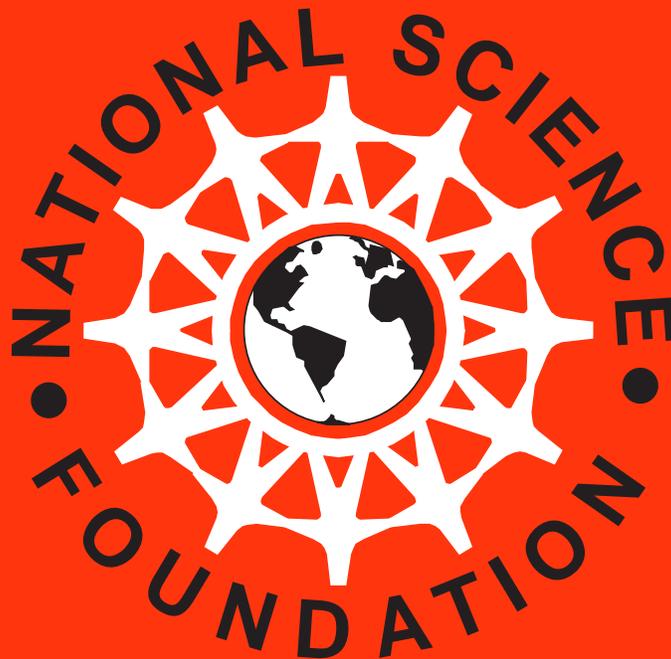


# NSF Graduate Research Fellowships

## 1999 Announcement



**Deadline for entering the competition:  
November 5, 1998**

**Apply to:**

**NSF Graduate Research Fellowship Program**

**Oak Ridge Associated Universities**

**P.O. Box 3010**

**Oak Ridge, TN 37831-3010**

**Telephone: (423) 241-4300**

**Fax: (423) 241-4513**

**Internet Mail: [nsfgrfp@orau.gov](mailto:nsfgrfp@orau.gov)**

**Sponsored by  
National Science Foundation  
Directorate for Education and Human Resources**

**NSF 98-143  
(Replaces NSF 97-133)**



# NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIPS (INCLUDING WOMEN IN ENGINEERING AND COMPUTER AND INFORMATION SCIENCE AWARDS)

## ACADEMIC YEAR 1999-2000

The National Science Foundation (NSF) aims to ensure the vitality of the human resource base of science, mathematics, and engineering in the United States and to reinforce its diversity. To that end in March 1999, the NSF will award approximately 1,000 new three-year Graduate Fellowships, including awards offered for women in engineering and computer and information science.<sup>1</sup>

Continuing a long history of program success, NSF Fellows are expected to contribute significantly to research, teaching, and industrial applications in science, mathematics, and engineering. Traditional measures of success include Fellows' completion of the PhD; reputation of the PhD-granting institution or employing department; attainment of postdoctoral appointments and research grants; and awarding of various prizes and honors. As the nature of scientific and technological inquiry evolves, and as the environments for such work change and diversify, NSF will continue to identify other appropriate measures of achievement of program goals that reflect excellence of scientific and engineering work and research outside traditional academic settings.

The Foundation welcomes applications from all qualified science, mathematics, or engineering students and strongly encourages women, minorities, and persons with disabilities to compete fully in this program.

## ELIGIBILITY GUIDELINES

### Citizenship

NSF Graduate Fellowships are open only to individuals who are, at the time of application, citizens or nationals<sup>2</sup> of the United States or permanent resident aliens of the United States.

### Field and Degree Program

Fellowships are awarded for graduate study leading to research-based master's or doctoral degrees in the fields of science, mathematics, and engineering supported by the National Science Foundation listed on page 6 of this *Announcement*. Awards are also made for work toward a research-based PhD in science education that requires a science competence comparable to that for PhD candidates in scientific disciplines. Research in bioengineering, with diagnosis or treatment-related goals that applies engineering principles to problems in biology and medicine while advancing engineering knowledge, is eligible for support. Bioengineering research to aid persons with disabilities is also eligible.

