

Supervised Undergraduate Research Experiences (SURE)

A Program for Women and Underrepresented Minorities¹ in STEM Disciplines

Request for Applications

DEADLINE DATES:

RFP ISSUE DATE: (October 22, 2021)

Last day for questions and answers about this RFP: (November 12, 2021)

Proposals due: (November 30, 2021, 4:30 PM Central Time)



LA EPSCoR

LOUISIANA ESTABLISHED PROGRAM TO STIMULATE COMPETITIVE RESEARCH (EPSCoR)

Sponsored By:

**The National Science Foundation and the
Louisiana Board of Regents**

1201 North Third Street, Suite 6-200

Baton Rouge, Louisiana 70802

(225) 342-4253

<https://web.laregents.org>

¹ Blacks or African-Americans; those of Hispanic or Latino ethnicity; American Indian or Alaskan Natives; Native Hawaiian or other Pacific Islanders; or those with disabilities (e.g., hearing, visual, or mobility impairments)

A. Program Overview

One of the goals of the Louisiana Established Program to Stimulate Competitive Research (LA-EPSCoR) project, funded by the National Science Foundation (NSF), is to increase the participation of women and other underrepresented minorities in STEM (Science, Technology, Engineering, and Mathematics) fields.

The LA EPSCoR Supervised Undergraduate Research Experiences (SURE) program seeks to further this goal by fostering opportunities for such students who conduct supervised research under the mentorship of a faculty member in areas directly related to materials and advanced manufacturing themes. Priority will be given to research topics relevant to the two LAMDA Science Driver areas described in Section A.1, as well as emerging areas of data-driven materials science and machine learning with applications to manufacturing. Other topics relevant for advanced manufacturing are also acceptable. Students will have the opportunity to become engaged in a professional researcher's work, to learn how he or she formulates a hypothesis, develops a plan to investigate it, obtains research funding and other resources, gathers and examines evidence, encounters obstacles, and evaluates and shares results with the scientific community. By participating in research, students have the chance to learn more about the advanced manufacturing field of study and can use the experience to help them decide whether or not to pursue further education by attending graduate school.

A.1. Louisiana Materials Design Alliance (LAMDA) Overview

LAMDA's research program represents a convergence of machine learning (ML), experimental and computational materials science and engineering (MS&E), and additive manufacturing (AM). The LAMDA research program is anchored by two Science Drivers: Complex Concentrated Alloys (CCAs) with balanced mechanical performance (SD-1) and AM-compatible Thermoset Shape Memory Polymers (TSMPs) with enhanced service life (SD-2). Using ML-guided materials design, LAMDA research will predict composition and processing variables for CCAs and TSMPs capable of meeting multi-criteria specifications. The SDs are supported by three Science Enablers (SEs): AM Process Monitoring (SE-1), Multiscale Mechanical Testing and Simulations (SE-2), and Multiscale Structural Characterization (SE-3). Detailed data from AM-process monitoring, structural characterization across length scales, and multiscale mechanical property measurements will provide the foundations for an ML-guided framework for AM materials design and structural integrity assessment, positioning LAMDA for sustainable excellence in AM materials research and education.

B. General Information

B.1 Program Goals

- Increase the participation of women and underrepresented minorities in STEM (Science, Technology, Engineering, and Mathematics) fields
- Motivate students toward advanced education and careers in STEM fields
- Give students a clearer idea of their options for a future in research
- Encourage students to attend graduate school
- Provide opportunities for students to learn modern research and laboratory techniques
- Provide mentors assistance to enhance their research programs

- Improve student written and oral communication skills

B.2 Eligibility

Students: The SURE program is available to full-time² undergraduate students who are matriculated at a Louisiana public institution of higher education, or in a higher education institution that is a member of the Louisiana Association of Independent Colleges and Universities (LAICU). Eligibility is further limited to female students or students (male or female) who are considered underrepresented minorities by NSF: i.e., Black or African-American; Hispanic or Latino; American Indian or Alaskan Native; Native Hawaiian or other Pacific Islander; or those students with disabilities (e.g., hearing, visual, or mobility impairments). Students who are not yet enrolled full time may apply as long as they will be enrolled full-time at the time the SURE research experience begins. Students who will have completed their bachelor's degree before the research experience begins are not eligible.

