



## The NMSU STEM+ Education Research Institute

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Name: STEM+ Education Research Institute

Home College(s)/School(s): Office of the VP for Research, Creativity, and Economic Development (RCED)

Home Department(s) or Unit(s): Research Cores Program (RCP)

Primary Contact Person: Dr. Luis Cifuentes

Formed by Provost Approval: May 15<sup>th</sup>, 2023

Overview/Summary:

### *Definition:*

“STEM” is an acronym for Science, Technology, Engineering, and Mathematics, whereas “STEM+” represents multidisciplinary equity-focused intersectional activities that include the humanities, arts, allied health, community needs, and global concerns.

### *Motivation:*

1. Broadly, the Institute will bring together faculty members from different departments, colleges, and disciplines to generate novel methodologies and knowledge that address grand challenges in STEM+ education in K-12 and higher education.
2. STEM+ Education research is fundamentally cross-disciplinary, and projects often involve a PI from both a STEM discipline and an education discipline. Ergo, activities naturally draw from multiple colleges.
3. STEM+ Education research provides an opportunity to identify and implement best practices that address vital diversity and inclusion challenges germane to the unique population NMSU serves. These best practices are of value at the local through national levels.
4. STEM+ Education research funding opportunity is currently high among federal funding agencies.

### *What is being proposed:*

Establish a cross-college, multi-departmental STEM+ Education research institute that is a comprehensive source of information and support for faculty teams involved in STEM+ education research, scholarly and creative inquiry, and outreach.



## Purpose and Mission:

### *Purpose:*

1. The Institute will facilitate seamless interdisciplinary and cross-college interactions between technical and educational components of STEM+ Education research projects.
2. The Institute will enable efficient resource sharing, including communications, fiscal oversight, evaluation, web presence, and proposal development support/content development for participating faculty and faculty teams.
3. The Institute will provide programmatic visibility and advocacy, for example:
  - As a demonstrable institutional resource within funding proposals, with a website, identified leadership structure, charter, etc.
  - Achievements and opportunities (e.g., outreach activities) will be disseminated to the local, regional, and national communities of interest.
  - Institute projects, faculty, and interests will be represented in strategic planning discussions with university leadership
  - Institute projects, faculty, and interests will be represented at the state and national levels
4. The Institute will promote practical approaches for broadening participation in STEM+ and improving success/retention in STEM for both students and educators.
5. The Institute will provide faculty and teachers with professional development in effective STEM+ pedagogies.

### *Mission:*

1. Create a locus for STEM+ Ed research excellence that attracts talented faculty and staff, stimulates research, and fosters collaboration at NMSU.
2. Enhance STEM+ success at all levels for all students, particularly those traditionally underrepresented in STEM.
3. Contribute to the diversification of the STEM+ workforce and will attract and retain faculty who represent the diversity of the state of New Mexico. This will be accomplished by NMSU's professional development of teachers and faculty to support the implementation of inclusive teaching practices and by using the institutions equitable and inclusive faculty hiring and retention practices.
4. Achieve a high institutional success rate for STEM+ Ed grant proposals to leverage and reinvest associated funds back into the Institute as a mechanism for capacity building (e.g., hire staff, postdocs, and students; fund projects and pre-proposal activities; fund community outreach/engagement; support faculty hires).



5. Implement assessment tools and methods verifying that intended diversity, equity, and inclusion impacts are being met in all STEM+ research and education aspects.

*Explain why this activity could not be as successfully carried out in an existing department or Center:*

1. With limited institutional resources, moving in a common direction and sharing resources is wise and will enable a scope of activity beyond what a department can accomplish alone.
2. A centralized structure is a neutral space for cross-college interactions and collaborations.
3. A centralized structure will provide visibility and identity versus having the effort spread across multiple colleges (e.g., multiple college websites and management structures, etc.)
4. The Institute will illustrate an NMSU commitment to STEM+ Ed research, where multiple colleges can contribute and leverage their strengths and resources.