Support is not provided for study in clinical, counseling, business, or management fields; in other education programs of any kind;

or in history or social work; for work in medical, dental, law, public health, or practice-oriented professional degree programs, or in joint science-professional degree programs such as MD/PhD and JD/PhD programs. Support is not provided for clinical research or for research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals. Research involving animal models of such conditions or the development or testing of drugs or other procedures for their treatment also is not eligible for support.

### Earned Graduate Study

NSF Graduate Fellowships are intended for students at or near the beginning of their graduate study in science, mathematics, or engineering. In most cases an individual has two opportunities to apply: during the senior year of college and in the first year of graduate school. Specifically, eligibility is limited to those individuals who, by the beginning of the fall 1998 term, have completed no more than 20 semester hours, 30 quarter hours, or equivalent, of graduate study in the science, mathematics, or engineering fields supported by this program since completion of a baccalaureate degree in science or engineering. One year or more of full-time study in any medical, dental, or veterinary school is considered to be greater than 20 semester or 30 quarter hours of graduate study. "Graduate study" includes course work, research, seminars, and independent study. These guidelines are applied to graduate study completed after October 1, 1988 regardless of purpose or whether credit for that study has been or will be applied toward an advanced degree. Students in four- or five-year joint baccalaureate-master's degree programs are eligible to apply in their fourth and fifth years; for eligibility purposes, the fifth year is considered graduate study. No individual will be eligible who, at the time of application, has earned after October 1, 1988 an advanced degree in science or engineering. Applicants who have earned any medical degree, such as the MD, DDS, or DVM, are ineligible.

### Eligibility for the Women in Engineering and Computer and Information Science Awards

The Women in Engineering and Computer and Information Science (WECS) awards are limited to women who intend to pursue graduate degrees in one of the fields listed under the headings "Engineering" or "Computer and Information Science and Engineering" in the "Fields of Specialization" list of this *Announcement*. Aside from this field restriction, other eligibility criteria are the same as for applicants in other fields.

## EVALUATION AND SELECTION

Graduate Research Fellowships are awarded on the basis of ability in accordance with Section 10 of the National Science Foundation Act of 1950, as amended. Evaluation of applicants is based on

<sup>1</sup> Partial funding for these additional awards is provided by the Directorate for Computer and Information Science and Engineering and the Directorate for Engineering.

<sup>2</sup> The term "national of the United States" designates a citizen of the United States or a native resident of a commonwealth or territory of the United States, such as American Samoa, Guam, Puerto Rico, US Virgin Islands or the Northern Mariana Islands. It does not refer to a citizen of another country who has applied for United States Citizenship.

all available evidence of ability, including academic records, recommendations regarding each applicant's qualifications, and Graduate Record Examinations (GRE) scores.

Each applicant's qualifications will be reviewed by disciplinary panels of scientists, mathematicians, and engineers convened in February 1999, for NSF by Oak Ridge Associated Universities (ORAU). Applications are assigned to panels based on the applicant's chosen field(s) of study.

Selection of awardees, made by the NSF, will be in the merit order established by the review panels; other criteria such as geographical region, discipline, or other factors determined to be consistent with policy and legislative intent will be used to select among applications of substantially equal merit (as determined by the merit review process).

## GRADUATE RECORD EXAMINATIONS

All applicants are expected to take the GRE General Test (Verbal, Quantitative, and Analytical). In addition, all applicants should take a GRE Subject Test in the science or engineering field most closely related to their chosen area of graduate study. Further information concerning payment of GRE registration fees and score reporting for fellowship evaluation purposes is included in the application materials. Registration forms and information concerning the GRE are available from four-year colleges, universities, or the Educational Testing Service (ETS), P.O. Box 6000, Princeton, New Jersey 08541-6000, telephone (609) 771-7670, fax (609) 771-7906 or Internet <http://www.gre.org>.

## CONDITIONS OF AWARDS

All fellowship awards are made subject to the provisions contained in the booklet *Information for Graduate Research Fellows* (and any subsequent amendment thereto) which is mailed to all awardees. Only the most basic information contained in that booklet is presented in this *Announcement*. Three certifications<sup>3</sup> must, by law, be made before the NSF can authorize funds for a fellowship award.

