

QUESTIONNAIRE COVER LETTER
For REU PIs

Subject line: NSF Research Experiences for Undergraduates (REU) Study

Dear Dr. [insert last name],

Thank you very much for your help earlier this year providing us with names and contact information for the study we are conducting for NSF of its Research Experiences for Undergraduates (REU) Program.

We ask you now to complete our survey questionnaire by clicking on this link:

[insert link to questionnaire—respondent's survey ID number will be imbedded]

All your responses will be strictly confidential and will be used only in combination with those from other respondents. The ID number included in the survey URL allows us to cross your name off our contact list once we have received your questionnaire and to send you a summary of the study results.

For more information about our study, please see the overview below. If you have any questions or problems with the survey, simply reply to this e-mail.

Please complete and submit the questionnaire as soon as possible. Your participation is important to the success of this study.

Sincerely yours,

Mary P. Hancock
Study Director
SRI International
1100 Wilson Blvd. Suite 2800
Arlington, VA 22209

STUDY OVERVIEW

What is the objective of this study?

The objective of the study is to obtain in-depth information about the activities, outcomes, and impacts of the NSF Directorate of Engineering (ENG) Research Experiences for Undergraduates (REU) Program from the perspectives of the faculty and undergraduate student participants. It is anticipated that the study results will help NSF better understand the components and characteristics of effective REUs and thus will help provide direction to ENG's REU program officers in their reviews of REU proposals and in the advice they give to REU PIs. The study is NOT an evaluation of outcomes from individual NSF awards or the people involved with them.

How was I selected for this study?

All undergraduate students, faculty mentors, and principal investigators (PIs) who participated in NSF ENG REU awards during 2003 through 2006 are included in this study. The PIs of those awards were contacted earlier this year and provided us with the names and contact information of undergraduate students who engaged in REU activities during 2003 through 2006, as well as faculty who mentored/supervised those students.

Can I get a copy of the study results?

We will send all survey participants a brief summary of the survey results next year. The study report will be available on SRI's Web site at <http://www.sri.com:8000/policy/csted/reports/university>.

Who funded the study and who is involved?

The project is funded by the National Science Foundation and conducted by researchers from SRI International (formerly Stanford Research Institute) <http://www.sri.com/policy>.

Privacy Notice

Information from this survey will be retained by the National Science Foundation (NSF), a federal agency, and will be an integral part of its Privacy Act System of Records in accordance with the Privacy Act of 1974 and maintained in the Education and Training System of Records 63 Fed. Reg. 264, 272 (January 5, 1998). These are confidential files accessible only to appropriate NSF officials, their staffs, and their contractors responsible for monitoring, assessing, and evaluating NSF programs. Only data in highly aggregated form will be made available to anyone outside of NSF for research purposes. Data submitted will be used in accordance with criteria established by NSF for monitoring research and education grants, and in response to Public Law 99-383 and 42 USC 1885c.

Where can I find more information about the project?

Contact the SRI study director, Mary Hancock (360-380-4126, mary.hancock@sri.com) or the NSF project officer, Esther Bolding (ebolding@nsf.gov, 703-292-5342).

**NATIONAL SCIENCE FOUNDATION DIRECTORATE FOR ENGINEERING
RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU) PROGRAM**

SUMMER FACULTY MENTOR SURVEY

Public Burden

Submission of the requested information is voluntary. Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0121. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Suzanne Plimpton, Reports Clearance Officer for OMB Collection 3145-0121 (ENG REU), Facilities and Operations Branch, Division of Administrative Services, National Science Foundation, 4201 Wilson Blvd., Suite 295, Arlington, VA 22230.

Your responses to this questionnaire are strictly confidential.

Selection Criteria

1. Were you a Principal Investigator (PI) involved in selecting undergraduates to participate in the summer [insert year] program for an Engineering Research Center (ERC) or REU Site?

(PLEASE CIRCLE ONE NUMBER)

Yes 1 → **PLEASE CONTINUE**

No..... 2 → **PLEASE SKIP TO QUESTION 7**

2. How important was each of the following in selecting undergraduates to participate in the research activities of your summer [insert year] program? **(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

	Not Important	Somewhat Important	Fairly Important	Extremely Important	Don't Remember
a. Overall grade point average	1	2	3	4	9
b. Grade point average in major or selected courses	1	2	3	4	9
c. Major	1	2	3	4	9
d. Courses taken	1	2	3	4	9
e. Student's essay	1	2	3	4	9
f. Letter(s) of recommendation	1	2	3	4	9
g. Student's interests match faculty interests	1	2	3	4	9
h. Interview or other personal contact with student	1	2	3	4	9
i. Motivation, enthusiasm	1	2	3	4	9
j. Obtaining a racially/ethnically diverse group	1	2	3	4	9
k. Including a good mix of male and female students	1	2	3	4	9
l. Including students with disabilities	1	2	3	4	9

