at least 10 annually

Activities

- iUTAH-WEST (Water, the Environment, Science and Teaching) Fellows
- iUTAH Summer Institutes
- Collaborative Research Experiences for Undergraduates
- Industry Internship Program

Activities, cont.

- Water Sustainability Graduate Research Fellows
- iUtah Postdoctoral Fellowships
- iUtah Faculty Research Fellowships
- Annual iUTAH Symposium

Outputs

- Increase in students entering STEM pathways
- Increase in students graduating with STEM degrees (secondary and post-secondary)
- Increase in number of Utah companies offering internships

Outputs, cont.

- Increase in graduates entering STEM-based research activities
  - Internship participation
  - Near-peer mentoring
  - Undergraduate research
  - Graduate school
  - Employment in Utah STEM-based companies
- Increased community awareness
  - Increased participation in STEM events

Possible Challenges

- Industry-internship participation (students and companies)
- Activity monitoring
- Assessment
  - Metric development
  - Tracking data
- Dissemination of research and internship opportunities

Anticipated Impacts

- Greater support of university and industry research activities
- Increased effectiveness of research activities resulting in increased extramural funding and commercialization

Anticipated Outcomes or Impacts, cont.

- Increased participation in STEM activities
- Increased awareness of the importance of STEM education and workforce efforts that results in increased state funding

Target Numbers and metrics

iFellows:
12 Undergraduate Fellows from 3 Institutions impacted
24 K-12 Teachers
600 K-12 Students impacted
Other possible metrics:
Number of science courses taken in post-program years
Longitudinal study of impacted students entering college and/or scientific careers
Change in student attitudes toward science
Change in student attitudes toward water in Utah
CRT scores (may require IRB) in scientific disciplines

Industry internships:
10 interns per year = 40 total
15 participant companies
Other possible metrics:
pre- and post-surveys for intern success
Pre- and post-surveys for intern host satisfaction
Job placement

Target Numbers and metrics

Summer Institutes:
4 Summer Institutes
8 teams per institute and each team consists of 1 iUtah researcher, 1 teacher and 5 students = 32 teams, 32 teachers and 160 students
4 PU or research institutions
Other possible metrics:
content and technical knowledge gained
students taking subsequent STEM courses
pre- and post-surveys

Undergraduate research:
10 interns per year = 40 interns
3-5 institutions
10 iUtah researchers
Other possible metrics:
Pre- and post-surveys
Poster quality

Workforce Logic Model

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACT
INFRASTRUCTURE • PU and Research Institution lab facilities • Watershed sights • High school classrooms • Faculty (K-12 and Post-secondary) • Students (K-12 and Post-secondary)	**INFRASTRUCTURE** • Develop and implement recruitment, selection, placement and evaluation processes	**INFRASTRUCTURE** • Curric repository • Watershed data • Research network • Industry database • Faculty and students (K-12, post- sec)	**INFRASTRUCTURE** • Increase internships options • Increase student participation in research • Enhance K-12 engagement • Enhance watershed monitoring capacity	Improved research capacity and research data at all IHEs Increased student engagement and understanding of importance o hydroecologic processes Economic development through increased funding success, private partnerships and a better education and experienced workforce Increased support from industry Improved community engagement in water management issues Improved student and teacher performance in STEM-related areas
ENGAGEMENT • K-12 faculty and students • Post-Secondary faculty and students • Museums • Extension agencies • PU and Research Institutions	**PRACTICE** • Plan and implement Summer Institute • Plan and implement iFellows program • Create curriculum materials for institute and fellow program • Identify industry partners • Recruit inters and place in PU and Research institutions • Organize poster symposium and cohort support activities for REU and industry interns	**PRACTICE** • Proposal submission • Presentations • Publications • Posters • Research data generation • Community outreach materials • Curriculum materials for instruction and professional development	**PRACTICE** • Increase faculty participation in research internships • Improve materials for professional development • Enhance scientific capacity for secondary educators • Enhance faulty research capacity	
FUNDING State EPSCoR Office Industry partners	**INTEGRATION WITH RFA 1-3, CI** Identify stakeholders and their research focus	**INTEGRATION WITH RFA 1-3, CI** Research mentors	**INTEGRATION WITH RFA 1-3, CI** • Increased interaction between PU and Research institutions	