IUSE Proposal Preparation Webinar: Overview with a Focus on Community Colleges

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Patrick Shabram
Rosa Alcazar, Ph.D.
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This presentation is being recorded. The recording and slides will be available in the coming week at

https://aaas-iuse.org

Please note: The discussion break-out groups following the presentations will NOT be recorded.
Closed Captioning:

To download the transcript or view the full transcript, please click the “CC” button at the bottom of your screen.
The AAAS-IUSE initiative supports faculty, students, and the greater undergraduate STEM education community by disseminating research and knowledge about STEM teaching, learning, equity and institutional transformation.

Check out our website to learn more and view: [https://aaas-iuse.org](https://aaas-iuse.org)

- Blog
- Workshops
- Summer Labs On-Demand
- Resources
- Lessons Learned During COVID
- NSF IUSE Proposal Preparation Toolkit

@IuseProgram

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NSF Support for STEM Education at Community Colleges

Improving Undergraduate STEM Education (IUSE: EDU) – NSF 23-510

Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education – PD 21-7980

Ellen Carpenter, elcarpen@nsf.gov
Kalyn Owens, kowens@nsf.gov
Mike Davis, mdavis@nsf.gov
Agenda

• Overview of the IUSE: EDU Program
  • Program goals and expectations
  • IUSE tracks and levels
  • Program deadlines
  • Program resources

• Overview of the Advancing Innovation and Impact Program
  • Program goals
  • Potential outcomes of interest
  • Potential approaches of interest
What is IUSE: EDU?

- IUSE: EDU is a core STEM education program that seeks to promote novel, creative, and transformative approaches to improve STEM education for all undergraduates.
- The program is open to application from all institutions of higher education and associated organizations.
- NSF places high value on educating students to be leaders and innovators in emerging and rapidly changing STEM fields as well as educating a scientifically literate public.
- IUSE: EDU supports projects that seek to bring recent advances in STEM knowledge into undergraduate education, that adapt, improve, and incorporate evidence-based practices into STEM teaching and learning, and that lay the groundwork for institutional improvement in STEM education.
<table>
<thead>
<tr>
<th>IUSE: EDU Program Goals</th>
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<tr>
<td><strong>To build knowledge about STEM teaching and learning at the undergraduate level</strong></td>
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<td>Develop novel, creative, and transformative approaches to undergraduate STEM teaching and learning</td>
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<td><strong>To incorporate evidence-based practices in undergraduate STEM teaching and learning</strong></td>
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<tr>
<td>Adapt, improve, replicate, and include evidence-based practices in STEM teaching and learning for all undergraduates</td>
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<td><strong>To build and understand systemic change in undergraduate STEM education</strong></td>
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<td>Lay the groundwork for sustained departmental, institutional, or community transformation and improvement</td>
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What does IUSE: EDU expect?

• All IUSE: EDU projects are expected to increase knowledge about effective STEM education.
• This may be achieved through posing one or more research questions that will be answered through the course of the study OR through evaluation of project activities, impacts, or outcomes.
• Dissemination of findings is expected. Creative dissemination efforts are encouraged.
# IUSE: EDU Tracks and Levels

## Engaged Student Learning
- Increasing engagement and learning through new tools, resources and models
- Generating knowledge about student learning

## Institutional and Community Transformation
- Spreading and scaling up evidence-based practices using a “theory of change”
- Generating knowledge about the organizational change process

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<tr>
<th>Level 1:</th>
<th>≤ $400k, up to 3 years</th>
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<tr>
<td>Level 2:</td>
<td>$400k - $750k, up to 3 years</td>
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<tr>
<td>Level 3:</td>
<td>$750k - $2M, up to 5 years</td>
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<th>Capacity-Building:</th>
<th>$200k for single institution or $400k for multiple institutions, up to 2 years</th>
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<tbody>
<tr>
<td>Level 1:</td>
<td>≤ $400k, up to 3 years</td>
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Program Deadlines

• ESL and ICT Level 1 and ICT Capacity-Building proposals:
  • January 18, 2023 (and the third Wednesday in January thereafter)
  • This is a good place to start for institutions new to NSF or new to IUSE support

• ESL and ICT Level 2 & Level 3 proposals:
  • July 19, 2023 (and the third Wednesday in July thereafter)
Preparing a competitive proposal

