**U.S. Department of Energy
Science and Engineering Research Semester
Fall 1996 Data Summary: All Participants
Final Report**

August 1997

Prepared by:
Argonne National Laboratory
and
Oak Ridge Institute for Science and Education

APPROVED FOR PUBLIC RELEASE:
FURTHER DISSEMINATION UNLIMITED

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This report results from collaboration between the Division of Educational Programs at Argonne National Laboratory and the Education and Training Division at the Oak Ridge Institute for Science and Education.

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**U.S. Department of Energy
Science and Engineering Research Semester
SERS Data Highlights: ALL Participants, FALL 1996**

**U.S. Department of Energy
Science and Engineering Research Semester**

SERS Data Highlights: ALL Participants, FALL 1996

- Entry forms (146) were received from all 7 labs.
- Exit forms (114) were received from 6 out of 7 labs.
- The number of SERS participants who provided both entry and exit forms was 109.

ENTRY Responses

- Ages of Fall 1996 respondents ranged from 19 to 51 years, with a mean age of almost 22.
- The students were from 115 college/university campuses.
- Males outnumbered females 62 percent to 38 percent.
- About 96 percent were U.S. citizens.
- Race/ethnicity representation included 82 percent Caucasian, 8 percent Hispanic, 5 percent Asian, 4 percent Black, and less than 1 percent each Pacific Islander and American Indian/Alaskan Native.
- While the largest proportions of the SERS respondents stated their current academic standing to be junior (25 percent) or senior (54 percent), 19 percent had already received their bachelor's degrees.
- The most frequently cited means of learning about SERS were:
 - bulletin board flier (51 percent)
 - faculty member (19 percent)
 - campus co-op office (16 percent)
- The most frequently cited reasons for participation in SERS were:
 - to gain research experience not available on campus (76 percent)
 - to learn more about applied scientific research (56 percent)
 - for the practical experience (49 percent)
- The largest proportions of the respondents indicated their fields of bachelor's degree to be chemistry (13 percent), physics (13 percent), and biology (11 percent).
- Almost 69 percent indicated they communicated with lab scientific staff before accepting their appointment; almost 83 percent said they communicated with lab staff after accepting but before beginning their appointment.
- About 49 percent indicated that SERS participation would alter the date to receive bachelor's degree; most of these said participation would delay graduation by one semester.

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Science and Engineering Research Semester**

SERS Data Highlights: ALL Participants, FALL 1996

EXIT Responses

- In assessing their program participation, respondents "agreed" or "strongly agreed" to the following statements:

participated in actual ongoing research	92%
gained practical experience in field	98%
contributed significantly to ongoing lab research	85%
academic preparation was adequate	95%
received sufficient prior information about SERS	82%
lab scientific staff was available to guide/assist me	96%
housing facilities were adequate	92%
stipend was sufficient	76%
expect to continue interaction with SERS students	74%
expect to continue interaction with lab scientific staff	91%
expect SERS research to contribute to publication	58%
would recommend SERS program to other students	99%

- The number of seminars attended at the lab ranged from 0 to 53, with a mean of about 7.
- Almost 47 percent expected credit from their college/university for their SERS research, and almost 22 percent attended a college/university course for credit during the SERS appointment.

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SERS Data Highlights: ALL Participants, FALL 1996

ENTRY VERSUS EXIT Responses

- There were 109 students in the Fall 1996 programs who provided both entry and exit responses, which allows a look at short-term changes in intentions of students regarding education and employment aspirations.
- The proportion of students expecting a Ph.D. as their highest degree increased from 47 percent at entry to 51 percent at exit; the proportion expecting a master's as their highest degree declined only slightly from 36 percent at entry and 35 percent at exit.
- There were only slight shifts for fields of highest expected degree between entry and exit responses. Majors with high proportions of responses included:
 - chemistry (almost 12 percent at both entry and exit)
 - computer science (8 percent at entry and 10 percent at exit)
 - medicine (7 percent at entry and 10 percent at exit)
- Regarding anticipated primary work activity, there was a slight decrease from 40 percent to 37 percent for applied research; basic research increased slightly from 13 percent at entry to 14 percent at exit; development decreased from 12 percent at entry to 9 percent at exit.
- Choice of anticipated employer showed increases from entry to exit for business/industry (27 percent at entry to 35 percent at exit); federal laboratory decreased from 16 percent to 13 percent; university-affiliated research institute increased from 8 percent at entry to 10 percent at exit.
- When asked to which area they would devote the most professional time in their anticipated career, respondents' interest in energy/fuel decreased from 26 percent at entry to 18 percent at exit. Interest in the environment decreased from 23 percent to 19 percent, and interest in health and safety increased slightly from 21 percent to 24 percent upon exit.

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Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

College/university of participants

	Frequency	Percent
Alcorn State University	1	0.7 %
Alma College	2	1.4
Aquinas College	1	0.7
Arizona State University	1	0.7
Auburn University	1	0.7
Berea College	1	0.7
Bethany College (KS)	1	0.7
Bethel College (MN)	1	0.7
Boston University	1	0.7
Bridgewater State College	1	0.7
Brooklyn College	1	0.7
Brown University	1	0.7
Bryn Mawr College	1	0.7
Bucknell University	1	0.7
California State University-Chico	2	1.4
California State University-Northridge	1	0.7
Carleton College	1	0.7
Carlow College	1	0.7
Cedarville College	1	0.7
Clarkson University	1	0.7
College of the Holy Cross	1	0.7
Colorado State University	1	0.7
Cornell University	2	1.4
Dartmouth College	3	2.1
Duke University	1	0.7
Eastern New Mexico University Main Campus	1	0.7
Elizabeth City State University	2	1.4
Emory and Henry College	1	0.7
Evergreen State College	1	0.7
Florida Institute of Technology	1	0.7
Georgia Institute of Technology	1	0.7
Grambling State University	1	0.7
Hamline University	2	1.4
Harvard University	1	0.7
Haverford College	1	0.7
Hesston College	1	0.7
Humboldt State University	2	1.4
Illinois College	1	0.7
Illinois Institute of Technology	1	0.7
Illinois Wesleyan University	1	0.7
Indiana University Kokomo	1	0.7
Iowa State University	1	0.7
Ithaca College	2	1.4

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

College/university of participants

	Frequency	Percent
Kalamazoo College	1	0.7
Kent State University Main Campus	1	0.7
Leland Stanford Junior University	1	0.7
Louisiana Scholars' College	1	0.7
Manatee Community College	1	0.7
Mayville State University	1	0.7
Metropolitan State College of Denver	3	2.1
Miami University	1	0.7
Michigan Technological University	1	0.7
Middle Tennessee State University	2	1.4
Mississippi State University	1	0.7
Missouri Southern State College	1	0.7
Monroe Community College	1	0.7
North Carolina State University	2	1.4
North Dakota State University Main Campus	1	0.7
Norwich University	1	0.7
Oberlin College	1	0.7
Oregon State University	2	1.4
Pacific Lutheran University	1	0.7
Pennsylvania State University at Harrisburg	1	0.7
Pomona College	1	0.7
Ramapo College of New Jersey	1	0.7
Saint Bonaventura University	1	0.7
Saint Mary's College of California	1	0.7
Salem State College	1	0.7
San Jacinto College	1	0.7
South Dakota School of Mines and Technology	1	0.7
Southwest Baptist University	2	1.4
Southwest Missouri State University	3	2.1
Spelman College	1	0.7
Swarthmore College	1	0.7
Tennessee Technological University	1	0.7
Texas A & M University	2	1.4
Texas Tech University	1	0.7
The Ohio State University Main Campus	1	0.7
Transylvania University	2	1.4
Universidad Metropolitana	3	2.1
University of Alaska Fairbanks	1	0.7
University of Arkansas at Little Rock	1	0.7
University of California-Berkeley	2	1.4
University of California-Davis	1	0.7
University of California-San Diego	2	1.4
University of California-Santa Cruz	2	1.4

