

**QUESTIONNAIRE COVER LETTER**  
**For Follow-up Survey with REU Undergraduate Students**

Subject line: NSF Research Experiences for Undergraduates (REU) Study
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Dear [insert first name],

In the fall of 2007, you participated in a survey about your 2006-07 Research Experiences for Undergraduates (REU) Program experiences. The survey was conducted by SRI International for the National Science Foundation (NSF). Thanks again for your participation. As promised, we are now conducting a follow-up survey to obtain an overview of all your undergraduate research experiences and to learn about your perceptions of their effects upon your professional and academic decisions.

**As thanks for your participation, we will send you a \$20 [insert online retailer] gift certificate after we receive your completed questionnaire.**

Our survey questionnaire can be accessed 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. Thanks in advance for your continuing participation in this important 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](mailto:mary.hancock@sri.com)) or the NSF project officer, Esther Bolding ([ebolding@nsf.gov](mailto:ebolding@nsf.gov), 703-292-5342).

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

**FOLLOW-UP STUDY OF REU OUTCOMES AND IMPACTS**

**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.**

**Your Current Academic Status**

1. Which of the following describe your current academic status? **(PLEASE CIRCLE ONE OR MORE NUMBERS)**

- I am currently enrolled as an undergraduate ..... 1
- I am currently enrolled as a graduate student (including medical, law, business school, etc.)..... 2
- I have been accepted into a graduate program, but have not yet begun..... 3
- None of the above ..... 4

2. What is the full name and location of the school from which you received or will receive your bachelor’s degree? (If you do not expect to obtain a bachelor’s degree, please enter the name of the school you attended most recently.)

Your **undergraduate** school’s full name: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

3. What was/is your total cumulative Grade Point Average (GPA) as an undergraduate?

GPA: \_\_\_\_ . \_\_\_\_    Out of a possible \_\_\_\_ . \_\_\_\_    Have no idea ..... 999

4. Which of the following best describe your undergraduate major? (Include only those fields in which you completed or expect to complete the requirements for a major.) **(PLEASE CIRCLE ONE OR MORE NUMBERS)**

Aerospace engineering.....	1	Materials or metallurgy engineering .....	11
Agricultural engineering .....	2	Mechanical engineering.....	12
Architectural engineering.....	3	Mining or mineral engineering.....	13
Bioengineering or biomedical engineering ...	4	Nuclear engineering.....	14
Chemical engineering .....	5	Ocean, marine, or naval engineering.....	15
Civil engineering.....	6	Systems engineering.....	16
Computer engineering.....	7	Transportation engineering .....	17
Electrical engineering .....	8	Other engineering.....	18
		<i>(please specify below)</i>	
Environmental engineering.....	9	A non-engineering field .....	19
		<i>(please specify below)</i>	
Industrial or manufacturing engineering.....	10	<b>Do not currently have a major</b> .....	20

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

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*If you have never attended nor been accepted to graduate school → Please skip to question 8*

5. For how many years have you attended **graduate** school? \_\_\_\_\_ years
6. What is the full name and location of the school where you are, will be, or were a **graduate** student?

Your **graduate** school’s full name: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

7. Which of the following best describe your field of study in **graduate** school?

**(PLEASE CIRCLE ONE OR MORE NUMBERS)**

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

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

## Your Undergraduate Research Activities

Please read all the way through the list of activities below and then indicate:

8. Which kinds of **hands-on research activities** (if any) did you participate in with a teacher, professor, or researcher while you were an undergraduate in college.