### Graduate Programs

Fellows may choose any appropriate, accredited, nonprofit United States institution or appropriate international institution of higher education offering advanced degrees in science, mathematics, or engineering.

Fellows are required to engage in full-time programs leading to graduate degrees in disciplines supported by NSF. Such programs may include a reasonable amount of teaching or similar activity as, in the institution's opinion, contribute to the Fellow's academic progress.

After an award is made, a major change in course of study requires prior NSF approval. The availability of the second and third years of a three-year award is contingent upon certification to NSF by

the fellowship institution that the Fellow is making satisfactory academic progress toward an advanced degree in the approved field of study.

### Stipend and Allowances

The NSF Fellowship stipend during 1999-2000 will be \$15,000 for a 12-month tenure, prorated monthly at \$1,250 for lesser periods. There is no dependency allowance. At its discretion, each fellowship institution may supplement a Fellow's stipend from institutional funds in such amounts as are in accordance with the policies of the fellowship institution.

In addition to the funds for stipend payments, the NSF provides the fellowship institution, on behalf of each Fellow, a cost-of-education allowance for each Fellow of \$10,500 per tenure year. During tenure, Fellows will be exempt from paying tuition and fees normally charged to students of similar academic standing, unless such charges are optional or are refundable. At international institutions, all tuition and assessed nonrefundable fees will be paid by the Fellow, with reimbursement by the NSF, up to a maximum of \$10,500 per fellowship year, upon presentation of an original statement from the university bursar regarding such charges.

Acknowledging the importance of integrating research and education, the NSF permits institutions to assign Fellows to appropriate research and teaching positions that will contribute to the progress of the Fellow toward an advanced degree. Fellows are encouraged to determine policies regarding any such required service before enrolling in any particular institution.

A one-time International Research Travel Allowance of \$1,000 is available to Fellows who have arranged to conduct full-time advanced study or research at appropriate international sites for at least three continuous months. The activities must contribute to the Fellow's advanced degree objectives and must be approved by the Fellow's institution. Once a Fellow has begun NSF Fellowship tenure, this travel allowance may be used at any appropriate time that travel is initiated within the five-year fellowship period.

Except for supplementation as explained above, a Fellow may not accept simultaneous remuneration from another major fellowship, assistantship, scholarship or similar award. Under Section 178(a) of Title 38, U.S. Code, educational benefits from the Department of Veterans Affairs may be received concurrently with NSF support.

### Tenure

New fellowships to be offered in March 1999 will be for maximum tenure periods of three years usable over a five-year period. Recipients may begin fellowship tenure in the summer of 1999, but must begin tenure not later than the beginning of the 1999 fall term with certain exceptions explained below. Tenure must be completed before the beginning of the 2004 fall term. Normal tenure for a Fellow is 9 to 12 months for each fellowship year; funds for unutilized months

<sup>3</sup> These concern 1) controlled substances; 2) delinquency on Federal debt; and 3) debarment and suspension from certain transactions with Federal, State, or local governments.

are forfeited. No individual will be eligible for more than three years of NSF Graduate Research Fellowship support.

The first year of an NSF Fellowship cannot be reserved in order to allow an individual to use an alternative means of support to engage in graduate study in the United States. However, with prior Foundation approval, Fellows may reserve the first one or two years of NSF Fellowship tenure to engage in activities other than those that would constitute the start or continuation of progress toward an advanced degree in science, mathematics, or engineering. With prior NSF approval, Fellows may reserve the first one or two years of NSF Fellowship tenure to accept a one- or two-year highly competitive international fellowship, such as the British Marshall or Rhodes Scholarship, for study and travel abroad. Fellows reserving the first two years of their NSF Fellowship must enter tenure no later than the fall of 2001 and must use their NSF Fellowship in three consecutive years.

## AWARDS

The review panels' recommendations for fellowships will be further reviewed by NSF staff for conformance with Foundation policy. Awards will be made by the NSF in late March 1999. The NSF will notify all applicants by letter of the outcome of their applications. Lists of awardees and Honorable Mention recipients are posted on the Graduate Research Fellowship Program web site at: <http://www.ehr.nsf.gov/ehr/dge/grf.htm>. Those applicants who merit receiving Graduate Research Fellowships, but to whom awards cannot be made because funds are not available, will be accorded Honorable Mention. Honorable Mention in the NSF Graduate Research Fellowship Program is considered a significant academic achievement nationwide. All offers and support levels referenced in this *Announcement* are subject to availability of funds.