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ENTRY Responses: ALL Participants, FALL 1996

College/university of participants

	Frequency	Percent
University of Dayton	1	0.7
University of Idaho	1	0.7
University of Illinois at Chicago	2	1.4
University of Illinois at Urbana-Champaign	1	0.7
University of Massachusetts at Amherst	1	0.7
University of Minnesota	1	0.7
University of Nebraska-Lincoln	1	0.7
University of Nevada, Reno	1	0.7
University of Puerto Rico Cayey University College	1	0.7
University of Puerto Rico Mayaguez Campus	2	1.4
University of Tennessee, Knoxville	3	2.1
University of Texas at Dallas	1	0.7
University of West Alabama	1	0.7
University of Wisconsin-Madison	2	1.4
University of Wisconsin-Stevens Point	2	1.4
University of Wisconsin-Whitewater	1	0.7
University of Wyoming	1	0.7
Vassar College	1	0.7
Wartburg College	1	0.7
Washington University	1	0.7
Weber State University	1	0.7
Western Carolina University	1	0.7
Western Montana College	1	0.7
Western Washington University	2	1.4
Whitman College	1	0.7
Wilkes University	1	0.7
Willamette University	1	0.7
William Jewell College	1	0.7
Williams College	1	0.7

Total = 146

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ENTRY Responses: ALL Participants, FALL 1996

Participant age

	Frequency	Percent
19	2	1.4%
20	19	13.2
21	46	31.9
22	38	26.4
23	12	8.3
24	10	6.9
25	1	0.7
26	2	1.4
27	3	2.1
28	2	1.4
29	1	0.7
30	1	0.7
33	1	0.7
38	1	0.7
39	1	0.7
42	1	0.7
43	1	0.7
44	1	0.7
51	1	0.7

Total = 144

Item nonresponse = 2

Note: Mean age = 21.8

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996**

Participant gender

	Frequency	Percent
Male	91	62.3%
Female	55	37.7

Total = 146

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Participant citizenship

	Frequency	Percent
U.S. Native Born	138	93.2%
U.S. Naturalized	4	2.7
Permanent Resident Alien	5	4.1

Total = 146

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

Participant race/ethnicity

	Frequency	Percent
American Indian/Alaskan Native	1	0.7%
Asian	7	4.8
Pacific Islander	1	0.7
Black (Not Hispanic)	6	4.1
Caucasian (Not Hispanic)	119	81.5
Hispanic	11	7.5
Other	1	0.7

Total = 146

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

How did you learn about this program?

	Frequency	Percent
Bulletin board flier	74	50.7%
Faculty member	27	18.5
Other students	19	13.0
Campus co-op office	23	15.6
SERS campus coordinator	1	0.7
Academic advisor	13	8.9
Off-campus recruiter	1	0.7
DOE laboratory staff	10	6.6
Journal advertisement	4	2.7
Electronic bulletin board/Internet	6	4.1
Former DOE program participant	3	2.1
Mailing from DOE or DOE contractor	3	2.1
Other	6	4.1

Note: 146 participants responded to this question; percentages do not add to 100% because participants were allowed to check multiple responses.
Some of the more frequent written responses for the "Other" choice have been included here to provide additional information (Electronic bulletin board/Internet, Former DOE program participant, Mailing from DOE or DOE contractor).

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

Facility

	Frequency	Percent
Argonne National Laboratory	47	32.2%
Brookhaven National Laboratory	9	6.2
Lawrence Berkeley National Laboratory	10	6.8
Lawrence Livermore National Laboratory	13	8.9
Los Alamos National Laboratory	26	17.8
Oak Ridge National Laboratory	18	12.3
Pacific Northwest National Laboratory	23	15.8

Total = 146

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

What were the main factors influencing your choice of laboratory for the SERS program?

	<u>Frequency</u>	<u>Percent</u>
Research programs at the laboratory	121	83.4 %
Reputation of the laboratory	50	34.5
Contact with laboratory	29	20.0
Recommendation of faculty member	28	19.3
Recommendation of former student participant	14	9.7
Geographical location	84	57.9
Other	5	3.4

Note: 145 participants responded to this question; percentages do not add to 100% because participants were allowed to check multiple responses.

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1986

What were the main reasons you chose to participate in the SERS program?

	<u>Frequency</u>	<u>Percent</u>
Gain research experience not available on campus	114	78.1%
For the practical experience	71	48.6
Learn more about applied scientific research	81	55.5
Receive special instrumentation training	10	6.8
For academic credit	8	5.5
Confirm choice of major field of study	58	39.7
Develop contacts for first job	38	26.0
Break in usual campus routine	24	16.4
Other	6	4.1

Note: 146 participants responded to this question; percentages do not add to 100% because participants were allowed to check multiple responses.

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

What is your current academic standing?

	<u>Frequency</u>	<u>Percent</u>
College junior	37	25.3%
College senior	79	54.1
B.S. recipient	28	19.2
Other	2	1.4

Total = 146

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Field of bachelor's degree

	Frequency	Percent
Biochemistry and biophysics	6	4.2 %
Bioengineering and biomedical engineering	1	0.7
Biology, general	16	11.1
Cell and molecular biology	7	4.9
Chemical engineering	4	2.8
Chemistry	19	13.2
Civil engineering	1	0.7
Computer programming	2	1.4
Computer science	12	8.3
Computer/information sciences, general	2	1.4
Computer/systems engineering	1	0.7
Conservation/renewable natural resources, other	1	0.7
Earth sciences	2	1.4
Economics	1	0.7
Electrical and electronic technologies	1	0.7
Electrical, electronics, communications engineering	5	3.5
Engineering sciences, mechanics, physics	4	2.8
Engineering, other	1	0.7
Engineering-related technologies, other	2	1.4
Environmental engineering	5	3.5
Environmental science studies	4	2.8
Genetics, animal and plant	1	0.7
Geology	2	1.4
Industrial production technologies	1	0.7
Liberal arts/general studies	1	0.7
Mathematics, applied	4	2.8
Mathematics, general	5	3.5
Mechanical engineering	7	4.9
Mechanical engineering-related technologies	2	1.4
Microbiology	1	0.7
Physical sciences, other	1	0.7
Physics	18	12.5
Pre-elementary teacher education	1	0.7
Public health	1	0.7
Zoology, general	1	0.7
Other fields	1	0.7

Total = 144

Item nonresponse = 2

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

In what year do you expect to receive your bachelor's degree?

	Frequency	Percent
1996	33	22.8%
1997	57	39.3
1998	43	29.7
1999	11	7.6
2000	1	0.7

Total = 145

Item nonresponse = 1

Note: Mean year = 1997

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

What is the highest degree you expect to receive?

	<u>Frequency</u>	<u>Percent</u>
B.A. or B.S.	11	7.6%
M.A. or M.S.	48	33.1
Ph.D.	75	51.7
M.D.	11	7.6

Total = 145

Item nonresponse = 1

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

In what year do you expect to receive your highest degree?

