



REQUEST FOR PROPOSALS 2022 SUMMER UNDERGRADUATE RESEARCH PROGRAM

Guidelines

Submit proposals via email to chadwell@calpoly.edu with the subject line: **SURP 2022**
Submission Deadline: **May 2, 2022**

Direct questions to Charles Chadwell, Associate Dean for Safety & Infrastructure (chadwell@calpoly.edu)

This Request for Proposal (RFP) is issued to solicit research topics in support of the 2022 College of Engineering Summer Undergraduate Research Program (SURP). Details of the CENG SURP are available in Appendix A of this RFP.

Who Can Apply?

All College of Engineering (CENG) faculty, including lecturers, are eligible to submit research topics for the 2022 SURP.

Is there a specific proposal format (**not to exceed two-pages**)?

Proposals are to be submitted online and will include the following elements:

1. Research project title
2. Number of students to be supported. *Due to funding limitations this year, it is strongly recommended that projects be scoped to 2 students.*
3. One paragraph description of the research project
4. Project impact statement (see Appendix A for goals of the CENG SURP)
5. Project emphasis area and expected outcomes (see Appendix A for specific emphasis areas)
6. Planned student-faculty co-authored publication(s) or other external scholarship validation

What review criteria will apply?

Proposals will be evaluated and ranked according to the following criteria:

1. Alignment of project with goals of the CENG SURP
2. Strength of proposal emphasis area outcomes
3. Program-level mix of emphasis areas
4. Potential for faculty-student co-authored publications or other external scholarship validation

Can faculty submit more than one research topic?

Yes. However, there is no guarantee that any submitted topic will be selected or funded. A maximum of 2 proposals is recommended.

Proposal Submission Process and Deadline

Proposals are submitted via email to chadwell@calpoly.edu with the subject line: **SURP 2022**

Submission Deadline: **May 2, 2022**. A review committee consisting of at least three CENG faculty will evaluate and rank proposals and you will be notified if your proposal was funded.

When does SURP start and how long does it last?

SURP is an 8-week long program, and SURP students are expected to spend at least 20 hours/week working on their research projects. SURP students and their faculty mentor agree upon a start date for their research project that falls within the summer 2022 quarter. While the 8-week SURP project must be completed during the summer 2022 quarter, the 8 weeks need not be contiguous. SURP students may not use any time worked beyond 20 hours/week to shorten the 8-week duration of the program.

How will students be selected for SURP 2022 participation?

All selected research topics and associated faculty mentors for SURP 2022 will be posted on the college website: <https://www.ceng.calpoly.edu/surp/> and all CENG undergraduate students will be invited to apply. During this RFP process, student(s) will be encouraged to discuss their application with the faculty mentor of interest. A faculty review committee in concert with the Dean's office will review the applications and work with the identified faculty mentor to make a final decision and inform the selected student participants.

How much compensation will faculty mentor receive?

We are actively encouraging projects that involve two students. If a research topic is selected for SURP, the faculty mentor will receive a faculty service payment of \$2,000 for mentoring a two-students project. If there is a strong case for a single student or more than two students, the incremental amount of faculty compensation for each student is \$500 (i.e. \$1500 total faculty compensation for a single student project or \$2500 for a three-student project). This payment will be processed upon completion of SURP.

How much compensation will each SURP student participant receive?

Each SURP student participant will receive a CENG Summer Research Grant of \$3,500. SURP students will not receive additional funding for working more than 20 hours/week or for more than 8 weeks. This grant will be disbursed through the Financial Aid Office.

Can a student receive funding for working on more than one research topic?

No. A selected student can receive only one CENG SURP research grant.

Can a student participate and receive funding from multiple SURP programs?

No. Other colleges at Cal Poly run SURP programs and may permit CENG students to participate. However, students are limited to participation in only SURP program at a time at Cal Poly.

What are the expectations of the faculty mentor?

The faculty mentor is expected to be an active, engaged participant throughout the project duration. Additionally, the faculty mentor is expected to ensure that the student researcher(s) prepare and present a poster at the fall SURP Research Expo. See Appendix A for full details.

Where can I get more information?

Questions should be submitted to Charles Chadwell, Associate Dean for Safety and Infrastructure chadwell@calpoly.edu.

APPENDIX A

COLLEGE OF ENGINEERING SUMMER UNDERGRADUATE PROGRAM

BACKGROUND

The College of Engineering (CENG) initiated a Summer Undergraduate Research Program (SURP) in 2017. The purpose of the program is to provide research experience for our undergraduate students working alongside our faculty during the summer. This program will also support the scholarly efforts of our faculty through engagement with undergraduate students. We anticipate the work will lead to student-faculty authored publications in venues appropriate to the area of research conducted during the summer. Further, the program invites industrial and other external sponsors to provide university/industry collaborative research and project activities.