## OTHER OPPORTUNITIES FOR FELLOWS AND HONORABLE MENTION RECIPIENTS

All Fellowship Awardees and Honorable Mention recipients may apply to use the facilities at a Partnership for Advanced Computational Infrastructure (PACI) facility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (students and faculty) to work on NSF-supported projects. All Fellowship Awardees and Honorable Mention recipients who have disabilities may apply for assistance by contacting: FASED, c/o Graduate Research Fellowship Program, National Science Foundation, 4201 Wilson Boulevard - Room 907, Arlington, VA 22230. See the FASED program announcement or contact the program coordinator at (703) 306-1636.

## GUIDELINES FOR APPLYING

Inquiries concerning the application process should be directed to Oak Ridge Associated Universities via e-mail or telephone.

### 1. Via the Internet

- a. **FastLane:** <http://www.fastlane.nsf.gov> With Internet access and a supported World Wide Web browser, an applicant can submit an application electronically using the NSF FastLane Graduate Research Fellowship Program (GRFP) process. Referees of applicants who use FastLane can submit a Reference Report Form using FastLane. Security is provided to ensure that both applications and references can be accessed only by authorized persons.

To access the NSF FastLane GRFP process, click on the Graduate Research Fellowships icon on the FastLane Home Page. You will see instructions on how to use the FastLane GRFP process. For questions concerning the FastLane GRFP process, please contact the FastLane Graduate Research Fellowship support staff at electronic mail: [felapp@nsf.gov](mailto:felapp@nsf.gov) or phone: (703) 306-1142. (If you reach the automated attendant, please dial extension 4686.)

- b. **NSF Web Site:** <http://www.ehr.nsf.gov/ehr/dge/grfp.htm> Via the Internet, you can download the application forms as either a PDF printable blank form or a Microsoft Word for Windows (6.0 or newer version) on-line form. Both application formats are located at the URL cited above. Any single form file from the application packet is available.

To view the PDF forms you must have the Adobe Viewer installed, which is a free product and can be downloaded at this site. If your browser does not automatically launch the on-line application, a message will appear to prompt you to save the Word file to a local disc drive.

- c. **Information via E-Mail:** With access only to Internet electronic mail, you can have the *Announcement* and application forms sent to you via electronic mail. Each application form is available in two versions: a PDF printable blank form and a Word for Windows (6.0 or newer version) on-line form.

Send an electronic mail message to: [getpub@nsf.gov](mailto:getpub@nsf.gov)  
Leave the subject line blank. In the body of the message enter:

get fmgfkitp.txt (for instructions to access the PDF files)  
get fmgfkitp.pdf (for the PDF Application Forms Kit)  
get fmgfkitd.txt (for instructions to access the Word for  
Windows files)  
get fmgfkitd.doc (for the Word for Windows Forms Kit)

The Forms Kit instructions detail how to receive a single application form file.

## 2. Via Postal Mail

Printed application forms may be obtained by direct request from:

NSF Graduate Research Fellowship Program  
Oak Ridge Associated Universities (ORAU)  
P.O. Box 3010  
Oak Ridge, TN 37831-3010  
or telephone (423) 241-4300  
or fax (423) 241-4513  
or Internet electronic mail to: [nsfgrfp@orau.gov](mailto:nsfgrfp@orau.gov)

### Application Status

In early January 1999, applicants will be informed via e-mail or postal mail of application materials received on their behalf. It is the applicant's responsibility to ensure that all materials are received by ORAU; applicants who do not receive a written notification regarding the status of their application materials by mid-January are encouraged to contact ORAU immediately.