	Frequency	Percent
1996	2	1.7%
1997	2	1.7
1998	6	5.0
1999	10	8.3
2000	20	16.5
2001	18	14.9
2002	29	24.0
2003	19	15.7
2004	11	9.1
2005	3	2.5
2012	1	0.8

Total = 121

Item nonresponse = 25

Note: Mean year = 2001

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ENTRY Responses: ALL Participants, FALL 1996

Field of expected highest degree	Frequency	Percent
Administration, education	1	0.8 %
Aerospace, aeronautical, astronautical engineering	1	0.8
Architectural engineering	1	0.8
Astronomy and astrophysics	1	0.8
Atmospheric sciences and meteorology	1	0.8
Biochemistry and biophysics	6	4.5
Bioengineering and biomedical engineering	2	1.5
Biological sciences, other	1	0.8
Biology, general	3	2.3
Cell and molecular biology	7	5.3
Chemical engineering	2	1.5
Chemistry	14	10.6
Civil engineering	1	0.8
Computer programming	2	1.5
Computer science	8	6.1
Computer/information sciences, general	3	2.3
Data processing technology	1	0.8
Earth sciences	1	0.8
Ecology	2	1.5
Electrical, electronics, communications engineering	6	4.5
Engineering sciences, mechanics, physics	3	2.3
Engineering, other	1	0.8
Environmental engineering	7	5.3
Environmental science studies	3	2.3
Genetics, animal and plant	3	3.8
Geological sciences, other	2	1.5
Industrial production technologies	1	0.8
Materials engineering	2	1.5
Mathematics, general	1	0.8
Mathematics, other	1	0.8
Mechanical engineering	8	6.1
Medicine	10	7.6
Microbiology	2	1.5
Nuclear engineering	1	0.8
Oceanography	1	0.8
Operations research	1	0.8
Pharmacology, human and animal	1	0.8
Physical sciences, other	1	0.8
Physics	12	9.1
Plant sciences	1	0.8
Public health	1	0.8
Science teacher education	1	0.8
Other fields	2	1.5

Total = 132

Item nonresponse = 14

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Indicate the one primary professional work activity associated with your anticipated future career

	Frequency	Percent
Accounting, finance, contracts	1	0.7%
Applied research	59	40.4
Basic research	19	13.0
Computer applications	14	9.6
Design of equipment, processes	10	6.8
Development	15	10.3
Employee relations	1	0.7
Management and administration	4	2.7
Professional services	11	7.5
Quality or productivity management	1	0.7
Teaching	10	6.8
Other	1	0.7

Total = 146

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

Indicate the one category that best describes the type of employer you would like to work for in your anticipated career.

	Frequency	Percent
Two-year college, junior college, technical institute	1	0.7 %
Four-year college/university	22	15.2
Business or industry	38	26.2
Elementary, middle or secondary school/system	1	0.7
Federal laboratory	24	16.6
Local government	2	1.4
Medical school	14	9.7
Nonprofit organization	2	1.4
Self-employed	15	10.3
State government	1	0.7
U.S. government, civilian	5	3.4
University-affiliated research institute	14	9.7
Other	6	4.1

Total = 145

Item nonresponse = 1

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Indicate the one area to which you would like to devote the most professional time in your anticipated career.

	Frequency	Percent
Energy/fuel	37	25.5%
Environment	34	23.4
Health/safety	32	22.1
National defense	8	5.5
None of the above	34	23.4

Total = 145

Item nonresponse = 1

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY Responses: ALL Participants, FALL 1996

Indicate the one energy-related activity to which you would be most interested in devoting your future professional time.

	Frequency	Percent
Conservation, utilization, management, storage	8	21.6 %
Electric power generation and transmission	6	16.2
Environment, health and safety	4	10.8
Exploration and extraction	6	16.2
Fuel processing	3	8.1
Manufacture of energy-related equipment	6	16.2
Waste management or decommissioning	1	2.7
Other energy-related activity	3	8.1

Total = 37

Note: The above responses are for those respondents who checked "energy/fuel" for the previous item.

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Indicate the extent to which you have been involved in different types of research projects on your college or university campus.

	<u>Frequency</u>	<u>Percent</u>
1. Self-directed projects as part of course		
Not involved	32	22.9%
Moderately involved	62	44.3
Heavily involved	46	32.9
Total = 140		
Item nonresponse = 6		
2. Student-team projects as part of course		
Not involved	37	27.0%
Moderately involved	53	38.7
Heavily involved	47	34.3
Total = 137		
Item nonresponse = 9		
3. Self-directed projects not part of course		
Not involved	70	50.7%
Moderately involved	45	32.6
Heavily involved	23	16.7
Total = 138		
Item nonresponse = 8		
4. Projects under supervision of graduate student		
Not involved	111	81.6%
Moderately involved	14	10.3
Heavily involved	11	8.1
Total = 136		
Item nonresponse = 10		
5. Major projects under supervision of faculty member		
Not involved	62	44.0%
Moderately involved	38	27.0
Heavily involved	41	29.1
Total = 141		
Item nonresponse = 5		

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Did you communicate with the laboratory scientific staff before accepting your appointment?

	Frequency	Percent
Yes	100	68.5%
No	43	31.5

Total = 146

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Did you communicate with the laboratory scientific staff after accepting but before beginning appointment?

	Frequency	Percent
Yes	121	82.9%
No	25	17.1

Total = 146

**U.S. Department of Energy
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ENTRY Responses: ALL Participants, FALL 1996

Does participation in the SERS program alter the date you expect to receive your bachelor's degree?

	Frequency	Percent
Yes	71	48.6 %
No	75	51.4

Total = 146

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EXIT Responses: ALL Participants, FALL 1996

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the one energy-related activity to which you would be most interested in devoting your future professional time.

	Frequency	Percent
Conservation, utilization, management, storage	4	21.1 %
Electric power generation and transmission	1	5.3
Environment, health and safety	1	5.3
Exploration and extraction	2	10.5
Fuel processing	1	5.3
Manufacture of energy-related equipment	5	26.3
Waste management or decommissioning	1	5.3
Other energy-related activity	4	21.1

Total = 19

Note: The above responses are for those respondents who checked "energy/fuel" for the previous item.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the one area to which you would like to devote the most professional time in your anticipated career.

	Frequency	Percent
Energy/fuel	19	16.8%
Environment	20	17.7
Health/safety	27	23.9
National defense	5	4.4
None of the above	42	37.2

Total = 113

Item nonresponse = 1

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the one category that best describes the type of employer you would like to work for in your anticipated career.

	Frequency	Percent
Two-year college, junior college, technical institute	1	0.9%
Four-year college/university	13	11.6
Business or industry	39	34.8
Elementary, middle or secondary school/system	3	2.7
Federal laboratory	15	13.4
Medical school	10	8.9
Self-employed	14	12.5
State government	1	0.9
U.S. government, civilian	4	3.6
University-affiliated research institute	11	9.8
Other	1	0.9

Total = 112

Item nonresponse = 2

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the one primary professional work activity associated with your anticipated future career.

	Frequency	Percent
Applied research	40	35.4%
Basic research	15	13.3
Computer applications	11	9.7
Design of equipment, processes	11	9.7
Development	11	9.7
Employee relations	1	0.9
Management and administration	4	3.5
Professional services	9	8.0
Quality or productivity management	1	0.9
Teaching	7	6.2
Other	3	2.7

Total = 113

Item nonresponse = 1

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Field of expected highest degree	Frequency	Percent
Administration, education	1	0.9%
Aerospace, aeronautical, astronautical engineering	1	0.9
Astronomy and astrophysics	1	0.9
Atmospheric sciences and meteorology	1	0.9
Biochemistry and biophysics	1	0.9
Bioengineering and biomedical engineering	3	2.7
Biology, general	3	2.7
Botany	1	0.9
Cell and molecular biology	7	6.3
Chemical engineering	3	2.7
Chemistry	11	9.8
Civil engineering	2	1.8
Computer and information sciences, other	1	0.9
Computer programming	2	1.8
Computer science	10	8.9
Computer/information sciences, general	1	0.9
Computer/systems engineering	1	0.9
Ecology	2	1.8
Electrical and electronic technologies	2	1.8
Electrical, electronics, communications engineering	7	6.3
Engineering sciences, mechanics, physics	2	1.8
Engineering, other	1	0.9
Engineering-related technologies, other	1	0.9
English language and literature/letters	1	0.9
Environmental engineering	5	4.5
Environmental science studies	2	1.8
Genetics, animal and plant	2	1.8
Geology	2	1.8
Health/medical assistants	1	0.9
Materials engineering	1	0.9
Mathematics teacher education	1	0.9
Mechanical engineering	5	4.5
Mechanical engineering-related technologies	2	1.8
Medicine	10	8.9
Microbiology	1	0.9
Oceanography	1	0.9
Pharmacology, human and animal	1	0.9
Physical sciences, other	1	0.9
Physical therapy and rehabilitation/therapeutic	1	0.9
Physics	6	5.4
Public health	1	0.9
Science teacher education	1	0.9
Zoology, general	1	0.9
Other fields	1	0.9

Total = 112

Item nonresponse = 2

**U.S. Department of Energy
Science and Engineering Research Semester
EXIT Responses: ALL Participants, FALL 1996**

In what year do you expect to receive your highest degree?