(PLEASE CIRCLE "YES" OR "NO" IN EACH ROW)

9. If "yes" on Question 8, for how many months in total did you do this?

(PLEASE ENTER YOUR BEST ESTIMATE FOR EACH APPLICABLE ITEM)

10. If "yes" on Question 8, how important was this experience to your career decision?

(PLEASE CIRCLE ONE NUMBER FOR EACH APPLICABLE ITEM)

Q8			Q9	Q10				
Did you do this as an undergraduate? (Please do not include a particular research experience in more than one of the types of research listed below.)				Total number of months you did this	How important was it to your career decision?			
Yes	No			Not	Some-what	Fairly	Extremely	Have No Idea
(A) <b>Summer research, other than intern or co-op program.</b> A full-time hands-on research project for the summer with a professor or researcher.	Yes	No	Number of months: _____	1	2	3	4	5
(B) <b>Hands-on research with a professor during one or more academic terms, while enrolled in classes.</b>	Yes	No	Number of months: _____	1	2	3	4	5
(C) <b>Intern or co-op program that involved hands-on research as its <u>main</u> component.</b> Usually, a company or other organization pays you for working on a research project at its site. Sometimes you receive academic credit at your school for this research. May happen any time of year.	Yes	No	Number of months: _____	1	2	3	4	5
(D) <b>A junior or senior thesis that involves hands-on research (other than library research) as its <u>main</u> component.</b>	Yes	No	Number of months: _____	1	2	3	4	5
(E) <b>Other kinds of hands-on research experiences with a teacher, professor, or researcher as an undergraduate in college (please describe briefly:)</b> _____ _____	Yes	No	Number of months: _____	1	2	3	4	5

11. At which of the following kinds of organizations did you participate in hands-on research with a teacher, professor, or research engineer or scientist before you graduated from college?

**(PLEASE CIRCLE ONE OR MORE NUMBERS))**

- My high school ..... 1
- My undergraduate college/university ..... 2
- Other college or university..... 3
- For-profit company ..... 4
- Non-profit organization ..... 5
- Government lab/facility ..... 6
- Other organization (*please specify below*) ..... 7

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***If you did not participate in hands-on research at your undergraduate college/university, please skip to question 14.***

12. (If you participated in hands-on research at your undergraduate college/university:) When you first enrolled in your undergraduate college/university, did you know that it offered undergraduate research opportunities?

**(PLEASE CIRCLE ONE NUMBER)**

- Yes ..... 1 → ***Please answer question 13***
- No..... 2 → ***Please skip to question 14***
- Don't remember 3 → ***Please skip to question 14***

13. How important were the opportunities for undergraduate research in your decision to enroll in this college/university? **(PLEASE CIRCLE ONE NUMBER)**

- Not important ..... 1
- Somewhat important ..... 2
- Fairly important ..... 3
- Extremely important ..... 4
- Don't remember ..... 5

14. Did you receive academic credit for any of your undergraduate research activities?

**(PLEASE CIRCLE ONE NUMBER)**

- Yes ..... 1
- No..... 2

15. Did you receive pay (for example, a stipend) for any of your undergraduate research activities?

**(PLEASE CIRCLE ONE NUMBER)**

- Yes ..... 1
- No..... 2

16. Did **any** of your undergraduate research activities take place in another country?

**(PLEASE CIRCLE ONE NUMBER)**

- Yes ..... 1
- No..... 2

17. Was **most** of the research you did as an undergraduate in the same general academic field as your major?  
(PLEASE CIRCLE ONE NUMBER)

- Yes ..... 1
- No..... 2

18. How related was most of your undergraduate research to courses that you took in your major?  
(PLEASE CIRCLE ONE NUMBER)

- Most was closely related to courses I took in my major ..... 1
- Most was somewhat related to courses I took in my major ..... 2
- Most was unrelated to courses I took in my major ..... 3
- Too varied to say..... 4

19. Which of the following apply to the faculty who were your undergraduate research mentors/supervisors?  
(PLEASE CIRCLE ONE OR MORE NUMBERS)

One or more was:

- Female ..... 1
- Male ..... 2
- The **same** race/ethnicity as mine..... 3
- A **different** race/ethnicity from mine ..... 4
- Doesn't apply: didn't have any faculty research mentors/supervisors ..... 5

20. Which of the following apply to the graduate students and postdocs who were your undergraduate research mentors/supervisors? (PLEASE CIRCLE ONE OR MORE NUMBERS)