3. In selecting undergraduates for participation in your summer [insert year] program, which of the following did you tend to prefer? **NOTE: These preferences may be determined by the target audience specified in your grant.**
- A. Those who were undecided about graduate school OR those who were already committed to going to graduate school **(PLEASE CIRCLE ONE NUMBER)**
- | | |
|--|---|
| Those who were undecided..... | 1 |
| Those who were committed | 2 |
| Some of both | 3 |
| Other (<i>please specify:</i>) | 4 |
| <hr/> | |
| No preference | 5 |
| Don't remember | 9 |
- B. Those with research experience OR those with no research experience **(PLEASE CIRCLE ONE NUMBER)**
- | | |
|--|---|
| Research experience..... | 1 |
| No research experience | 2 |
| Some of both | 3 |
| Other (<i>please specify:</i>) | 4 |
| <hr/> | |
| No preference | 5 |
| Don't remember | 9 |
- C. Those from schools with few undergraduate research opportunities OR those from schools with many undergraduate research opportunities **(PLEASE CIRCLE ONE NUMBER)**
- | | |
|--|---|
| Those from schools with few
undergraduate research opportunities ... | 1 |
| Those from schools with many
undergraduate research opportunities ... | 2 |
| Some of both | 3 |
| Other (<i>please specify:</i>) | 4 |
| <hr/> | |
| No preference | 5 |
| Don't remember | 9 |
- D. Rising sophomores OR juniors OR seniors **(PLEASE CIRCLE ONE OR MORE NUMBERS)**
- | | |
|----------------------------|---|
| Rising sophomores..... | 1 |
| Rising juniors | 2 |
| Rising seniors..... | 3 |
| Some from all classes..... | 4 |
| No preference | 5 |
| Don't remember | 9 |

Other important selection criteria: _____

4. How many undergraduates **applied** to participate in research in your summer [insert year] ERC or REU Site program?
Please include all applicants, regardless of the potential source of their support
(PLEASE ENTER YOUR BEST ESTIMATE. ENTER "99" IF YOU HAVE NO IDEA OR DON'T REMEMBER)

Number: _____ Don't remember...99

5. How many undergraduates **participated** in your summer [insert year] ERC or REU Site program?
Please include all participants, regardless of the potential source of their support.
(PLEASE ENTER YOUR BEST ESTIMATE)

Number: _____ Don't remember...99

6. Did any K-12 teachers or community college faculty participate in research in your summer [insert year] ERC or REU Site program? **(PLEASE CIRCLE ONE NUMBER)**

- Yes 1
 No..... 2
 Don't remember ... 9

Barriers to Increased Undergraduate Research

7. How much do you agree or disagree with each of the following statements about the number of undergraduates who conduct research? **(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

In my department, we probably would include more undergraduates in our research...	Disagree	Disagree Somewhat	Agree Somewhat	Agree	Have No Idea/ Doesn't Apply
f. ...if we had financial support for more undergraduates	1	2	3	4	9
g. ...if we had more faculty or researchers available/willing to be mentors/supervisors	1	2	3	4	9
h. ...if we had more graduate students or postdocs available/willing to be mentors/supervisors	1	2	3	4	9
i. ...if there were more undergraduates who were interested	1	2	3	4	9
j. ...if there were more undergraduates who were qualified	1	2	3	4	9
k.if we had more lab space, facilities, or equipment	1	2	3	4	9
l. ...if we had more financial support for program administration	1	2	3	4	9

Other barriers to increased undergraduate participation in research: _____

Your Undergraduate Research Mentoring/Supervising

8. For how many REU undergraduates, if any, were you **personally** a research mentor/supervisor in summer [insert year]? **Note: If you cannot differentiate between REU and non-REU undergraduates, please answer for all undergraduates you mentored that summer.**

Number: _____ **IF NONE, PLEASE SKIP TO QUESTION 19** Don't remember....99

9. What was the average number of hours **per week** that you spent engaged in **research-related mentoring activities** with **all** of the REU undergraduates you mentored/supervised during summer [insert year]? **(PLEASE CIRCLE YOUR BEST ESTIMATE)**

Average time mentoring per week:

- Less than 1 hour per week 1
- 1 hour up to 5 hours per week..... 2
- 5 hours up to 10 hours per week 3
- 10 hours up to 20 hours per week 4
- 20 hours or more per week..... 5
- Have no idea 9

10. Which of the following did **any** of the undergraduates you mentored/supervised do as part of their REU research experiences during summer [insert year]? **(PLEASE CIRCLE ONE OR MORE NUMBERS)**