	Frequency	Percent
1997	2	2.1%
1998	3	3.2
1999	9	9.6
2000	18	18.9
2001	16	16.8
2002	22	23.2
2003	12	12.6
2004	4	4.2
2005	6	6.3
2007	1	1.1
2008	1	1.1
2009	1	1.1

Total = 95

Item nonresponse = 19

Note: Mean year = 2002

**U.S. Department of Energy
Science and Engineering Research Semester
EXIT Responses: ALL Participants, FALL 1996**

What is the highest degree you expect to receive?

	Frequency	Percent
B.A. or B.S.	5	4.4%
M.A. or M.S.	40	35.4
Ph.D.	58	51.3
M.D.	9	8.0
Other Professional	1	0.9

Total = 113

Item nonresponse = 1

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

In what year do you expect to receive your bachelor's degree?

	Frequency	Percent
1991	1	0.9%
1995	1	0.9
1996	23	20.5
1997	45	40.2
1998	35	31.3
1999	6	5.4
2000	1	0.9

Total = 112

Item nonresponse = 2

Note: Mean year = 1997

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Does participation in the SERS program alter the date you expect to receive your bachelor's degree?

	Frequency	Percent
Yes	56	49.1%
No	58	50.9

Total = 114

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Quarter hours of credit received for college/university course during SERS appointment.

	<u>Frequency</u>	<u>Percent</u>
5	1	50.0%
8	1	50.0

Total = 2

Note: Mean number of quarter hours credit = 6.5

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Semester hours of credit received for college/university courses during SERS appointment.

	Frequency	Percent
1	2	9.1%
3	16	72.7
4	3	13.6
8	1	4.5

Total = 22

Note: Mean number of semester hours credit = 3.2

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Did you attend a college/university course for credit during the SERS appointment?

	<u>Frequency</u>	<u>Percent</u>
Yes	25	21.9%
No	89	78.1

Total = 114

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Quarter hours of academic credit received from home college/university for the research conducted in the SERS program.

	Frequency	Percent
2	4	50.0%
4	1	12.5
7	1	12.5
8	2	25.0

Total = 8

Note: Mean number of quarter hours credit = 4.4

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Semester hours of academic credit received from home college/university for the research conducted in the SERS program.

	Frequency	Percent
1	2	5.4%
2	6	16.2
3	12	32.4
4	2	5.4
6	4	10.8
8	3	8.1
12	5	13.5
13	1	2.7
15	1	2.7
18	1	2.7

Total = 37

Note: Mean number of semester hours credit = 5.7

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Will you receive academic credit from your home college/university for the research you have conducted in the SERS program?

	Frequency	Percent
Yes	53	46.5%
No	55	48.2
Don't know	6	5.3

Total = 114

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Approximately how many seminars did you attend at your laboratory?

	Frequency	Percent
0	4	3.9 %
1	9	8.8
2	9	8.8
3	11	10.8
4	14	13.7
5	13	12.7
6	11	10.8
7	3	2.9
8	3	2.9
9	2	2.0
10	9	8.8
11	1	1.0
12	2	2.0
14	1	1.0
15	4	3.9
25	1	1.0
35	2	2.0
40	1	1.0
50	2	2.0

Total = 102

Item nonresponse =12

Note: Mean number of seminars = 7.2

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the extent to which you agree or disagree with the following statements about the SERS appointment.

	<u>Frequency</u>	<u>Percent</u>
11. I expect my SERS research will contribute to a publication.		
Strongly agree	32	28.3%
Agree	34	30.6
Disagree	38	24.2
Strongly disagree	7	6.3
Total = 111		
Item nonresponse = 3		
12. I would recommend this program to other college students.		
Strongly agree	79	69.3%
Agree	34	29.8
Disagree	1	0.9
Total = 114		

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the extent to which you agree or disagree with the following statements about the SERS appointment.

	<u>Frequency</u>	<u>Percent</u>
6. Laboratory scientific staff was available to guide or assist me.		
Strongly agree	75	65.8%
Agree	34	29.8
Disagree	5	4.4
Total = 114		
7. Housing facilities provided were adequate.		
Strongly agree	44	41.1 %
Agree	55	51.4
Disagree	8	5.8
Strongly disagree	2	1.9
Total = 107		
Item nonresponse = 7		
8. The stipend provided was sufficient.		
Strongly agree	30	26.3%
Agree	57	50.0
Disagree	22	19.3
Strongly disagree	5	4.4
Total = 114		
9. I expect I will continue interaction with other SERS students.		
Strongly agree	37	32.7%
Agree	47	41.6
Disagree	27	23.9
Strongly disagree	2	1.8
Total = 113		
Item nonresponse = 1		
10. I expect I will continue interaction with laboratory scientific staff.		
Strongly agree	48	42.9%
Agree	54	48.2
Disagree	10	8.9
Total = 112		
Item nonresponse = 2		

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Indicate the extent to which you agree or disagree with the following statements about the SERS appointment.

	<u>Frequency</u>	<u>Percent</u>
1. I participated in actual ongoing research.		
Strongly agree	73	64.6%
Agree	31	27.4
Disagree	7	6.2
Strongly disagree	2	1.8
Total = 113		
Item nonresponse = 1		
2. I gained practical experience in my field.		
Strongly agree	73	64.0%
Agree	39	34.2
Disagree	2	1.8
Total = 114		
3. I contributed significantly to ongoing research in the laboratory.		
Strongly agree	50	43.9%
Agree	47	41.2
Disagree	15	13.2
Strongly disagree	2	1.8
Total = 114		
4. My academic preparation for my assignment was adequate.		
Strongly agree	47	41.2%
Agree	61	53.5
Disagree	6	5.3
Total = 114		
5. I received sufficient prior information about the nature of the program.		
Strongly agree	38	33.3%
Agree	56	49.1
Disagree	16	14.0
Strongly disagree	4	3.5
Total = 114		

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Facility

	Frequency	Percent
Argonne National Laboratory	37	32.5%
Brookhaven National Laboratory	9	7.9
Lawrence Berkeley National Laboratory	0	0.0
Lawrence Livermore National Laboratory	13	11.4
Los Alamos National Laboratory	24	21.1
Oak Ridge National Laboratory	14	12.3
Pacific Northwest National Laboratory	17	14.9

Total = 114

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program:

I think that SERS is a valuable program that provides students interested in a research career with the opportunity to experience what research involves.

Very good. Excellent research experience.

Very good.

I think the program offers students an excellent opportunity to experience the research community of a national lab. It's an awesome chance to get material that can be published and a great place to network with people in the fields we entered into.

I think the program overall is very good. The disorganization within the SERS staff was hard to deal with. Phone calls weren't returned within a reasonable amount of time, e-mail wasn't answered, and paper abstracts were lost.

It offers an excellent opportunity to learn, make contacts, and begin to build your specific career.

I think this is a very good program, but I also think it needs improvement. There wasn't enough supervision from SERS personnel, but it is a very educational program in many ways. I learned a lot about doing research and working for the government. At times, the work was very frustrating, but I feel that I truly learned a lot.

It was a great opportunity and experience. I received a lot of practical experience in the work field.

It was a killer. I would do it again.

Very good experience. Preparation for grad school.