One or more was:

- Female ..... 1
- Male ..... 2
- The **same** race/ethnicity as mine..... 3
- A **different** race/ethnicity than mine ..... 4
- Doesn't apply: didn't have any graduate student or postdoc research mentors/supervisors..... 5

### Activities and Characteristics of Undergraduate Research Experiences

21. Did you have a choice of research projects to work on in **any** of your undergraduate research experiences?  
(PLEASE CIRCLE ONE NUMBER)

- Yes ..... 1
- No..... 2

22. Generally speaking, who made each of the following kinds of decisions?

**(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

	<b>I Did</b>	<b>Grad Student/ Faculty Mentor and I Together</b>	<b>Grad Student/ Faculty Mentor</b>
a. What research techniques/materials were used	1	2	3
b. What to do next (for example, following interim results)	1	2	3

23. As far as you can remember, which of the following did you do as part of **any** of your undergraduate research experiences? **(PLEASE CIRCLE ONE OR MORE NUMBERS)**

- Had primary responsibility for designing the research project that I worked on..... 1
- Provided input to designing my research project (someone else had primary responsibility) ..... 2
- Did little or nothing that seemed to me to be real research..... 3
- Wrote a proposal describing the research I planned to do ..... 4
- Collected and/or analyzed data or information to try to answer a research question..... 5
- Gained increasing independence over the course of the research..... 6
- Was able to complete my research project..... 7
- Mentored other students conducting research or led a student research team ..... 8
- Understood how my work contributed to the “bigger picture” of research in that field..... 9
- Attended lectures/seminars on research ethics.....10
- Went on research-related field trip(s) (to other labs, universities, industry, etc.).....11
- Attended student conference(s) that included students from other colleges .....12
- Attended professional conference(s) (conferences not specifically for students).....13
- Received training in written or oral communication skills .....14
- Prepared/presented a poster presentation describing my research and results.....15
- Prepared a final written research report describing my research and results .....16
- Delivered an oral presentation describing my research and results .....17
- Authored or co-authored a paper that was submitted for publication in a professional journal .....18
- None of the above .....19



24. To what extent, if at all, do you think your undergraduate research experiences **increased** each of the following?  
**(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

		<b>How Much Each Increased:</b>				
		<b>Not At All</b>	<b>Some-what</b>	<b>A Fair Amount</b>	<b>A Great Deal</b>	<b>Have No Idea</b>
<b>Your understanding of...</b>						
a.	... how to formulate a research question	1	2	3	4	5
b.	... how to plan a research project	1	2	3	4	5
c.	... how to conduct a research project	1	2	3	4	5
d.	...how to deal with setbacks, “negative results,” etc.	1	2	3	4	5
e.	...how scientific/math/engineering knowledge is built	1	2	3	4	5
f.	...the nature of the job of a researcher	1	2	3	4	5
<b>Your skills/abilities in...</b>						
g.	...working collaboratively with others	1	2	3	4	5
h.	...working independently	1	2	3	4	5
i.	...preparing written research reports, papers, or posters	1	2	3	4	5
j.	...delivering oral research presentations	1	2	3	4	5
<b>Your awareness of...</b>						
k.	...career paths of the faculty you worked with (how they got to where they were when you worked with them)	1	2	3	4	5
l.	...what graduate school is like	1	2	3	4	5
m.	...the variety of engineering fields you could specialize in	1	2	3	4	5
n.	...career options in engineering	1	2	3	4	5
o.	...ethical issues in conducting research	1	2	3	4	5
<b>Your ...</b>						
p.	...confidence in your research skills generally	1	2	3	4	5
q.	...confidence in your ability to succeed in grad school	1	2	3	4	5
r.	...qualifications for jobs in related fields	1	2	3	4	5