- Wrote a proposal describing the research they planned to do..... 1
- Collected and/or analyzed data or information to try to answer a research question..... 2
- Gained increasing independence over the course of the summer 3
- Were able to complete their research project (either during the summer or later)..... 4
- Mentored other students conducting research or led a student research team 5
- Understood how their work contributed to the “bigger picture” of research in this field..... 6
- Attended lectures/seminars on research ethics..... 7
- Went on research-related field trip(s) (to other labs, universities, industry, etc.)..... 8
- Attended student conference(s) that included students from multiple colleges..... 9
- Attended professional conference(s) (conferences not specifically for students)..... 10
- Received training in written or oral communication skills 11
- Received training to use research tools (computer program/language, lab or field equipment, etc.) 12
- Prepared/presented a poster presentation describing their research and results..... 13
- Prepared a final written research report describing their research and results..... 14
- Delivered an oral/PowerPoint presentation describing their research and results 15
- Authored or co-authored a paper that has been or will be submitted for publication in a professional journal 16
- Worked on research with K-12 grade teachers 17
- Don't remember 99

11. To what extent, if at all, do you think your REU undergraduates' experiences during summer [insert year] **increased** each of the following? (**PLEASE CIRCLE ONE NUMBER IN EACH ROW**)

	How Much Each Increased:				
	Not At All	Some-what	A Fair Amount	A Great Deal	Have No Idea
Their understanding of...					
a ... how to formulate a research question	1	2	3	4	9
b ... how to plan a research project	1	2	3	4	9
c ... how to conduct a research project	1	2	3	4	9
d ...how to deal with setbacks, negative results, etc.	1	2	3	4	9
e ...how engineering knowledge is built	1	2	3	4	9
f. ...the nature of the job of a researcher	1	2	3	4	9
Their skills/abilities in...					
g ...working collaboratively with others	1	2	3	4	9
h ...working independently	1	2	3	4	9
i. ...preparing written research reports, papers, or posters	1	2	3	4	9
j. ...delivering oral research presentations	1	2	3	4	9
Their awareness of...					
k ...career paths of the faculty in the program (how you got to where you are now)	1	2	3	4	9
l. ...what graduate school is like	1	2	3	4	9
m ...the variety of engineering fields they could specialize in	1	2	3	4	9
n ...career options in engineering	1	2	3	4	9
o ...ethical issues in conducting research	1	2	3	4	9
Their...					
p ... confidence in their research skills generally	1	2	3	4	9
q ...confidence in their ability to succeed in graduate school	1	2	3	4	9
r. ...qualifications for jobs in related fields	1	2	3	4	9

Academic Field

12. Which of the following best describe the academic field(s) of your summer [insert year] REU research?
(PLEASE CIRCLE ONE OR MORE NUMBERS)

Aerospace engineering.....	1	Industrial or manufacturing engineering.....	10
Agricultural engineering.....	2	Materials or metallurgy engineering.....	11
Architectural engineering.....	3	Mechanical engineering.....	12
Bioengineering or biomedical engineering...	4	Mining or mineral engineering.....	13
Chemical engineering.....	5	Nuclear engineering.....	14
Civil engineering.....	6	Ocean, marine, or naval engineering.....	15
Computer engineering.....	7	Systems engineering.....	16
Electrical engineering.....	8	Transportation engineering.....	17
Environmental engineering.....	9	Other engineering (<i>please specify below</i>).....	18
		A non-engineering field.....	19
		<i>(please specify below)</i>	

Please specify “other engineering” or “non-engineering field”:

Your Experience with Undergraduates and Undergraduate Research Generally

13. For how many years have you mentored/supervised undergraduates doing research, including mentoring/supervising you might have done as a graduate student or postdoc?
(PLEASE ENTER YOUR BEST ESTIMATE)

Number of years: _____

14. Did you yourself do research as an undergraduate? **(PLEASE CIRCLE ONE NUMBER)**

Yes..... 1 → **PLEASE CONTINUE**
 No..... 2 → **PLEASE SKIP TO QUESTION 16**

15. How important were your undergraduate research experiences to your decision to pursue teaching/research as a career? **(PLEASE CIRCLE ONE NUMBER)**

Not Important	Somewhat Important	Fairly Important	Extremely Important	Have No Idea
1	2	3	4	9

16. How much do you disagree or agree with each of the following statements about undergraduates and undergraduate research? (PLEASE CIRCLE ONE NUMBER IN EACH ROW)