It's a good program. It would be better if the projects were better organized and had more obvious areas of advancement.

SERS is a very exciting program that provides many educational opportunities.

This has been an excellent opportunity and experience.

It compared favorably to other internships I'd done in the past. My advisor was excellent about integrating me into the lab activities--it was my first opportunity to do experimental physics! (At most other places, the time duration of the internship is too short to permit true experimental work.)

I really enjoyed my experience in the SERS program. I feel that I learned many things that will be of use to me in the future. So, in general, I have a very positive impression of the SERS program.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

The SERS program was a very great experience for me. I learned more here in a semester than I could have learned in four semesters at school. It gave me an opportunity to see and experience technologies I have never even heard of. The time spent here was probably one of the best decisions I have ever made.

Loved it.

This has been a very positive experience. I gained knowledge about applied research, laboratory equipment, and the environmental bioremediation field I would not have otherwise gotten in the classroom. I gained a foothold to other research positions as a result of this program.

I felt the program was well worth my time. I was able to do actual research, gain experience, learn new equipment, and make new friends. It is a great program.

O.K.

The SERS program is definitely worthwhile. I learned valuable, field-related information that I couldn't have learned elsewhere. I thought I'd be doing chemistry research which I applied, but I ended up in an engineering lab. I enjoyed my experience and broadened my knowledge base. Thanks.

It was highly beneficial; clearly the best move I made in college.

I have gained a lot of experience in my field (computer science) since I have been working here.. Also the SERS program helped me to realize the area of research I could/would participate in the future.

SERS is a very good way for a student to get a taste of research. In my case, I learned that I do not want to work for the government at all.

The research experience was great. I got experience programming a large, complex system and also experience working independently. However, phone rates were like extortion, the housing staff treated us like children, the stipend was less than minimum wage... these practical annoyances really subtracted from my overall enjoyment of the experience.

My experience was mainly as a normal job. The SERS program is a good chance to get some work experience without required previous experience that similar positions would require.

Overall "Good."

A very good opportunity for a student to get hands-on experience.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

It is a great program. The experience I have gained will really amount to something. I haven't just shadowed a researcher, as I had expected; instead, I have actively led the lab's efforts to establish a certification authority and integrate with other DOE certification authorities in a public-key infrastructure. Still, I had expected my appointment to be more research-oriented and less application. I haven't been conducting research at all, but I have been helping to advance the field.

The program helped me gain research experience in a group research project. It will be very hard to gain the same experience in my undergraduate institution because the research done at the undergraduate level is more individualized.

The program was very worthwhile and will hopefully help me in my career decisions. The program was well organized and provided adequate assistance/ structure to keep us going throughout the semester.

The SERS program has been challenging, fulfilling, and exciting. Staff members have been sincere and helpful, proving to be excellent role models for an aspiring young professional. Being an engineering graduate, I look forward to continuing my education and rounding my knowledge through practical experience. The lab has been an inspiration, and I look forward to maintaining contact with the professionals I've met here.

I think that SERS is an overall good experience. My experience could have been better if my supervisor would have interacted with me more. I was not clear on my purpose here, and I think my supervisor thought it had already been explained to me. I think it's a good experience for students like me to be introduced to a new environment, but you have to give them a little bit of background so they know why they are doing it. Overall, it was a positive experience.

For myself, I was very happy with my supervisor and the significant role I played in my research project. I took on a large portion of responsibilities and was able to even make decisions on my own.

The SERS program provided me with vital experience in research and development and helped me to clarify future goals for myself. It is an excellent opportunity for undergraduate students to experience a scientific/research environment, especially if they attend schools which are not strongly research-oriented. The staff on-site were extremely helpful in arranging for special conditions.

Very worthwhile. I learned much more than I expected to.

The SERS program is an excellent program and gave me the opportunity to do research, get experience in my interested field, and maybe get a publication. But I think the students can do more work and more research because they are capable to do it, especially the graduate students.

U.S. Department of Energy
Science and Engineering Research Semester
EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERP program: (Continued)

I feel the SERP program gave me the experience and knowledge necessary to pursue a higher level of education. This experience also gave me direction on a career path. I would recommend the SERP program to my colleagues due to the fact that there are great opportunities to increase knowledge and experience.

O.K.

I worked in a very laid-back, low-pressure atmosphere. This was good in that it was relaxing. It was bad in that I tended to become unchallenged, lazy, and unmotivated. Job freedom was a big plus. Other SERP students were great to be with. The SERP program is beneficial to about half of the students involved. Several appointments were poorly directed, and students were not able to contribute to their full capacity. I learned while I was here, but I could've done much more.

Good exposure to a government lab. Research experience was all right, but valuable research experience can also be gained elsewhere, i.e., industry.

I liked having the opportunity to do real research before I get my Ph.D. I think the student program gives opportunities to explore your interests without having to commit long-term.

The SERP program was a very good research and learning experience. I believe this program should continue. It provides the students the tools for a better understanding of what they want to do with their academic and professional lives.

Good learning experience.

I had an overall positive experience with the SERP program. I learned a great deal about radiochemistry, a field that I had not considered before an option as a career choice. The people in my lab were very helpful and patient. I enjoyed spending time with the fellow students, and the SERP program was helpful in getting us transportation for certain events.

I believe that this is an incredibly great way for students interested in scientific research to learn about the career path and prepare for it. I had a very good supervisor and worked with a very good staff, learning a lot from all of them. I'm glad I had this opportunity.

Very good! Gave me an opportunity to work with experts in my field and state-of-art environment. This program was beneficial to me because my school is small and generally does not offer original research opportunities. Based on personal observations and the comments of my peers, I feel that the program could have benefited from more organized administration.

I enjoyed my time spent working here, and I gained a lot of laboratory skills and knowledge that I would not have gained otherwise. I was rather disappointed in my research project because it wasn't really what I was interested in. I also found that the program lacked some in organization.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

I enjoyed working here and feel this semester has provided me with a good deal of valuable laboratory experience. I learned a lot about the scientific process and found it interesting to see so closely how research is undertaken.

It has been my experience that most SERS students have found the program to be a richly rewarding semester. Most students are involved in ongoing research that is exciting, new, and useful to society.

It has allowed me to not only obtain the hands-on experience required for the work field, but also to meet various people and make connections through interaction for possible future employment or obtain help through them.

A great opportunity!

The SERS program is a valuable experience for anyone interested in pure or applied research. The opportunity to work with scientific equipment/instruments like the medical research reactor or the particle accelerators which cannot be found elsewhere is one of the greatest benefits of the SERS program.

I have found the SERS program to be very beneficial for many reasons. I was able to get some hands-on experience and gain practical skills that will be of great help when I get to graduate school. I have made some valuable contacts in my intended field of study, and I had the chance to meet and work with interesting people/scientists from around the U.S. and world. I would recommend the program to other students as a great learning experience.

It was an excellent opportunity to understand the effort that goes behind publishing a paper in a scientific journal. Work like this is easy to loose sight of when in school.

I think the experience gained is excellent. I have felt that my work was significant, and I have learned many new techniques.

My overall impressions of the program are very positive. It allows students to conduct research, gaining experience which can never be found on the pages of a book. It also introduces the students to some of the politics guiding today's research.

It has been very enjoyable for me. It's always great to meet students from around the country with similar interests. The job has been good for me by giving me an idea of the opportunity of working in a federal lab. The stipend and housing provided are really helpful in making it feasible for students to participate.

The program kept me very busy. I worked a lot in the lab and also attended most of the seminars and field trips. I gained laboratory experience and made new friends, met interesting people. It was a good learning experience.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

The SERS program is a great learning experience for students. I will definitely recommend it to friends and peers.

The SERS program is a wonderful opportunity to gain knowledge and experience in your chosen field of study. The stipend is not adequate for the cost of living in California, so I can only recommend participating in the program for one semester.