### Organizational Structure and Governance

*How will the Center be organized?*

The institute will report to the Vice President for Research, Creativity, and Economic Development (ARP 11.01), who will be responsible for the overall administration of the Institute. The Institute will comprise a central management team (the hub) that coordinates and supports the activities of participating faculty members (the spokes) from across campus. The central team will manage interactions among departments, schools, and colleges. The Institute director will lead the hub and report to the Vice President for Research, Creativity, and Economic Development through a Council of Participating Deans, which will have operational oversight of the Institute (see below).

The management team will include the following:

1. Director
2. Project Manager (0.25 FTE initially, RCED) \*FTE will depend on the level of research activity.
3. Administrative assistant (0.5 FTE initially, RCED) \*FTE will depend on the level of research activity
4. Proposal development specialist(s) (RCED)
5. Web development specialist (RCED)
6. Fiscal monitor (ASC)

*Faculty and Staff Participants:*

The participation of interested faculty and staff will be approved through existing mechanisms for determining the allocation of effort, with initial approval from the direct supervisor (e.g., Department Head) followed by the Dean or Associate Dean for Research from their college. Institute membership will be active for three years, and renewal will be contingent on ongoing participation in activities germane to the purpose and mission of the Institute. At a minimum, Institute participants will act as principal investigator, co-principal investigator, support person, or collaborator on at least one funded Institute project or submitted proposal during any 3-year



membership period. The Council of Participating Deans will establish additional details of membership.

*Advisory Board:*

An Advisory Board will comprise the Institute Director and one faculty member from each participating college. The Advisory board will coalesce the input, concerns, and ideas of participating faculty/institute members and make recommendations to the Council of Participating Deans.

*What will be the governance and administrative structure? How will its leadership be identified, and to whom will its leadership report?*

Programmatic oversight, personnel management, and strategic vision will be provided by the Council of Participating Deans, including one Dean or Dean's appointee from each college with participating faculty or staff in the Institute. A Council Chairperson will be determined annually during the first week of August and will be the council member whose college has the most Institute participants. The Council Chairperson will call meetings, set meeting agendas, and cast the determinant vote in case of a tie. The Council of Participating Deans reports to the Vice President for Research, Creativity, and Economic Development. Upon request, a Council representative will provide an update on institute activities to the Faculty Senate. The Council of Deans will determine the composition and participation of any external/non-NMSU members of the advisory board.

*By what process is the director appointed and evaluated?*

The founding Institute director will be identified by a national search and report to the Council of Participating Deans. The Council will establish details of this hire or appointment. The director's performance will be evaluated annually by the Council Chairperson. The Director will be a tenure-track faculty member. Prior to hiring of the founding Institute director, an interim director will be assigned with approval of the Council of Participating Deans, Vice President for Research, Creativity, and Economic Development, and Provost.

*What are the proposed responsibilities of the director?*

The Institute director will be responsible for identifying extramural funding opportunities, formulating teaming strategy and logistics for grant efforts, and leading and assisting with proposal development, budget management, fiscal planning, program staffing, and strategic visioning. The director will be active in the field of STEM education research and will maintain an active, funded research program within the scope of the Institute.



## Financial Support.

The Institute requests a centrally funded, 5-year commitment to the salary + fringe of the Institute Director. Other program management team staff time/effort (administrative assistant, proposal development specialist(s), web developer, fiscal monitor, etc.) will be provided by the Office of the Vice President for Research, Creativity, and Economic Development.

The Research Cores Program will provide accounting support in collaboration with the Aggie Service Center. The Institute Director and Council of Deans will have spending authority over all Institute programmatic funds.

Recovered indirect cost funds represent a means for the strategic growth of the Institute and will also fund a portion of the operating costs (e.g., management team staff). Therefore, indirect costs that are usually allocated to the college (i.e., 44.325% of the total recovered IDC) will be split between the participating college(s) (70%) and the Institute (20%), and the PI(s) (10%).

The Institute will pursue State support through the RPSP project request process. Those requests would target the expansion of Institute activity and support of additional Institute positions in strategic areas identified by the Advisory board and the Council of Participating Deans.

## Administration of Grants

*If grants run through the Center, will they be administered by the Center or the PIs home department?*

The Institute will administer grants that run through the Institute.