25. How dissatisfied or satisfied were you with each of the following?

**(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

	<b>Very Dissatisfied</b>	<b>Somewhat Dissatisfied</b>	<b>Somewhat Satisfied</b>	<b>Very Satisfied</b>	<b>Have No Idea/ Doesn't Apply</b>
a. How well you were informed about the opportunities for undergraduate research at your college/university	1	2	3	4	5
b. The variety of opportunities you had at your college/ university to do research	1	2	3	4	5
c. The relevance of research opportunities at your college/university to your interests	1	2	3	4	5
d. How well you were informed about the opportunities for undergraduate research at places <b>other than your own</b> college/university	1	2	3	4	5
e. Your undergraduate research experiences overall	1	2	3	4	5

26. How did you feel about each of the following aspects of your interactions with faculty/grad students/postdocs and others during your undergraduate research experiences? **(PLEASE CIRCLE ONE NUMBER)**

	<b>Wish I Had More</b>	<b>Had About The Right Amount</b>	<b>Wish I Had Less</b>	<b>Too Varied To Say</b>	<b>Have No Idea/ Doesn't Apply</b>
a. The amount of interaction you had with faculty	1	2	3	4	5
b. The amount of support/guidance you received from faculty	1	2	3	4	5
c. The amount of interaction you had with grad students/postdocs	1	2	3	4	5
d. The amount of support/guidance you received from grad students/postdocs	1	2	3	4	5
e. The amount of interaction you had with K-12 grade teachers	1	2	3	4	5
f. The amount of interaction you had with other undergraduate students	1	2	3	4	5

27. How do you feel now about the amount of hands-on research you did as an undergraduate?

**(PLEASE CIRCLE ONE NUMBER)**

- Wish I had done more ..... 1
- Did about the right amount ..... 2
- Wish I had done less ..... 3
- Have no idea ..... 4

## Effects of Your Undergraduate Research Experiences

28. Which of the following statements about undergraduate research apply to you?

(PLEASE CIRCLE ONE OR MORE NUMBERS)

Undergraduate research helped me to be self-motivated .....	1
I learned that I have the ability to be a competent researcher .....	2
I learned how to work effectively with others .....	3
Undergraduate research was one of the best experiences of my life .....	4
I learned how to apply concepts that I had learned in the classroom to a real situation .....	5
I learned what it takes to be a successful graduate student .....	6
My knowledge and understanding of engineering increased a lot because of my undergraduate research....	7
I learned that research is not for me .....	8
I learned what the "world" of research is like.....	9
Doing research made me better able to tackle complex problems .....	10
I learned that I would like to continue research as a career in a field similar to my undergraduate research.	11
I learned that you have to have patience to do research.....	12
I learned that there are different skills required for classroom success and research success.....	13
Doing research helped me get better grades .....	14
I learned that "real" research is much different from experience gained in lab classes .....	15
Undergraduate research helped me to be more dependable.....	16
I learned that I can do things I didn't think I could do .....	17
I liked research better than I expected I would .....	18
I learned how to figure out for myself things that I needed to know .....	19
My research experiences taught me that I can do what I set out to do even if there are setbacks along the way.....	20
I learned a lot about my personal strengths and weaknesses .....	21
I learned better time management skills.....	22
My research experiences introduced me to a career I had never known existed .....	23
I learned that I am a good problem solver .....	24
I learned that I do not have the patience to do research.....	25
I learned that I want to go for a PhD.....	26

29. Overall, how important were your undergraduate research experiences to each of the following?  
**(PLEASE CIRCLE ONE NUMBER IN EACH ROW; IF GRAD SCHOOL DOESN'T APPLY TO YOU, SELECT THE "DOESN'T APPLY" CATEGORY)**

	Not Important	Somewhat Important	Fairly Important	Extremely Important	Have No Idea/ Doesn't Apply
a Your decision about whether to go to graduate school	1	2	3	4	5
b Your decision about what field to study in graduate school	1	2	3	4	5
c Your decision about where to apply for graduate school	1	2	3	4	5
d Your acceptance into the graduate school where you are now	1	2	3	4	5