It was a wonderful experience. My project was education-related and therefore not very scientific. I learned a great deal about research and its importance in decision making.

An excellent opportunity to gain hands-on experience to apply your own skills and abilities to a project. You can set your own goals and the milestones to achieve them.

The SERS program has been a wonderful experience and valuable tool in learning more about the research process and my field of interest in general. I have also learned much about California, met many great people, and got to know the Sierras very well. The SERS program is an experience which I will tell many about.

I think it is generally a good program. I think it is important to have a good mentor, and possibly screening mentors more closely would not be a bad idea.

It seems to be a good way for an individual to get a good start in an area.

This is a great program. The seminars were very helpful and the meetings with Dr. _____ and Dr. _____ were inspirational. I loved the field trips also. It really opened my eyes to all the scientific goings-on that I never would have had a chance to observe otherwise. I had a terrific mentor and learned so much this semester. I look forward to continuing.

An outstanding experience. Gave me amazing background and confidence. Contributed direction to my career choices. Perhaps the finest and most influential academic experience of my life.

The SERS program was valuable because it gave me the chance to interact with a very close group. The staff was very supportive in answering all my questions. SERS has an atmosphere unlike college or "a real job" but somewhere between the two. It's a great program where a student can find out where their interests lie. It felt like a transition step for me, from school to life on your own.

The SERS program is a good program. I would like to thank DOE and SERS for giving me this chance (my first) in letting me do this research semester. The people I worked with, including the staff, really made my stay really comfortable. Thank you for being so generous and helpful!

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

The SERS program provides an excellent opportunity to explore our interests and to test the researching "waters." However, unless advisors completely understand what the SERS program is and are able to guide students, students may (and have) end up helping or mindlessly assisting rather than coming up with their own research ideas. Overall, great program, but it would be even better if someone had an active hand in insuring that students reach their full potential here.

Overall, I enjoyed the SERS program. It gave me the opportunity to meet other students from around the United States. It also gave me the opportunity to work with a great staff of scientists here.

I was thrilled to have the opportunity to work at the laboratory, and I believe that the decision to participate in the SERS program was one of the best decisions I have made in my life thus far. I enjoyed learning new laboratory techniques and working individually to accomplish a group goal.

I think it's an excellent opportunity to see the inner-workings of a national lab and better understand how research progresses. I wish my particular work had been more relevant to my field, but I still think it was a good experience.

The SERS program has provided me with an opportunity to become involved in research that I would not have seen anywhere else. It opened up doors that were unknown to me. I feel lucky to have stumbled on the research opportunity that Dr. _____ has offered me through SERS. This experience has helped define my future goals in chemistry.

A great experience for a student preparing for a career in the sciences.

Very rewarding and satisfying experience. Great resource of knowledge.

I was not sure if I would take my fellowship when I first learned I could. I obviously did and am exceptionally glad that I did. It actually was everything I hoped it would be. I gained practical "real-world" experience and accomplished a goal (my project) that was not just on paper. I talked to two people who were thinking of coming out here and highly recommended it to both of them.

This has been a fantastic experience to be involved with the leading edge of science and industry. While a fellow, an undergraduate student, is not capable to be fully involved with planning and analyzing research, much can be experienced and learned. It is very important to learn as much as possible about the projects open to the student before accepting an appointment, so that the student can work on projects of great interest.

Very good program to allow student to gain experience in a research field. Good exposure to all facets of research. Excellent opportunity to interact with people from all different backgrounds, cultures, and educations.

I think SERS is a great program. It's very well organized, and the staff are very helpful. I gained great experience and knowledge I wouldn't have gained without SERS. This is an excellent program.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

I think it gives participants an opportunity to gain valuable research skills, and the overall experience helps students to finalize their future plans.

I thought the program was very good and well planned out. It gave me the opportunity to learn about and experience things which I never would have been able to do at my school.

I think this program provides an excellent opportunity for undergraduates to gain practical field/research experience. I really appreciate the time I was able to spend here, however, I think it would have been even more valuable had I known more of what to expect.

This is an outstanding program, and I would recommend it to any of my fellow students.

This program was invaluable. The program goals are to encourage undergraduates to pursue advanced study in some area, and this is precisely what I needed to do. I can't say enough about what an experience it has been!

It was time well spent. Working for a national laboratory not only gives me a chance to conduct state-of-the-art research, but gives me credibility when applying to other programs/schools. I have learned a lot in my field and feel like I could have a good understanding of all other research in my division.

Excellent! This was a great research and educational opportunity. I cannot believe how much I learned. My mentors were great to work with and were willing to help me. I met new friends and made other contacts.

The program was well organized and run. I had a great time!

The SERS program was one of the most outstanding programs I have ever participated in. The benefits as far as educational, experience, and future possibilities are enormous. Aside from this, the cultural experience is wonderful. You are given the opportunity to see another part of the country, along with the opportunity to meet and interact with a diverse range of people overall. The program is simply excellent.

I had a chance to perform research in a field that I would otherwise have had no experience with. I feel this is important. People who plan to stay in research should have the broadest education base possible along with their specialization. The Wednesday group tours were enjoyable and educational.

This was an excellent opportunity to improve my research skills as an undergraduate, from actually performing the research to presenting it in a concise and reviewable manner.

The SERS program is a great chance to gain experience, do relevant work, and build contacts and resume. I had the chance to contribute to a program, make several talks, and tour many lab facilities.

U.S. Department of Energy
Science and Engineering Research Semester

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

The SERS program is a valuable tool in preparing and guiding undergraduates for their potential futures in science.

Great program. Good 80%/20% balance. My mentor was great, housing great, coordinator great.

The program was very good. I learned more here than I have ever learned in four months. I was impressed by the patience and availability of the scientists and the organization of the program. The coordinator and her staff did a great job of keeping us organized and on track.

The SERS program was very rewarding and enlightening. There was opportunity to work with some of the most intelligent people in the country. The knowledge obtained during my stay as a SERS student is unsurpassed and in no way compares to the experience at the university.

I think it's a really great experience which provides students who are considering pursuing a career in research a chance to actually see if it is the field for them. Everyone I worked with was incredibly helpful--always more than willing to answer all my questions and spend the time to explain things to me. The program was very well organized, and the coordinator was very helpful as well.

It's an excellent program. It's helpful both to the student and the lab. I feel very privileged by having been given this great opportunity, and I've gained much from it. I really hope this program can be available to students in the future who are interested in pursuing a career in science.

I had an overall good experience with the SERS program. I think it is a great opportunity for students to get research experience and to learn about the field they worked in.

It is a wonderful program, useful for college students who want to learn about the research environment. It also shows you other things that are happening at the lab and community making it diverse.

It was an excellent opportunity to work with some of the best scientists in the field on cutting-edge research--an opportunity I wouldn't have otherwise received at this stage in my career. I enjoyed the activities we did together as a group (through SERS). This program definitely gave me an advantage over other applicants for grad school. Because of my experience, I have decided on a graduate field of study.

Quality of the program exceeded my expectations, especially in areas outside of the actual research being done, including the weekly tours of other facilities and opportunity to develop life-long friendships with my mentor and other colleagues.

Very good impression from start to finish. Very happy I chose this lab--friendly people, lots of attention and time provided to me and my project, good friends, as rewarding as I wanted it to be.

I feel that the SERS program was a great opportunity for me. It has been a great learning opportunity.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please give us your overall impression of the SERS program: (Continued)

The program gives students a wonderful lab experience. I was highly impressed with the program. The coordinator does an exceptional job with providing the students with a good experience. I will definitely recommend the program to friends.

This was an excellent opportunity for me to work with experts in the field I'd like to obtain an advanced degree in. Unlike in a normal academic semester, I was able to focus on my main topic, then use my free time to teach myself new skills that added to my research. My favorite part of this program was 24-hr.-a-day/7-days-a-week access to the lab library. I truly enjoyed the program, and gained from it!