- Start with a good idea
- Communicate clearly; check spelling, grammar, and readability
- Address the two merit review criteria: IM and BI
- State project objectives and questions as well as plans for evaluation
- Have plans for carrying out the proposed work; give specific examples
- Ground the project in relevant and appropriate literature (perhaps outside of STEM education!)
- Get appropriate expertise on board (co-PIs, senior personnel, advisory board, etc.)
- Ask colleagues (in and out of your field) to read and critique your proposal
Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education

**PD 21-7980**

*Encourages bold, potentially transformative projects that:*

- Advance innovative and evidence-based practices in undergraduate STEM education at two-year colleges.
- Address immediate challenges facing STEM education at two-year colleges.
- Enhance support for research, development, implementation, and assessment to improve STEM education.
- Support systemic approaches to advance inclusive and equitable STEM education practices.
NSF Funding Mechanisms

**Solicitation**
formal NSF publications that encourage the submission of proposals in specific program areas of interest to NSF

**Program Description**
broad, general depictions of programs or activities in an NSF Directorate, office, or division

**Dear Colleague Letters**
provide general information to the community; announce special opportunities for competitions or supplements to existing NSF awards
Approaches of Interest

- Improving student outcomes in foundational STEM courses
- Broadening and/or creating new STEM curricula
- Providing authentic research experiences, internships, experiential learning opportunities
- Increasing access to high quality STEM education through new technologies
- Re- or up-skilling incumbent workers for new STEM jobs
- Building STEM career and seamless transfer pathways
- Developing novel mechanisms to identify talent and recruit into STEM programs.

In all cases, this program is interested in projects that include substantive public and private partnerships that contribute towards advancing STEM education.
Preparing a Proposal for PD 21-7980

- Follow the PAPPG for proposal preparation guidance
- Build on prior fundamental and/or applied research in STEM education and provide theoretical and empirical justification for proposed projects as needed
- Applied research is not required but it is supported
- Knowledge generation may be achieved through an applied research study or through evaluation that engages the project team
- Result in field-tested outcomes and products that enhance STEM teaching and learning at two-year colleges.
Scope, Budget & Proposal Submission

- Open to all institutions of higher education and associated organizations
- Projects may focus on different time scales, from near-, to long-term challenges and opportunities, and can range from small, exploratory investigations to large, comprehensive projects.
- Proposal budgets should be commensurate with the scope and scale of the proposed work and level of effort.

Send two-page project summary to program officer for feedback. Check NSF website for Program Updates.

Proposals accepted at any time!
Target Date: May 1, 2023
THANK YOU for your interest in improving undergraduate STEM education!
Tips on Preparing an IUSE Proposal

AAAS-IUSE Proposal Preparation Webinar with a Focus on Community Colleges
December 5, 2022

Patrick L. Shabram
Front Range Community College Larimer Campus, Fort Collins, CO
Some background on me:

• First generation graduate.

• Prior to 2015, absolutely no experience with Federal grants.

• Was originally approached by an individuals at a non-profit NSF facility who wanted to work with community colleges but didn’t know many two-year faculty.
Original IUSE grant:

- GEO-PAths grant in collaboration with UNAVCO (2015-2020 - NSF # 1540588, 1540524)
  - A main focus of this award was for students to improve their knowledge of geoscience career options as well as gain skills in geoscience technologies, develop a suite of soft skills critical for success in a professional environment, and develop a network of peers.

- Currently working with second GEO-PAths grant (not IUSE).
Current IUSE grant:

- PRIMERS grant with University of Colorado Boulder in collaboration with University of Texas Rio Grande Valley (2018- Present - NSF #1811709 & #1821697)
  - Provide PD programs that support STEM instructor use of research-based instructional strategies (RBISs) and course design principles
  - Collaborate across three institutions to learn from one another how instructors are supported in their adoption of RBISs & course design
Some best practices.

• Read the solicitation carefully, then read it again.

• Propose something new (but not too new).

• Do a thorough literature review.
Collaborations have:

• Allowed leveraging of organizational experience.

• Offered legitimacy to programs, which helped administrative and institutional acceptance.

• Leveraged experience of education researchers to test outcomes of initiatives.
Some thoughts if you are at a two-year college and this is your first NSF proposal.

• Collaborate with someone with experience.
  • Understand the difference between collaborative grant and sub-award.