30. To what extent did your interest in each of the following increase or decrease as a result of the undergraduate research experiences you had? **(PLEASE CIRCLE ONE NUMBER IN EACH ROW)**

Your interest in:	Decreased A Lot	Decreased Somewhat	No Effect	Increased Somewhat	Increased A Lot	Have No Idea
a. A career in engineering	1	2	3	4	5	6
b A career in research	1	2	3	4	5	6
c. A career in teaching	1	2	3	4	5	6
d A career in medicine	1	2	3	4	5	6

31. Before you participated in **any** undergraduate research, what was the highest degree you expected to receive?  
**(PLEASE CIRCLE ONE NUMBER)**

Associate of Arts (AA) .....	1
Bachelor's (BA or BS).....	2
Master's (MA, MS, MBA, etc.).....	3
LLB or JD .....	4
PhD .....	5
MD .....	6
MD <u>or</u> PhD (was not sure which) .....	7
MD <u>and</u> PhD (both degrees) .....	8
Other ( <i>please specify below:</i> ).....	9
<hr/>	
Undecided/Don't remember.....	10

32. What is the highest level of formal education that you have **now completed**?  
(PLEASE CIRCLE ONE NUMBER)

- Some college..... 1
  - Bachelor's (BA or BS)..... 2
  - Some graduate work, but no graduate degree ..... 3
  - Master's (MA, MS, MBA, etc.)..... 4
  - LLB or JD ..... 5
  - Post-Masters work but no doctorate..... 6
  - PhD ..... 7
  - MD ..... 8
  - MD and PhD (both) ..... 9
  - Other (*please specify below:*)..... 10
- 

33. What is the highest degree that you **expect to have 10 years from now**?  
(Note: This may be a degree you have already completed.) (PLEASE CIRCLE ONE NUMBER)

- Some college..... 1
  - Bachelor's (BA or BS)..... 2
  - Master's (MA, MS, MBA, etc.)..... 3
  - LLB or JD ..... 4
  - PhD ..... 5
  - MD ..... 6
  - MD or PhD (not sure which)..... 7
  - MD and PhD (both degrees) ..... 8
  - Other (*please specify below:*)..... 9
- 
- Have no idea ..... 10

34. Are you currently employed? (PLEASE CIRCLE ONE NUMBER)

- Yes, I am employed full-time (35 or more hours per week)..... 1 → *Please answer question 35*
- Yes, I am employed part-time (fewer than 35 hours per week)..... 2 → *Please answer question 35*
- No..... 3 → *Please skip to question 39*

35. By what kind(s) of organization(s) are you currently employed? **(PLEASE CIRCLE ONE OR MORE NUMBERS)**

- College or university..... 1
  - Elementary or secondary school ..... 2
  - Military ..... 3
  - Government (other than military) ..... 4
  - Hospital, medical center, etc. .... 5
  - Research organization ..... 6
  - For-profit company (other than medical or research) ..... 7
  - Non-profit organization (other than medical or research)..... 8
  - Self-employed..... 9
  - Other (*please specify:*) ..... 10
- 

36. How related is your current job to your undergraduate major? **(PLEASE CIRCLE ONE NUMBER)**

- Not related..... 1
- Somewhat related..... 2
- Closely related ..... 3

37. How much, if at all, do you use **any** of the skills you learned doing undergraduate research in your current job?  
**(PLEASE CIRCLE ONE NUMBER)**

- Not at all..... 1
- Somewhat..... 2
- A lot ..... 3

38. Does your current job involve engineering? **(PLEASE CIRCLE ONE NUMBER)**

- Yes ..... 1
- No..... 2

39. If you were designing undergraduate research programs, how would you make them better than the programs you participated in?
40. Comments:

**Thank you very much for your participation in this study.  
As a token of our appreciation, we will send you a \$20 [insert online retailer] gift certificate  
when we receive your completed questionnaire.**

If you have questions, please contact the SRI study director, Mary Hancock  
(360-380-4126, mary.hancock@sri.com)

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