An exceptionally excellent opportunity! It literally changed my life.

Although my individual experience had a few bureaucratic flaws, the research experience was wonderful. I had great opportunities to work and learn from scientists who were both knowledgeable and generous with their time. I think the educational activities, although improvable, were well-conceived. Overall, my impression is good.

Excellent. The weekly SERS meetings were great, fun, and educational. The chance to work with some of the best scientists in the world was great.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program:

it would provide for a more educational experience if students were included more in the planning process for their projects. I think it is a shame that SERS funding has been cut; since many departments would now be forced to financially support a SERS student in order to have one, I know that many departments will not have students. Unfortunately, this will cut down severely on the number of students to whom this opportunity is available.

Change seminar format. Don't tour labs.

Kill those boring seminars. Ask the students what they are interested in learning more about in the first week. Then construct a list based on the most common answers.

Organizational efforts need to be made in preparing housing material and maps for students in the program.

Timeliness of maps and pre-arrival information is important.

Get more organized.

I realize that there were many difficulties this semester. It was very unfortunate that the coordinator was ill, but this program needs someone to supervise it. I felt that the students were kind of abandoned. It would take a very dedicated, organized person to run this program smoothly.

Bigger stipend checks would be nice.

The addition of more maps for seminar locations.

More money.

More seminars on technical writing and effective presentations of scientific data. Computer training on graphing or spreadsheet software. Making sure each student has a project or research to conduct that is approved by his supervisor and submitted to DEP.

Try to get all the training classes to be at the same time and get them all over at once.

To try something myself.

Just inform the students of how much they make after taxes. We all have a lot of bills to pay, and when the government are taxed, we lose out! Reword the way it's put in the brochures and show students that although they make \$660 in gross pay, we only get \$260 a paycheck after taxes. That's a far cry from the \$450 we expect. I know taxes account for a lot, but tell them how much! Thanks.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

Many complained about the stipends, but I think they are adequate when you calculate in free housing.

If an advisor isn't willing to spend time with students, they should not be in the program.

You need to make the stipend competitive with other research jobs. You are losing lots of great potential who don't bother when they see the amount of the stipend. This is particularly true for computer science students; the typical research job pays \$15-20/hr. (The typical programming job pays \$20-25/hr.)

Education should be factored into stipend pay determination. With one quarter to graduation, I was paid the same as a freshman with little experience.

Lower the housing rent.

Students should have housing more appropriate. Six students in an apartment is too much to handle. I couldn't find a place to study in the night because all rooms have someone in it.

Operation of the SERS program may be improved by providing more detailed information for lodging facilities and services to prospective interns. In this way we may be able to better prepare for our appointment.

I think one of the biggest problems for me was some of the overall impressions the lab gave me. They need to clarify the letters of information that they send us. The stipend wasn't bad before taxes. I think they should explain that you can bet on only 1/2 of your paycheck as actual spending money. This was a big issue for the SERS students.

I would strongly suggest a better match between a student's indicated interests and his/her assignment. The required oral presentation at the end is a very good practice in public presentation.

It may be better if students presentations are conducted on a non-work day so all students are able to attend.

Give more work and research to the students especially at the beginning. Give the opportunity to the students to work more by themselves.

Overall, I feel the SERS program was a great benefit; however, further discussions on continuing education and different options where a federal laboratory can contribute to this education should be made aware to students.

More competitive pay if possible.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

Students need more information prior to appointment in order to shorten the adjustment period. Also, there is a need for better teamwork between students and staff. Your experience depends too much on the luck of the draw. I guess I just got a short stick.

I suggest that the advisors should be more aware of their roles with the students. I was lucky because my advisor is an excellent scientist and teacher. But, unfortunately, I know students that didn't enjoy their research appointment here because their advisors were not there to teach and help. The students that are part of this program are among the best in America. They are here because they're smart and willing to work.

Although my experience was good, my roommate's was not. Her boss did not have enough for her to do and was constantly sending her home early. Maybe SERS should review the supervisor's agenda before allowing them to take a student.

I wish it was more widespread, covering more fields at more laboratories. For example, I would've very much loved a semester learning about fusion research. Still, I gained a fairly comprehensive background in physics research, in general.

Hard to think about any—good job!!

Personally, I feel that the SERS program could have been more effective for me if I had been able to prepare for my assigned research project prior to my arrival at the lab. My research largely was out of my field, so I felt like I had a lot of "catch-up" work to do. It would have been less intimidating if I had been given some idea of what to expect and prepare for.

Make sure the students time spent here is well spent by checking up on their status or projects they are working in.

I think the program is wonderful in that it allows us (students) to view firsthand scientific research. I feel the program could be improved by better communication between the advisors and the program heads in terms of what the role of the student is to be. I think it is important that before a student is picked it is made sure that the advisor has something specific for the student to work on or help out with.

In general, the SERS program seems to run very smoothly. Some students could use direction and encouragement, but most adjust well to the environment.

The SERS program is an excellent advantage for students to come to terms and understand their possible field of employment in a practical sense. I intend to use what I have learned here as a means of analyzing where I want to be in the future.

More defined projects for each student.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

While I was impressed with the preparation my PI and supervisor took so I would have a valuable experience here, I was not impressed with organization higher up in the program. I felt the program orientation was rather lax and as to what was required from us at the end of the program, we were all left in the dark. A little more guidance than "write a paper" and "give an oral presentation" would have been appreciated. A description of what is expected of us should be given at the beginning of the semester.

I have no complaints. Everything ran very smooth.

Having a devoted mentor is crucial. Either the mentor or someone appointed by the mentor needs to work with the student so understanding can be gained about the overall project and about proper scientific methods. Unfortunately, sometimes students are left too much on their own.

Provide a mentor-student designed list or description of mentor-student relationship. Orient mentors and educate them on the finer points of mentoring.

Please be aware of how mentor-student relations are going. Maybe cut back on some of the seminars or project papers, posters, presentations; sometimes the students are doing all they can to keep up with lab work without the extra stuff to worry about.

Too much stuff to do. Too many seminars and trips, it takes away from time on your project. The poster-making class and how to give a presentation class were not very useful. Time of presentation class was way too long. Also, I think best time to do field trips and seminars is at the beginning of the semester. Late in the semester, students are really into their projects and trying to prepare their poster, presentation, and paper. So, try to schedule more stuff at the beginning and less stuff towards the end.

More funding to provide adequate stipends. \$900 a month is not enough money for a person to live on.

If it's possible to add a few weeks to the program, I think that would be very valuable.

Plan tours and trips for the first half of the semester only. This is the time when students do not know what they are doing with their projects. They have a lot of time. The second half of the term is very busy. There is no time to take a day off, or even 4 hours.

I would like to have a little more guidance in the beginning. My mentor was out of town for the first month and there was not much help available right away. Perhaps the mentor could be required or asked to come up with a list of suggestions for help resources and an outline of what needs to be done.

I had a great experience. I can't think of ways to improve. For others though, I know they had problems with mentors. I can't imagine how you could screen for better mentors though. Maybe ask students at the end for 2 or 3 people they feel would make good mentors and then approach them to see if they could use or are interested in a SERS student.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

Essential to ensure that mentor is prepared and committed to educate and assist student.

Ensure that projects are actual research (mine was!).

_____ and _____ were great in keeping us on track and on schedule. Notification was always given although we all had a copy of the upcoming events. The events, by the way, were all very interesting--something could always be taken away from each trip.

The SERS poster session came a little early because many students did not have results or conclusions yet, but this was a big help in preparing the final paper.

Besides making the SERS program more readily available, I really have no other suggestions.

I have no suggestion to improve the program except to make it known in local areas around the site. Most of the students came from back East and Midwest. There was only a couple of us from the Northwest.

Meeting the other SERS students was one of the best aspects of the program, and I think it would be wonderful if the students were able to work together as well. It may be worthwhile to try group projects where students interested in a certain topic work together under the guidance of mentors to investigate that issue.

