NSF REU Supplement Guidelines

Table of Contents:

Information on NSF REU Supplement.................................................. 2

Sample REU Supplement Justification.................................................. 5

How to Submit REU Supplement in Fastlane........................................ 8
NSF REU Supplement Information

What is an NSF REU Supplement?
An NSF REU (Research Experience for Undergraduates) supplement is additional funding meant to allow undergraduate students to engage in an existing NSF funded research project. Typically, NSF REU supplements are up to $12,000 per student, or $1,200/week, with a maximum of two students per grant per year. Students can work full-time, usually 10 weeks over the summer.

Why would I want an NSF REU Supplement?
Adding an REU student to a research project boosts your total grant funds and expenditures, accelerates your research, and adds to your teaching and mentorship. Your graduate students can also gain mentorship and leadership skills by working with REU students under your guidance. These supplements are short and simple to write and they have a high rate of funding.

The full solicitation (for both REU Supplement and REU Sites) can be found here: [https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517)

Deadline: For supplements to existing projects, supplemental funding can be requested either for summer, or the school year. The timing of REU supplement requests can vary by directorate so check with your program officer.

Tips
You can either request supplemental REU funding for students as part of a new/renewal NSF proposals or add them to funded proposals. Below are proposal guidelines and an example proposal including sample budget and budget justification.

Step 1. Develop a student project. The project should be connected to the purpose of the larger proposal, manageable in 10-12 weeks for an undergraduate, have specific discrete tasks and outcomes.

Step 2. Describe the project in 1-2 paragraphs.

Step 3. Contact the program officer in charge of your proposal/project to see if they have additional funds for an REU. (Note this could be step 1, but it is a good practice to have an idea before contacting the program officer)

Supplemental Proposal Sections
The following four sections need to be addressed in the supplement request, which should be less than three pages in length, total. Note: *Italicized* text come from the NSF REU RPF.

1. *The nature of each prospective student's involvement in the research project.* Explain what the student will be working on specifically, note expected student outcomes. Ensure the tasks and work are manageable for the timeline proposed.
(2) The experience of the PI (or other prospective research mentors) in involving undergraduates in research, including any previous REU Supplements and the outcomes from that support. Describe when and how you mentored undergraduates (if you are a new faculty, you could list graduate student experience). If you co-authored papers with undergraduates this is the place to list them.

(3) The nature of the mentoring that the student(s) will receive. Explain how you will work with the student, how they will be included in the lab group, list any extra experiences they might have over the term of the REU project. E.g. they will be incorporated into an existing REU site, or any specific experiences that would be additional to basic mentoring. Basic mentoring for REU students could include weekly meetings with the PI, frequent supervision by a graduate students and joining lab meetings.

(4) The process and criteria for selecting the student(s). If the student has been pre-selected (as might be true in the case of a supplement for an ongoing award), then the grounds for selection and a brief biographical sketch of the student should be included.

Budget

Typical student stipends are $500 per 40-hour work week, scaled for 10 week projects, though a longer research duration can be requested. You may also request funds for accommodation and subsistence (food), consult with your program officer about this. Travel support can also be requested if you plan to recruit non-OSU students. Due to the variability of costs contact your program officer for guidance about the total budget.

For summer REU projects, the total budget request--including all direct costs and indirect costs--is generally expected not to exceed $1,200 per student per week. (The budget request for an academic-year REU project should be comparable on a pro rata basis.) However, projects that involve international activities, field work in remote locations, a Research Experience for Teachers (RET) component, or other exceptional circumstances may exceed this limit.

Submission Instructions: (Edited from NSF REU RFP) – The pre-award office may be able to assist you with your submission

Prepare a budget, including a justification of the funds requested for student support and their proposed use. All student costs should be entered as Participant Support Costs (Line F) in the proposal budget.

(Indirect costs [F&A] are not allowed on Participant Support Costs in REU Site or REU Supplement budgets.) After you have prepared the request for supplemental funding, forward it to your organization's Sponsored Research Office (SRO), which will submit the request to NSF.
Sample Justification for REU Supplement

Collaborative Research: Improving the Safety of Complex Engineering Systems
Irem Y. Tumer & Christopher Hoyle, Oregon State University
David C. Jensen, University of Arkansas

1. Undergraduate Involvement

This short proposal is to request a second year REU supplement to the collaborative NSF research grants for three Principal Investigators: I.Y. Tumer in Mechanical Engineering at Oregon State University (OSU), Chris Hoyle at Oregon State University (OSU) for project number CMMI-1363509.