Faculty Mentors must hold a faculty position at a Louisiana public institution of higher education, or in a higher education institution that is a member of the Louisiana Association of Independent Colleges and Universities (LAICU), in a STEM discipline supported by NSF. Faculty mentors need not be currently funded by CIMM.

Students and Faculty Mentors can be from the same institution or different institutions.

Eligible Disciplines are those STEM fields that are directly related to materials and advanced manufacturing themes. Priority will be given to research topics relevant to the two LAMDA Science Driver areas described in Section A.1 as well as emerging areas of data-driven materials science and machine learning with applications to manufacturing, but other topics relevant for advanced manufacturing are also acceptable.

B.3 Award Amounts

Students accepted for the SURE program will receive a stipend/scholarship of \$4,500. This amount is based on a level of effort consistent with no less than 320 total hours of work. Faculty mentors will receive a supplemental grant of \$500 per student for the purchase of research supplies associated with mentoring students, travel by students/mentors to meetings or conferences to present research findings, or other expenses directly related to the SURE project. The funds for both the stipend/scholarship and the Faculty Mentor supplemental grant will be made available to the Faculty Mentor's institution as a subcontract. Indirect costs (i.e., overhead) are not allowed under this program. The research experience must be completed within one year of the award date.

Prior to submission of a SURE grant application, campus grants administrators must confirm, to the best of their ability, that student applicants are eligible to receive SURE funding, and determine the impact of SURE funding on other sources of financial support received by the student applicants. Consistent with the purpose of the program, SURE funds must be provided supplementary to other student financial support unless campus restrictions strictly prohibit it. Prior to accepting a SURE award, the campus will be asked to determine the terms upon which the student awardee will be paid and formally notify the Board of Regents. These provisions will be made a part of any subsequent contract from the Board of Regents. If a SURE student

² Students with disabilities that prevent them from enrolling full-time are exempted from this requirement.

applicant holds a scholarship, fellowship, or other financial support from the campus, this should not be cancelled, suspended or replaced, in whole or in part, by SURE funds unless the student is notified in writing, prior to acceptance of the award, of the impact the SURE award will have on this support. If a student awardee is not fully informed of said impact, the Board of Regents will reserve the right to require return from the campus of any or all SURE funds provided for the student awardee.

B.4 Duration of Research Experience

Students are expected to complete the research experience over no more than three consecutive terms/semesters, which may include summer. For example, a research experience may be completed in one summer; over summer and the following (fall) semester/term; or over spring, summer and fall semesters/terms. The period of performance is to be January 1, 2022 – December 31, 2022.

B.5 Student Responsibilities

- Dedicate a level of effort consistent with no less than 320 hours of work over the course of the research experience
- Participate in seminars, workshops, discussion groups, and other activities as required by the Faculty Mentor
- Complete a program evaluation form
- Respond to queries from LA-EPSCoR after completion of the research experience for program evaluation purposes and reporting to NSF

B.6 Mentor Responsibilities

- Assist student in defining project goals, timeline, and structure
- Communicate expectations to the student regarding work hours, laboratory protocols, and evaluation of the student's performance
- Meet with student regularly to discuss progress and offer suggestions, feedback, and constructive criticism
- Respond to queries from LA-EPSCoR after completion of the research experience for program evaluation purposes and reporting to NSF

B.7 Selection Criteria

Applications will be reviewed according to the quality of the proposed research described in the SURE Student Application Form, the student's interest in pursuing an advanced degree, the letter of recommendation from the Faculty Mentor, and other information provided in the Application Form.

| Criteria | Possible Points |
|---|-----------------|
| Letter of recommendation from faculty member(s) | 50 points |
| Quality of proposed research | 30 points |
| Interest in pursuing an advanced degree in graduate or medical school | 10 points |
| GPA | 10 points |

C. Proposal Submission

The proposal must be submitted by the PI to the Board of Regents through the LA EPSCoR online submission system, <https://laepscor.piestar-rfx.com/opportunities>, no later than the close of business day (4:30 p.m.) on Tuesday, November 30, 2021. All proposals must include a certification letter that the proposal has been approved by the submitting institution's authorized representative (see template provided).