The applications need to be updated each semester so that the area the student requests work in is actually still an active area. When I applied, they were already a few semesters old and the same areas are still on the application more than a year later. It really is confusing. No one really got to work exactly where they originally had anticipated.

It is important that advisors who are sponsoring students, who are earning credit for their research efforts, invest the time in their students that is required for them to walk away having learned something. Sometimes it's easy to get lost in the continual flow of research. A student needs guidance, and time must be invested by both the student and advisor.

No complaints.

I can't think of any way to really improve it, except to suggest that the program keeps going and keeps its funding.

It would be helpful to students to have current information about ongoing research projects that actually need help, so that blindly picking from a list of subjects doesn't turn out as a fruitless guesswork.

I am very pleased with the program.

I think it would be more productive to form the SERS students into multidisciplinary research groups.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

I wish there was more funding so that more students could have this experience.

Students should receive more information from their host facility or advisor regarding what they can or will be doing at their labs. I came here without much idea of what to expect and consequently spent some time here wondering what I should do before I was able to get started on some projects.

Very efficient the way it is run now. However, I would suggest publicizing it more widely.

Keep the funding for the program!

I think it is a wonderful program, which should not be halted!! It gives students the opportunity to do research in their prospective fields at a top-of-the-line laboratory.

Keep it!

Keep funding it!

Everything went very well with my semester. I have no immediate suggestions.

i think it is run as good as it can be run.

Don't nix it.

The best way to improve it would be to expand it. More students should have this opportunity. Also it should be publicized better--both to attract more applicants and to tell the public.

SERS program needs no improvement in my eyes.

I really don't have any--no complaints--everything went smoothly and it was a great learning experience.

I have no suggestions to improve it. My experience was perfect. Thank you!

More mentor-student interaction.

I can't make any suggestions.

There should be more communication between students and mentors before starting the program. It would also be nice to invite the mentors to do fun things with SERS group. I think the goal of the SERS program should be made clear to the mentors--especially it being an undergraduate program or a stepping stone to grad school.

I found the program very effective.

**U.S. Department of Energy
Science and Engineering Research Semester**

EXIT Responses: ALL Participants, FALL 1996

Please make comments or suggestions to improve the effectiveness or operation of the SERS program: (Continued)

I feel the program was run very effectively.

Continue to include older students such as myself. With the trend toward 2nd and 3rd careers facing us all throughout our lives, knowing that opportunities like this are available may help those in transition to consider possibilities they might otherwise think had passed them by.

Continue funding!

A more competitive stipend might attract more high-quality applicants/participants.

Publicize a little more.

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Facility

	Frequency	Percent
Argonne National Laboratory	33	30.3%
Brookhaven National Laboratory	9	8.9
Lawrence Berkeley National Laboratory	3	0.0
Lawrence Livermore National Laboratory	13	11.9
Los Alamos National Laboratory	24	22.0
Oak Ridge National Laboratory	14	12.6
Pacific Northwest National Laboratory	13	14.7

Total = 109

Note: The entry/exit comparisons are restricted to those respondents who provided both entry and exit data.

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

What is the highest degree you expect to receive?

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
B.A. or B.S.	10	9.3	5	4.7
M.A. or M.S.	39	38.4	37	34.6
Ph.D.	50	46.7	55	51.4
M.D.	8	7.5	9	8.4
Other Professional	0	0.0	1	0.9

Total = 107

Item nonresponse = 2

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Field of expected highest degree

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
Administration, education	1	1.0	1	1.0
Aerospace, aeronautical, astronautical engineering	1	1.0	1	1.0
Astronomy and astrophysics	1	1.0	1	1.0
Atmospheric sciences and meteorology	1	1.0	1	1.0
Biochemistry and biophysics	3	3.1	1	1.0
Bioengineering and biomedical engineering	2	2.1	2	2.1
Biological sciences, other	1	1.0	0	0.0
Biology, general	2	2.1	2	2.1
Botany	0	0.0	1	1.0
Cell and molecular biology	7	7.3	7	7.3
Chemical engineering	2	2.1	2	2.1
Chemistry	11	11.5	11	11.5
Civil engineering	1	1.0	1	1.0
Computer and information sciences, other	0	0.0	1	1.0
Computer programming	1	1.0	2	2.1
Computer science	6	6.3	10	10.4
Computer/information sciences, general	2	2.1	0	0.0
Data processing technology	1	1.0	0	0.0
Earth sciences	1	1.0	0	0.0
Ecology	1	1.0	1	1.0
Electrical and electronic technologies	0	0.0	2	2.1
Electrical, electronics, communications engineering	6	6.3	6	6.3
Engineering sciences, mechanics, physics	2	2.1	1	1.0
Engineering, other	1	1.0	1	1.0
Engineering-related technologies, other	0	0.0	1	1.0
English language and literature/latters	0	0.0	1	1.0
Environmental engineering	6	6.3	4	4.2
Environmental science studies	0	0.0	1	1.0
Genetics, animal and plant	4	4.2	2	2.1
Geological sciences, other	2	2.1	0	0.0
Geology	0	0.0	2	2.1
Health/medical assistants	0	0.0	1	1.0
Materials engineering	2	2.1	1	1.0
Mathematics, other	1	1.0	0	0.0
Mechanical engineering	7	7.3	4	4.2
Mechanical engineering-related technologies	0	0.0	1	1.0
Medicine	7	7.3	10	10.4
Microbiology	1	1.0	1	1.0
Oceanography	1	1.0	1	1.0
Pharmacology, human and animal	1	1.0	1	1.0
Physical therapy and rehabilitation/therapeutic services	0	0.0	1	1.0

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Field of expected highest degree

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
Physics	7	7.3	6	6.3
Plant sciences	1	1.0	0	0.0
Public health	1	1.0	1	1.0
Science teacher education	1	1.0	1	1.0
Zoology, general	0	0.0	1	1.0

Total = 96

Item nonresponse = 19

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Indicate the one primary professional work activity associated with your anticipated future career.

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
Applied research	43	39.8	40	37.0
Basic research	14	13.0	15	13.9
Computer applications	10	9.3	9	8.3
Design of equipment, processes	9	8.3	10	9.3
Development	13	12.0	10	9.3
Employee relations	1	0.9	1	0.9
Management and administration	2	1.9	3	2.8
Professional services	7	6.5	9	8.3
Quality or productivity management	1	0.9	1	0.9
Teaching	8	7.4	7	6.5
Other	0	0.0	3	2.8

Total = 108

Item nonresponse = 1

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Indicate the one category that best describes the type of employer you would like to work for in your anticipated career.

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
Two-year college, junior college, technical institute	1	0.9	1	0.9
Four-year college/university	16	15.0	13	12.1
Business or industry	29	27.1	37	34.6
Elementary, middle or secondary school/system	1	0.9	3	2.8
Federal laboratory	17	15.9	14	13.1
Local government	1	0.9	0	0.0
Medical school	10	9.3	10	9.3
Nonprofit organization	1	0.9	0	0.0
Self-employed	14	13.1	13	12.1
State government	1	0.9	0	0.0
U.S. government, civilian	5	4.7	4	3.7
University-affiliated research institute	8	7.5	11	10.3
Other	3	2.8	1	0.9

Total = 107

Item nonresponse = 2

**U.S. Department of Energy
Science and Engineering Research Semester**

ENTRY VERSUS EXIT Responses: ALL Participants, FALL 1996

Indicate the one area to which you would like to devote the most professional time in your anticipated career.

	Entry		Exit	
	Frequency	Percent	Frequency	Percent
Energy/fuel	28	25.9	19	17.6
Environment	25	23.1	20	18.5
Health/safety	23	21.3	26	24.1
National defense	6	5.6	5	4.6
None of the above	26	24.1	38	35.2

Total = 108

Item nonresponse = 1