### Where to Submit Application Materials

1. Electronic submission using FastLane
2. Mailing address:  
NSF Graduate Research Fellowship Program  
Oak Ridge Associated Universities  
P.O. Box 3010  
Oak Ridge, TN 37831-3010
3. Special messenger, courier or overnight delivery address:  
NSF Graduate Research Fellowship Program  
Oak Ridge Associated Universities  
702 South Illinois Avenue, Suite B-102  
Oak Ridge, TN 37830

**NOTE: Applications are not accepted via fax or electronic mail.**

### Deadlines for Application Materials

A complete application consists of all the materials listed below, including GRE scores. An incomplete application is at a disadvantage in the competition and may not be evaluated.

- November 5, 1998 - Postmark Deadline
  - Inventory List
  - Information Form
  - Application Form
  - Proposed Plan of Study or Research Form
  - Previous Research Experience Form
  - Course Report Forms

The application materials listed above must be submitted electronically, postmarked, or delivered in person to Oak Ridge Associated Universities by November 5, 1998. Applications postmarked later than November 5, 1998 will not be considered for review.

- November 5, 1998 - Postmark Date
  - Undergraduate GPA Form
  - Official Academic Transcripts (excluding fall 1998)

Failure to postmark the Undergraduate GPA Form and Official Academic Transcripts by November 5, 1998 will delay processing.

- December 10, 1998 - Receipt Date
  - Reference Report Forms (four are expected)

Failure to submit the Reference Report Forms by December 10, 1998 will delay processing.

### Requests for Reactivation of Application Materials

- November 5, 1998 - Postmark date for requests for reactivation of Official Academic Transcripts and Course Report Forms from the 1998 competition. No other materials from the 1998 competition may be reactivated. To request reactivation, mail a written request (a separate letter or sheet submitted with the application materials) to ORAU or electronic mail to [nsfgrfp@orau.gov](mailto:nsfgrfp@orau.gov) by November 5, 1998.

### Deadlines for GRE Scores

- November 6, 1998 - Receipt date for GRE Registration Forms at the Educational Testing Service (ETS) for NSF applicants for the December 12, 1998 Subject Test.
- December 12, 1998 - Last date for GRE Subject Test for NSF applicants.
- January 4, 1999 - Last date for GRE General Test for NSF applicants.

## **PRIVACY ACT AND PUBLIC BURDEN STATEMENTS**

The information requested on the application materials is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified applicants and may be disclosed to qualified reviewers and staff assistants as part of the review process; to the institution the nominee, applicant or fellow is attending or is planning to attend or is employed by for the purpose of facilitating review or award decisions, or administering fellowships or awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing data regarding applicants or nominees as part of the proposal review process, or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information from this system may be merged with other computer files to carry out statistical studies the results of which do not identify individuals. Notice of the agency's decision may be given to nominators, and disclosure may be made of awardees' names, home institutions, and fields of study for public information purposes. For fellows or awardees receiving stipends directly from the government, information is transmitted to the Department of the Treasury to make payments. See System of Records, NSF-12, "Fellowships and Other Awards," 63 Federal Register 265 (January 5, 1998). Submission of the information is voluntary; however, failure to provide full and complete information may reduce the possibility of your receiving an award.

The public reporting burden for this collection of information is estimated to average 12 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and

maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: Reports Clearance Officer; Information Dissemination Branch, DAS; National Science Foundation; Arlington, VA 22230.

## **NSF PROGRAMS AND PUBLICATIONS**

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Grantees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities, and persons with disabilities to compete fully in its programs. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from the NSF (unless otherwise specified in the eligibility requirements for a particular program).

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation regarding NSF programs, employment, or general information. TDD may be accessed at (703) 306-0090 or through the FIRS on 1-800-877-8339.

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The Catalog of Federal Domestic Assistance number for this program is 47.076, Education and Human Resources.