The goal of this research is to develop a framework to enable decision-making in the early design stage of complex systems with respect to safety. The proposed research is to formulate a new approach to safety-based design which can be conducted early in the design process and provide a comprehensive framework for selecting robust designs which meet the objectives of the designer. In the reduced scope, Objective 1 is to automatically generate a comprehensive set of failure propagation paths using a model-based hazard analysis approach. The ultimate goal is to develop a safe-system design and decision-making framework to reason about failures based on the mapping between components, functions, and nominal and off-nominal behavior. The method allows analysis of a system in the early design phase and automatically identifies failure propagation paths by mapping component failure states to function “health” using a combination of ontologies, a formal modeling language, and a search-based path analyzer. Objective 2 is to evaluate consequences and system-level functional impact of the potential failure scenarios using similarity metrics, clustering, and sampling. Here we explore the failure behavior of the system evaluating the resulting failure paths and using clustering methods identify characteristic system behavior. The research is done collaboratively with PI David C. Jensen at the University of Arkansas, project number CMMI-1363349. A separate request will be submitted by PI Jensen to support an REU student at U of Arkansas.

In this first year of the project, PIs Irem Tumer and Chris Hoyle have hired two GRAs at Oregon State University, and PI David Jensen has hired one GRA at the University of Arkansas. The research is being conducted in a very collaborative fashion, with weekly telecons with the entire team, plus additional telecons with the University of Arkansas for part of the research. In addition, we have funded one of the OSU graduate students to visit PI Jensen to help him understand the experimental setup at the University of Arkansas and establish the basics of the modeling requirements. To help our graduate students progress further, we would like to request an REU supplement to hire undergraduate research students over the summer. This particular request is for hiring on undergraduate student at OSU, Ms. Katy Schmidt, whose resume is included with the submission. Katy worked with Dr. Tumer’s students in Summer 2014 under a previous NSF project, and will have completed her first year at Brown University by Summer 2015. She has expressed interest in learning more about failures and safety in complex engineering systems. This project would be a perfect opportunity to introduce her to these concepts and give her an opportunity to work alongside our graduate students in learning new skills. A companion request will be made by the PI Jensen at our collaborating institution to hire one undergraduate student to help with the experimental setup for the project. We believe this REU supplement will provide the students in this project a uniquely multi-disciplinary view of engineering, beyond anything they will see in their undergraduate studies.

2. Previous Experience with Undergraduate Research

Dr. Irem Tumer has had undergraduate students work alongside her graduate students to help support and sometimes, initiate research. She is a strong believer in making undergraduate students an important part of her research group, typically has as many undergraduate research assistants as there are graduate research assistants in her lab. To date, since starting at OSU in 2006, she has supervised 21 undergraduate students, with 11 of them as REU fellows. These students have mainly assisted her graduate students in their research, including the development of a project management framework for a
virtual and open-source design environment, the development of simulation models for failure analysis for decision making, enabling the integration of the failure analysis in concept generation, conducting experiments in assessing the creativity of student design projects, developing a multiagent framework for modeling large complex systems, etc. The undergraduate student work has resulted in several conference publications, with journal versions published or in progress. As a result of these experiences, they generally form a strong understanding of concepts at the core of complex system design and engineering. The students have typically been assigned to one GRA as the primary point of contact, working closely under their supervision. Every one of these students has expressed interest in finding out more about what it means to do research and graduate school in general. As a result, they also meet on a regular basis with Dr. Tumer, and attend the research group’s weekly meetings to get exposed to other graduate research, and on occasion are asked to give presentations to the group to present their work and findings. Many of these students have either gone to pursue a graduate degree or have expressed interest in doing so, as a result of the undergraduate research experience. As a result of this experience, these students have either entered graduate school to pursue research upon graduation (Carrie Rebuhn, Brady Gilchrist, Yousef Alhashemi, Jesse Boudart, David Jensen, Brian O’Halloran, Nick Taylor, Josh Wilcox, Raschelle Berkume, Sean Hunter), and/or have been offered a job in industry (Max Breedlove, Mayur Dixit, Vince Foley, Courtney Solem, Jill Lewis), with the remaining still pursuing their undergraduate education (Katy Schmidt, Francisco Boschetti Tofano, Davis Schneider, Amanda Smith, Naomi Spevack, Jason Castaneda.)

3. Selection Criteria and Biographical Information

For all positions, applications will be encouraged from underrepresented minorities in engineering. Other selection criteria will include upper level standing in a relevant engineering program (industrial, manufacturing, or mechanical engineering), exposure to the topics of engineering design or engineering management, and an expressed interest in graduate school.

If REU funding were obtained, a female pre-engineering student (Katy Schmidt) would be hired to work with Dr. Tumer and Dr. Hoyle at Oregon State University. Katy is finishing her first year in General Engineering at Brown University, and is still deciding on her desired field of interest within engineering. Dr. Jensen at the University of Arkansas has also recruited a candidate for their share of the REU work, focusing on students who have shown strong interest in research and going to graduate school. An NSF REU project is a perfect way for them to get exposed to research before making the decision of whether to pursue graduate studies. Every effort has been made to select students who have demonstrated leadership, dedication, and strong technical communication skills (both verbal and written).