*What process will be used to assign or share credit for extramural funding between the Center and the Principal Investigator's department?*

Research credit for extramural funding will be apportioned to the department(s) of the Principal Investigator(s) in total. For multiple PI grants, the credit allocation will follow the values specified by the team on the Proposal Award Form at the time of proposal writing.

## Staffing

*By what mechanism is the participation of new members/participants solicited?*

Institute activity will be shared widely within faculty communication venues at new faculty orientation, and we expect word-of-mouth to be the primary mechanism for new member solicitation.

*How are participants' activities (faculty and staff) allocated or credited among participants' various units? What procedures are in place to support such discussions?*



The Council of Participating Deans will decide on questions of credit allocation (of any kind).

*How will administrative support be provided? Is staffing adequate? If an existing unit will provide such support, explain and ensure that support is specifically endorsed in a letter of support.*

As indicated above, the management team will include the following:

1. Director
2. Project Manager (0.25 FTE, RCED)
3. Administrative assistant (0.5 FTE, RCED)
4. Proposal development specialist(s) (RCED)
5. Web development specialist (RCED)
6. Fiscal monitor (ASC)

### Space

*Where will the Center's staff and activities be housed?*

Initially, Institute activities will occur in the shared spaces of participating colleges and those of the Office of the Vice President for Research, Creativity, and Economic Development. RCED will provide the Institute Director's office. Administrative support staff and proposal development specialists will also be initially housed at RCED.

*Is the space adequate?*

Yes, initially, available and shared space from the participating units will be sufficient.

*If there is a need for more space, what plans exist to accommodate this need?*

If additional space becomes necessary, the Council of Participating Deans will ask the University Space Committee to identify options for extra space.

*Have the departmental/sponsoring unit and school/college facilities staff been consulted?*

Yes, we have had a large working group of faculty and senior administrators (~15 regular attendees) discussing this project and Institute every two weeks for the period of a year.

*If an existing campus unit or an academic department will provide such space, include this information in the letters of endorsement.*

In process.



*Has the Office of Space Management been consulted and informed of the space to be used by the Center?*

In process.

#### Life Cycle: Growth or Discontinuation

*Under what circumstances might the unit evolve into a department?*

The Institute would not evolve into a department but could be absorbed by a department. This might occur if the scope of Institute activity is narrowed to include faculty from only one department.

*Under what circumstances should it cease to exist? For example, Centers should be closed when faculty cease to participate or when new leaders cannot be identified or when external resources that support the Center are no longer available. The proposal must include specific “sunset” provisions appropriate to the Center being proposed.*

The Vice President for Research, Creativity, and Economic Development will have sole authority to dissolve the Institute, with approval from the NMSU Chancellor and Provost. It may include reasons such as lack of participation, lack of funding opportunities, lack of measurable impacts, etc.

Upon dissolution of the Institute, remaining recovered indirect costs in Institute overhead accounts will become part of the research investment funds of the Office of the Vice President for Research, Creativity, and Economic Development.

#### Evaluation

*What is the proposed evaluation process for the Center?*

The Vice President for Research, Creativity, and Economic Development will be responsible for regular evaluation of Institute performance and will do so annually, with the input of an evaluating body external to the institute. The assessment approaches will determine the extent to which the Institute meets its purpose and mission.

The evaluation will include information from the Institute Director (e.g., an annual report), from participating faculty, Institute staff, and other stakeholders who have contributed to the Institute efforts. The evaluating body will use all this information from different perspectives to assess whether the Institute is fulfilling its purpose and mission if improvements are needed and if the Institute should persist. This includes regular tracking of related metrics including, but not limited to: The number of proposals submitted and awarded each year, total funds raised and awarded,



the number of disciplines reflected in key personnel, the number of articles published from the grants, number of early career faculty and postdoctoral researchers supported by the donations, and the number of external agencies (e.g., school districts) who partner in the grants and who receive the results,

The Vice President for Research, Creativity, and Economic Development will present an annual report to the Advisory Board and the Council of Participating Deans using the metrics above and others determined to be relevant to the institute evaluation. The Council of Participating Deans will issue directives for a new strategy or corrective actions based on these reports annually.