This program supports Cal Poly's educational mission as both faculty members and students are provided a significant opportunity for their professional growth. SURP students will gain valuable training in research methods and practices, professional experience, have opportunities to apply classroom knowledge and theories in a research setting, and work in a team environment. Through collaboration with faculty members and external sponsors, SURP students gain "Learn by Doing" research experience that will support their growth now as a student and set a foundation to build on as they pursue their career goals. Depending on the project, students may have tangible products such as data sets, hardware prototypes, software code, other forms of intellectual property, abstracts and/or research posters, and co-authored publications. SURP faculty participants are able to implement the teacher-scholar model while making progress in their area of research. Partnerships with industrial and external sponsors through SURP support the California State University's mission of preparing significant numbers of educated and responsible people to contribute to California's economy, culture, and future. Industrial and external SURP project sponsors gain a head start in cultivating professional relationships with talented and motivated SURP students.

The SURP will run during the summer quarter. The faculty project supervisor, in consultation with the respective CENG Associate Dean, may implement deviations from this schedule.

Each SURP participating undergraduate student will receive a research grant of \$3,500. SURP students will not receive additional funding for working more than 20 hours/week or for more than 8 weeks. For students, this will be a non-credit bearing co-curricular experience. In lieu of teaching credit or assigned time, faculty will receive faculty service payment of \$1,500 for each of their first two students in the program and \$1,000 for each of the next 2 students, with a maximum faculty service payment of \$5,000.

SURP GOALS

1. Help Cal Poly Engineering students develop professionally and enhance their portfolios for future employment.
2. Give opportunities for CENG faculty (including lecturers) to advance their research/project agendas over the summer quarter.

3. Provide opportunities for industrial and other external sponsors to work with Cal Poly faculty and students to advance connections, gain access to Cal Poly talent and capabilities, and engage in valuable collaborative activities.
4. Promote project focus in at least one *Emphasis Area*:
 - a. *Mentoring Emphasis* – PI will accommodate a breadth of student backgrounds, particularly lower-division students, transfer students, and first-time applicants. The PI will emphasize the student learning experience in the design and implementation of the project, and will participate in program evaluation efforts. Proposals in this emphasis area are encouraged to contain a diversity and inclusivity statement.
 - b. *Exploratory Research Emphasis* – PI will base project on new lines of inquiry with the goal of developing sustaining research programs/partnerships.
 - c. *Interdisciplinary Emphasis* – PI will partner with Co-Investigators from across departments and across colleges; students will be selected from multiple disciplines.
 - d. *Program Development or Partnership Emphasis* – PI will strengthen an existing research program by working with external partners/sponsors and by pairing older and younger students to establish continuity OR will create remote internship-like experiences with industrial or other organizational partners.

SURP TIMELINE

Winter Quarter:

- Request for Proposal (RFP) to CENG faculty (including lecturers) to solicit potential summer research project topics.
- Appointment of a minimum of three CENG faculty to a SURP review committee appointed by the CENG Associate Dean for Innovation Infrastructure.
- Solicit external SURP project sponsors. Financial commitments from CENG and Engineering Departments are finalized.
- Research project ideas from CENG faculty and external sponsors are screened and posted on the SURP website for students to review.
- Applications open for CENG undergraduate students to apply for SURP participation.

Spring Quarter:

- Financial commitments from project sponsors are finalized.
- The SURP review committee reviews the available financial support, the available faculty/sponsor projects, and the list of student applicants.
- The SURP review committee provides a prioritized list of projects to be sponsored and sends this list to the CENG Associate Dean for final approvals.
- Agreements are sent out to faculty, sponsors, and students selected for SURP and finalized.

Summer Quarter:

- SURP projects are active.

Following Fall Quarter:

- SURP participants publish their work to the Cal Poly Digital Commons.
- SURP participants prepare and present a poster at SURP Research Expo.

- Presentations on the SURP work are made available to the public and to project sponsors.

STUDENT EXPECTATIONS

- SURP research projects last 8-weeks and require at least a 20 hour/week commitment from the student participants. It is expected that SURP students will meet regularly with their faculty mentor to discuss progress on their project. SURP students are also expected to participate in campus events associated with the program that may take place after the summer (e.g., SURP Research Expo).
- The CENG SURP is open only to students working toward earning a baccalaureate degree in CENG (i.e., CENG students who have graduated are ineligible for SURP). Preference will be given to students completing their freshman or sophomore years who are applying to the SURP for the first time. Students must be in good academic standing at the time of their application to SURP and at the time of the beginning of SURP if they are selected for the program.
- Requests to be excused from SURP-related activities need to be made to the faculty mentor for the project and any industrial or external sponsor with at least one week notice in writing (except in emergency cases, as determined by the faculty supervisor). Requests to be excused from SURP-related activities may be approved with the understanding that the student will make up the missed research hours before the end of the summer. The expectation is that SURP students will complete the research goals of their project during the 8-week period by putting in the necessary time and effort to ensure a meaningful professional research experience.
- CENG will provide SURP participants with a CENG Summer Research Grant of \$3,500. Students are limited to participation in only one SURP program either in the CENG or other colleges at Cal Poly.
- SURP student may be dismissed from the program and/or have one or more grant installments withheld as a result of unsatisfactory performance in the program, as determined by the faculty mentor and any industrial or external sponsor in consultation with the Associate Dean. A written warning of unsatisfactory performance along with reasonable corrective action(s) to be taken by the student must be provided to the student by the faculty mentor at least one week before payment of a grant installment if withholding of a grant installment or dismissal is contemplated.
- As a SURP participant, the student will conduct research under the guidance of a CENG faculty mentor. The student may be expected to participate in project meetings, workshops, seminars, online evaluations, and field trips throughout the summer. A research/project definition document including a schedule of activities, expectations, and deliverables will be provided to the student during the first week of the program or upon request. While some amount of preparatory research (e.g., literature review) may be required prior to or as part of a project, the majority of his/her time shall not be spent on such preparatory work.
- The student may be required to report and reflect on his/her research experience using a variety of approaches (e.g., written reports, digitally recorded oral presentations, digital video productions, online discussion boards, wikis, etc.). Reports and submissions will be reviewed and archived by the Associate Dean to support program assessment efforts. Report exemplars and other SURP-related submissions may be shared via the CENG website, used in