4. Publications Enabled by REU Student Support


Budget Justification for REU Supplement

Funding for one undergraduate researcher at the Oregon State University is requested in this proposal for the collaborative research projects CMMI-1363509 (one REU student will also be requested by our collaborator at the University of Arkansas in a separate proposal).

The undergraduate researcher is expected to work 40 hours per week for a roughly ten-week period during the summer term. The student will be paid a total of $5000. In addition, $500 will be used to cover travel from Brown University to Corvallis, and an additional $500 will be provided as housing allowance to help cover the cost of housing. The total request for the Oregon State University is for one REU student at a total cost of $6000.

A similar request will be submitted by the University of Arkansas for CMMI-1363349.
### Proposal Name:
Improving the Safety of Complex Engineering Systems

**Start Date:** 6/1/2015  
**End Date:** 8/31/2015

#### AY/CY or Summer

<table>
<thead>
<tr>
<th></th>
<th>6/1/15-8/31/15</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Senior Personnel (3% Salary Inflation per year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal Senior Personnel</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>B</strong> Other Personnel (3% Salary Inflation per year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal Other Personnel</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>C</strong> Fringe (2% annual inflation for Senior Personnel - ensure correct OPE rate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL FRINGE</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>D</strong> Capital Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL CAPITAL EQUIPMENT COSTS</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>E</strong> Travel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL TRAVEL COSTS</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>F</strong> Participant Support Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stipends - $5,000 for 1 student</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Travel - $500/student to cover travel to OSU</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>Other - Housing Allowance at $500 per student</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>TOTAL PARTICIPANT COST</td>
<td>$6,000</td>
<td>$6,000</td>
</tr>
<tr>
<td><strong>G</strong> Other Direct Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.6 Other Total</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>H</strong> TOTAL DIRECT COSTS (TDC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Costs exempt from F/A****</td>
<td>-$6,000</td>
<td>-$6,000</td>
</tr>
<tr>
<td>MTDC (TDC-Exceptions) Only used to figure F&amp;A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I</strong> TOTAL INDIRECT COSTS (F/A) (ensure correct F&amp;A rate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL DIRECT AND INDIRECT COSTS (TDC + F/A)</td>
<td>$6,000</td>
<td>$6,000</td>
</tr>
</tbody>
</table>

*No 10% OPE has been applied for the graduate student summer effort*

*A 4th term of GRA OPE has been added to each year to cover summer support*

****4.5% inflation for tuition

Sub-contract amounts over $25,000 per contract; Tuition/Fee Remissions; Equipment; Participant Support

---

**Lead - Tumer, Irem**  
**Cayuse # 15-1836**

**REU Supplement**

---

**Revised 2-5-2015**
How to Submit REU Supplement in Fastlane

REU Supplements may be requested at the proposal stage, or after the award.

1. If requested at the proposal stage, simply include participant support into the budget, and add the Justification for Supplement (template provided) in the supplementary documents. From NSF REU solicitation 13-542:

“A request for an REU Supplement as part of a proposal for a new or renewal grant or cooperative agreement should be embedded in the proposal as follows. Enter the description of the REU activity (namely, the information described above in the fourth paragraph under the subheading "REQUEST FOR REU SUPPLEMENT") in the section for Supplementary Documentation. Limit this description to three pages. Include the budget for the REU activity in the yearly project budget. Enter all student costs under Participant Support Costs (Line F on the FastLane budget form and Field E on the Grants.gov budget form). (Indirect costs [F&A] are not allowed on Participant Support Costs in REU Site or REU Supplement budgets.) As part of the Budget Justification, provide a separate explanation of the REU Supplement request, with the proposed student costs itemized and justified and a total given for the items plus associated indirect costs. If the intent is to engage students as technicians, then an REU Supplement is not the appropriate support mechanism; instead, support should be entered on the Undergraduate Students line of the proposal budget.”

2. Here are instructions for supplement request on an awarded project.

In Fastlane, you must be a PI or co-PI on the project, under “Proposal Functions”, navigate to Principal Investigator (PI)/Co-Principal Investigator (Co-PI) Management screen:

**Award and Reporting Functions**

- Notifications and Requests
- Continuation Funding Status
- View/Print Award Documents
- Project Reports - Disabled In FastLane, Log In to Research.gov
- Supplemental Funding Request
- Research.gov Functions

Click on “Supplemental Funding Request”. A list of eligible awards should be displayed. Select the one for which you are requesting the REU Supplement. The next screen should look like this:
Under summary of proposed work only add text “Request for an REU Supplement”. You will need to complete the budget (not to exceed $1,200/student/week) and upload the corresponding budget justification, and Justification for Supplement. The provided packet includes budget, justification and Justification for Supplement templates.