• Try to be the lead institution (and the PI rather than a co-PI).

• If not the lead institution, then get a collaborative grant rather than a sub-award.
If I could offer one piece of advice:

- **Put in budget for an assistant.**

Also:
- Be wary of co-PI college administrators.
- Understand how you should be compensated, and put that in the budget.
- Recognize that flexibility is anticipated.
www.frontrange.edu/geo-launchpad

www.frontrange.edu/primers

Patrick.Shabram@frontrange.edu

NSF Grants ICER 1540588, 1540524, 2119440, & 2117397  DUE 1811709 & 1821697
Hard won lessons from my first NSF IUSE grant

Rosa Alcazar, PhD
Five years working as an office clerk 9-5

Biology Instructor *(now tenured)*
Clovis Community College

- 45% Hispanic/Latino
- 25% First Generation
- 2-year degrees
- Transfer agreements w/ UC/CSU
- Dual Enrollment for HS students

Source: EMSI program Demand Gap Analysis (2020)
My IUSE Grant

- 1st submission rejected (not a co-PI)
- 2nd submission success (as a co-PI!)
- Collaboration CIW/JHU/CCC
Pay Attention When Writing a Grant

- **Specific Aims**
  - Stand on its own
  - Excite many different people
  - Revise, revise, revise

- **Rejection is redirection**
  - Don’t marry your proposal
  - Listen to your program officer
  - Regroup and resubmit
Capacity Building Requires a Support Network

- Your Department (Chair, Faculty, Counselors)
- Administration (Dean, VP, President)
- Finance Office (create budget, process invoices)
- Grants Office (preparation, submission)
- Institutional Review Board (protect human subjects)
- Office Institutional Research (conduct assessments)
- Marketing (web developer, social media)
Two Additional Considerations

● Non-Lead vs Lead
  ○ Pro: Benefit from other expertise
  ○ Con: Less control and money

● Your Effort
  ○ Course Release: Expensive, some politics
  ○ Overload: Stressful, less free time
Acknowledgements

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Oxana Aghaei, Scott Trippel
Maria Elena Zavala, CSUN, HSI Hub

C-MOOR
Frederick Tan and Alan Boss, Carnegie
Jai Won Kim and Gerard Lemson, JHU
Katie Cox and Joel Schildbach, JHU
Mike Ferrara, NSF

GDSCN
Mike Schatz, JHU and Jeff Leek, Hutch
Shurjo Sen and Christina Daulton, NHGRI
Eric Baer
Highline College (Washington)

PI - Faculty as Change Agents: Transforming Geoscience Education in Two-year Colleges (IUSE 1524606) [ICT]

PI - The Math Your Earth Science Majors Need, When They Need It: Improving Quantitative Skills in The Future Earth Science Workforce (IUSE 2234247) [ESL - 2]

Co-PI on other awards outside of IUSE (current and expired)
My lessons learned:

• Reach out to the program officer
• Every community college is different (and changes) – You will have to negotiate your system
• Make sure you REALLY want to do the project. Don’t chase money
• Make sure you know what the intellectual merit is
• Are there easier sources of funds for you to do the work?
• Think about evaluation early
• Sketch out a budget
Dear [PO name]
I am considering submitting a proposal to [Program, track, etc.]
My project will... [What will you do, what is the IM and BI, etc.]
[A couple of sentences on your background and institution.]
I would like to discuss the suitability of my proposed research for this program any other information that might be helpful.
[Any other questions you might have]
I look forward to your response and can provide any additional information you may need. I am available for a phone conversation...

Keep lines of communication open... Write a thank you with key points from conversation
My lessons learned:

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• Every community college is different (and changes) – You will have to negotiate your system
• Make sure you REALLY want to do the project. Don’t chase money
• Make sure you know what the intellectual merit is
• Are there easier sources of funds for you to do the work?
• Think about evaluation early
• Sketch out a budget
And, of course....

• Read the solicitation before, during and at the end of the process.
• Have someone on your team that knows the PAPPG
Breakout Room Options

Main Session: Q&A with NSF Program Officers (recorded)

Breakout Rooms with PI presenters (not recorded)
Thank you for attending!

Slides and recording will be available in the coming week.

We value your feedback, please take a few minutes to complete the survey.

@IuseProgram  https://www.aaas-iuse.org  AAAS IUSE Initiative

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