future marketing and recruiting efforts, and/or disseminated as a means of broadening the impact of the research outcomes. Participation in the SURP implies agreement to participant's image or likeness and SURP-related submission for this purpose.

- In support of program assessment and evaluation, students may also be asked to complete surveys and questionnaires during and after the program. Students may be asked to maintain contact with their faculty mentor after the program to allow for tracking of academic performance and career progress. Participation in the SURP implies agreement of the participant to these terms. Student confidentiality will be protected during the collection and archiving of program assessment data and evaluation results of the program.
- CENG retains the option of withholding one or more grant installment(s) from a student and/or dismissing a student from the program who does not follow the requirements or meet the expectations listed above.

FACULTY MENTOR COMMITMENTS

CENG SURP faculty mentors will supervise student participants with specific research studies; ensure that students understand the project and associated responsibilities; ensure that all project participants abide by Cal Poly and other research protocols, guidelines, methods, and risk management practices; assist students as they work through challenges associated with their project; and act as a liaison with external project sponsors.

Faculty members should be actively engaged in their work with their SURP students over the 8-week period funded by SURP. Typical engagement strategies should include:

- Creation of a research/project definition document that outlines the definition, scope, timeline, safety guidelines, and expectations (including deliverables) for the activity.
- A schedule of the supervision and training activities (including safety training) that will make sure the students have what they need to be successful in the research/project activity.

Faculty who are not actively engaged in their research project(s) with their SURP student(s) during the 8-week period of the SURP may receive a reduction in their SURP stipend at the discretion of the appropriate CENG Associate Dean. This includes SURP faculty being physically absent present from the Cal Poly campus or other project research site for the first week of the project, or being physically absent from the Cal Poly campus or other project research site for a total of more than 2 weeks of the 8-week project period.

INDUSTRIAL AND EXTERNAL SPONSOR COMMITMENTS

Industrial and external sponsors are encouraged to engage with CENG faculty and students as part of SURP. SURP aims to provide motivated and talented lower division students (who typically have less opportunities for summer internships) an option to gain hands-on experience in research. The CENG SURP provides a compelling win-win-win opportunity for industrial and external sponsors to explore projects that provide students a hands-on summer research opportunity aligned with the interests of the supervising faculty mentor.

Industrial and external sponsors are expected to provide the following support:

- A research goals or project definition document and a member of the sponsoring organization who will support the project.

- \$10,000 to support a team of two undergraduate students and one faculty mentor.
- Provide financial and/or in-kind support for any project-related expenses that are not typically available in CENG.

Intellectual Property Statement: Research/projects where the work is publishable (with the consent of the sponsor) in the public domain are strongly preferred. If specific deliverables or sensitive intellectual property is involved in the project, arrangements should be made with the Associate Dean to ensure that the correct contract mechanisms are in place and that proposed work is appropriate for SURP activities.

END OF RESEARCH/PROJECT REPORTING EXPECTATIONS

Each SURP student will be expected to create the following items by October 31 of the year of their program participation.

1. **SURP Project Report Submission:** After approval by your faculty mentor and any external sponsor, upload your final SURP Project Report to the college website: <https://www.ceng.calpoly.edu/surp/>. If your faculty mentor and any external sponsor agrees, the results/report may also be uploaded to Cal Poly Digital Commons.
2. **Conference and/or Journal Publications:** It is strongly encouraged to submit the results of the research and/or project activity for publication in an appropriate conference or journal publication. Among the SURP goals are to help the professional development of students and faculty.
3. **Project Presentation.** Each year, at the discretion of your faculty mentor and in conjunction with any industrial or external project sponsor, a presentation on the SURP work is expected from the student. At a minimum, it is expected that student teams, in coordination with their faculty mentor, will prepare a poster to present at the annual SURP Research Expo so that stakeholders and supporters can gather together to benefit from the knowledge generated and gained from SURP activities each year.