D. Reporting and Evaluation

Annually the LA-EPSCoR office must submit a report to NSF summarizing progress toward its project goals. At the conclusion of your SURE contract, the principal investigator shall submit the SURE report modules via an online reporting system and must respond to the questions within 30 days.

It is also requested that the faculty mentor and/or student respond to requests for information (e.g., current educational/career situation) each year for five years after completion of the research experience to assist LA-EPSCoR in assessing the long-term effectiveness of the program.

E. Questions about this RFA

Specific questions concerning this RFA and the requirements set forth herein should be directed **in writing** to jessica.patton@laregents.edu. Questions will be accepted and answered through **12 November 2021**. A running compilation of all questions asked about this RFA and all answers provided in response to those questions will be periodically posted on the BoR website at <https://web.laregents.org>.

F. Attachment

SURE Student Application Form

Last Name:

First Name:

Personal Information:

Gender:

Ethnic Background:

Racial Background: (mark one or more boxes)

☐ American Indian or Alaska Native

☐ Asian

☐ Black or African American

☐ Native Hawaiian or Other Pacific Islander

☐ White

Do you have a disability that limits your activities?

If yes, please explain:

Contact Information:

Email Address:

Phone number (with area code):

Mailing Address:

Line 1:

Line 2:

City:

State:

Zip:

Permanent Address (if different from above):

Line 1:

Line 2:

City:

State:

Zip:

Academic Information:

Current Undergraduate Institution:

Current Major/Minor:

Current Standing (Year)

When do you expect to receive your bachelor's degree?

GPA (out of 4.00):

Do you have prior research experience?

Are you currently receiving any stipends or involved in another research experience for undergraduates (REU)? If yes, please mention title, funding source, and duration:

Future Educational Plans:

I plan to enter this school:

I am currently considering: (check all that apply)

- ☐ Graduate School
- ☐ Medical School
- ☐ Have not decided yet
- ☐ I don't plan to pursue further education

Proposed Research Project: Student must first contact a Faculty Mentor and discuss the proposed research project. The proposed project may be your idea, one suggested by your Faculty Mentor, or a combination of both.

Name of Faculty Mentor:

Email Address:

Phone number (with area code):

Faculty Mentor Institution/Department:

Title of Proposed Research Project:

Proposed Duration of Project (weeks):

Abstract of Proposed Research Project: (max 250 words)

For Student to complete: What are your expectations for your SURE experience?: (max 250 words)

Letter of Recommendation from Faculty Mentor

A letter of recommendation from the Faculty Mentor who has agreed to sponsor your research experience is required. This letter should address your potential as a researcher, and the potential benefits of the research experience to your education and career, as well as any other pertinent information. No other letters of recommendation are allowable.

INSTITUTION
Authorized Sponsored Programs
Representative Office

<Date>

Ms. Jessica Patton
Federal Program Administrator
Board of Regents, State of
Louisiana 1201 North 3rd Street,
Suite 6-200 Baton Rouge, LA 70802

Dear Ms. Patton:

<Institution> agrees to participate as a subrecipient in the proposed project entitled "<Title>." The <institution> portion of the work as described in the attached proposal will be under the primary direction of <principal investigator>.

The amount requested for <institution>'s participation in this research project is **<total budget amount>**. <Institution> has reviewed and approved the budget and budget justification for this proposal.

We look forward to a rewarding and productive research effort.

Sincerely,

<Authorized Organization Representative>

<Office of Authorized Organization Representative>

Enclosures: <Any necessary attachments>