OMB 3145-0023

PT 22, FF, II

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# NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIPS

## Fields of Specialization

### ENGINEERING

6210 Aeronautical and Aerospace  
6240 Agricultural  
6250 Bioengineering and Biomedical  
6330 Chemical  
6350 Civil  
6388 Computer Engineering  
6390 Electrical and Electronic  
6741 Energy  
6470 Engineering Mechanics  
6532 Engineering Science  
9996 Environmental  
6580 Industrial  
6476 Materials  
6620 Mechanical  
6660 Metallurgical  
6740 Nuclear  
6245 Ocean  
6716 Petroleum  
6480 Polymer  
6585 Systems Engineering  
6799 Engineering, other (specify)

### MATHEMATICAL SCIENCES

7010 Algebra or Number Theory  
7030 Analysis  
7050 Applications of Mathematics (including  
Biometrics and Biostatistics)  
7110 Geometry  
7130 Logic or Foundations of Mathematics  
7140 Operations Research  
7150 Probability and Statistics  
7170 Topology  
7199 Mathematics, other (specify)

### COMPUTER AND INFORMATION

#### SCIENCE AND ENGINEERING

7240 Artificial Intelligence (including Robotics  
and Expert Systems)  
7210 Computer Science - Languages and  
Systems  
7200 Computer Science - Theory  
7270 Computer Systems Design (including  
Signal Processing)  
7230 Database Systems  
7261 Graphics  
7260 Human Computer Interaction  
7250 Information Technology and Organizations  
7290 Networks and Communications  
7280 Scientific Computing  
7220 Software Engineering  
7299 CISE, other (specify)

### CHEMISTRY

5230 Analytical  
5250 Bio-inorganic  
5240 Bio-organic  
5260 Biophysical  
9994 Environmental  
5290 Inorganic  
5330 Organic  
5350 Physical  
5331 Polymer  
5370 Theoretical  
5399 Chemistry, other (specify)

### GEOSCIENCES

5710 Aeronomy  
5720 Atmospheric Chemistry  
5750 Chemical Oceanography  
5770 Climate Dynamics  
5740 Geochemistry  
5780 Geology  
5800 Geophysics  
5810 Hydrologic Sciences  
5820 Large-Scale Dynamics Meteorology  
5830 Magnetospheric Physics  
5840 Marine Geology and Geophysics  
5850 Mesoscale Dynamic Meteorology  
5870 Paleoclimate  
5860 Paleontology  
5880 Physical Meteorology  
7799 Physical Oceanography  
5890 Solar-Terrestrial  
5889 Geosciences, other (specify)

### PHYSICS AND ASTRONOMY

4999 Astronomy  
4930 Astrophysics  
8040 Atomic and Molecular  
8050 Condensed Matter Physics  
8160 Nuclear  
8180 Optics  
8110 Particle Physics  
8200 Physics of Fluids  
8210 Plasma  
8220 Solid State  
8260 Theoretical Physics  
8299 Physics, other (specify)

### PSYCHOLOGY

4125 Cognitive  
4120 Cognitive Neuroscience  
4130 Developmental  
4150 Experimental or Comparative  
4189 Industrial/Organizational  
4155 Neuropsychology  
4165 Perception and Psychophysics  
4170 Personality and Individual Differences  
4158 Physiological  
4162 Quantitative  
4190 Social  
4199 Psychology, other (specify)

### LIFE SCIENCES

4530 Animal Behavior  
4510 Anatomy  
0999 Biochemistry  
1870 Biological Oceanography  
1899 Biology  
1299 Biophysics  
1599 Botany (including Plant Physiology)  
1820 Cell Biology  
1840 Developmental Biology  
1830 Ecology  
4570 Entomology  
9992 Environmental Sciences  
1850 Evolutionary Biology  
4590 Fish and Wildlife  
0250 Forestry  
2499 Genetics  
0300 Horticulture  
1874 Marine Biology  
3299 Microbiology  
1880 Molecular Biology  
1829 Neurosciences  
3899 Physiology  
1545 Plant Pathology  
1822 Structural Biology  
4699 Zoology  
2299 Life Sciences, other (specify)

### SOCIAL SCIENCES

0693 Biological Anthropology  
0695 Cultural Anthropology  
0694 Linguistic Anthropology  
0696 Medical Anthropology  
0697 Physical Anthropology  
0699 Anthropology, other (specify)  
0610 Archaeology  
9818 Demography  
8599 Economics (Business Administration not  
eligible)  
8799 Geography (other than Physical)  
9099 History of Science  
9499 International Relations  
9299 Linguistics  
9098 Philosophy of Science  
9399 Political Science  
9599 Sociology (Social Work not eligible)  
9699 Urban and Regional Planning  
9899 Social Sciences, other (specify)