	Disagree	Disagree Somewhat	Agree Somewhat	Agree	Have No Idea/ Doesn't Apply
a. My own positive experiences doing undergraduate research help motivate me to be a mentor.	1	2	3	4	9
b. Undergraduates have opened my eyes to things in my research I probably would have overlooked.	1	2	3	4	9
c. Involving undergraduates in my research gives me the opportunity to do something risky.	1	2	3	4	9
d. Involving undergraduates in my research enables me to expand the avenues of investigation that I can pursue.	1	2	3	4	9
e. I get a lot of personal satisfaction out of working with undergraduates doing research.	1	2	3	4	9
f. My work lends itself well to undergraduate participation.	1	2	3	4	9
g. If there were no external pressures to do so, I probably would <u>not</u> involve undergraduates in my research.	1	2	3	4	9
h. If I did not receive funding specifically for including undergraduates, I probably would not involve them in my research.	1	2	3	4	9
i. All in all, involving undergraduates in my research has been more of a burden than an asset to my research.	1	2	3	4	9
j. All in all, mentoring undergraduates is a good experience for graduate students.	1	2	3	4	9
k. Mentoring undergraduates during the summer program is a good way to recruit them to be graduate students in my lab/department.	1	2	3	4	9
l. Mentoring undergraduates is viewed favorably in my department's tenure/promotion review process.	1	2	3	4	9
m. Research is a good experience for undergraduates, regardless of their decisions about career or advanced degrees.	1	2	3	4	9
n. Research experiences are more valuable for students who will pursue research or teaching careers than for those who will not.	1	2	3	4	9

17. Which of the following best describes **your department's** position on undergraduate research mentoring/supervising? (**PLEASE CIRCLE ONE NUMBER**)

- Faculty are required to serve as mentors/supervisors on undergraduate research 1
 - Faculty are not required to mentor/supervise undergraduate research, but are encouraged to do so..... 2
 - The department takes no position on mentoring/supervising undergraduate research 3
 - Other (*please specify below*)..... 4
-

18. In **your experience**, how important are the following to providing a high quality research experience for undergraduates? (**PLEASE CIRCLE ONE NUMBER IN EACH ROW**)

	Not Important	Somewhat Important	Fairly Important	Extremely Important	Too Much Variation Among Students to Generalize	Have No Idea
a. Open and regular communication between the student and a mentor/supervisor (either faculty or graduate student)	1	2	3	4	0	9
b. A research project that is closely related to the student's regular academic course work	1	2	3	4	0	9
c. Involving the student in designing or selecting his/her project	1	2	3	4	0	9
d. Making the student feel as though he/she is an integral part of the project team	1	2	3	4	0	9
e. Providing sound technical guidance	1	2	3	4	0	9
f. Giving the student independence in conducting his/her research	1	2	3	4	0	9

Background Information

Note: The following information will help us interpret your responses to the previous questions. **All** your responses to this questionnaire are **strictly confidential** and will not be released to anyone outside our small research project team.

19. By which of the following kinds of organizations are you currently employed?

(PLEASE CIRCLE ONE OR MORE NUMBERS)

- College/university 1
 - For-profit organization..... 2
 - Non-profit organization 3
 - Government lab..... 4
 - Other (*please specify below*)... 5
-

IF YOU ARE NOT CURRENTLY EMPLOYED IN ACADEMIA, PLEASE SKIP TO QUESTION 22

20. (If currently employed in academia) What is your current academic rank? **(PLEASE CIRCLE ONE NUMBER)**

- Professor 1
 - Associate professor 2
 - Assistant professor 3
 - Adjunct professor..... 4
 - Instructor or lecturer 5
 - Research associate..... 6
 - Other (*please specify below*).... 7
-

21. (If currently employed in academia) What is your current tenure status? **(PLEASE CIRCLE ONE NUMBER)**

- Doesn't apply: No tenure system here 1
- Tenured 2
- On tenure track but not tenured 3
- Not on tenure track..... 4

22. What is your age? **(PLEASE CIRCLE ONE NUMBER)**

- Under 30..... 1
- 30 to 39..... 2
- 40 to 49..... 3
- 50 to 59..... 4
- 60 to 69..... 5
- 70 or older 6

23. What is your sex? **(PLEASE CIRCLE ONE NUMBER)**
 Male..... 1
 Female 2
24. What is your ethnicity? **(PLEASE CIRCLE ONE NUMBER)**
 Hispanic or Latino..... 1
 Not Hispanic or Latino... 2
25. What is your race? **(PLEASE CIRCLE ONE OR MORE NUMBERS)**
 American Indian or Alaskan Native 1
 Asian..... 2
 Black or African American 3
 Native Hawaiian or Pacific Islander..... 4
 White 5

Overview

26. What is your single most important objective in mentoring/supervising undergraduate research?
27. How do you think NSF can improve the REU experience for faculty mentors?
28. How do you think NSF can improve the REU experience for undergraduate students?
29. How do you think NSF can involve more undergraduate students in the REU program?
30. Other comments:

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY

If you have questions, please contact Mary Hancock: 360-380-4126, mary.hancock@sri.com