



NATIONAL SCIENCE FOUNDATION
ARLINGTON, VA 22230

**HIGHER EDUCATION RESEARCH AND DEVELOPMENT SURVEY
FY 2016 Short Form**

Please submit your survey data by January 31, 2017.

This survey collects data on research and development (R&D) activities at higher education institutions. Please report R&D activities and expenditures for your institution's **2016** fiscal year.

Your participation in this survey provides important information on the national level of R&D activity. The National Science Foundation (NSF) is authorized to collect this information under the National Science Foundation Act of 1950, as amended. Your institution's response is entirely voluntary.

Response to this survey is estimated to require 8 hours. If you wish to comment on the time required to complete this survey, please contact Suzanne H. Plimpton of NSF at (703) 292-7556, or e-mail splimpto@nsf.gov.

The Web address for submitting your data:

<http://shortform.herdsurvey.org>

Or mail this form to:

ICF International
530 Gaither Road, Suite 500
Rockville, MD 20850

Questions?

Technical support:

Support@HERDSurvey.org
(866) 936-9376

General survey questions:

Ronda Britt
National Center for Science and Engineering Statistics
National Science Foundation
rbritt@nsf.gov
(703) 292-7765

Thank you for your participation.

What's New for FY 2016

Changes to Survey Definitions

- The definition of research and development (R&D) has been updated, but is still consistent with the definitions used in the previous surveys. The updates were made to achieve standardized definitions across all NSF R&D surveys. These definitions mirror the definitions provided in the Frascati Manual 2015, an international document published by the Organisation for Economic Co-operation and Development that provides guidelines for collecting and reporting data on R&D.

Changes to Questions

- **Question 2:** There have been some revisions to the fields of R&D for which you are asked to report expenditures. These changes better reflect the types of R&D currently being conducted at universities and colleges and also make the survey fields more consistent with the taxonomy used by the Department of Education's Classification of Instructional Programs (CIP).

Changes to the fields of R&D include the following:

- The names of some fields have been revised to better reflect the disciplines included in those fields.
- New disciplines have been added as examples under many fields.
- Some disciplines have been reclassified under different fields.

Please see "Related Information" on the survey website for additional information about which disciplines have been reclassified under different fields.

Survey Definitions and Instructions

Fiscal Year (FY)

Please report data for your institution's 2016 fiscal year.

Research and Development (R&D)

R&D is creative and systematic work undertaken in order to increase the stock of knowledge — including knowledge of humankind, culture, and society — and to devise new applications of available knowledge. R&D covers three activities defined below — basic research, applied research, and experimental development.

- **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
- **Applied research** is original investigation undertaken in order to acquire new knowledge. It is directed primarily towards a specific, practical aim or objective.
- **Experimental development** is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

R&D Expenditures

Include all R&D expenditures from your institution's current operating funds that are separately accounted for. For purposes of this survey, R&D includes expenditures for organized research as defined by 2 CFR Part 200 Appendix III and expenditures from funds designated for research.

R&D *includes*:

- Sponsored research (federal and nonfederal)
- University research (institutional funds that are separately budgeted for individual R&D projects)
- Startup, bridge, or seed funding provided to researchers within your institution
- Other departmental funds designated for research
- Recovered and unrecovered indirect costs (see definitions in Question 1)
- Equipment purchased from R&D project accounts
- R&D funds passed through to a subrecipient organization, educational or other
- Clinical trials, Phases I, II, or III
- Research training grants funding work on organized research projects
- Tuition remission provided to students working on research

R&D does *not* include:

- Public service grants or outreach programs
- Curriculum development (unless included as part of an overall research project)
- R&D conducted by university faculty or staff at outside institutions that is not accounted for in your financial records
- Estimates of the proportion of time budgeted for instruction that is spent on research
- Capital projects (i.e., construction or renovation of research facilities)
- Non-research training grants
- Unrecovered indirect costs that exceed your institution's federally negotiated Facilities and Administrative (F&A) rate

Reporting Units

Please *include* these components of your institution:

- All units of your institution included in or with your financial statements, such as:
 - Agricultural experiment stations
 - Branch campuses
 - Medical schools
 - Hospitals or clinics
 - Research centers and facilities
 - A university 501(c)3 foundation

Please do *not* include:

- Federally Funded R&D Centers (FFRDCs). This information is collected separately. See the list of FFRDCs: <http://www.nsf.gov/statistics/ffrdc/>.
- Other organizations or institutions, such as teaching hospitals or research institutes, with which your institution has an affiliation or relationship, but which are *not* components of your institution.
- Other campuses headed by their own president, chancellor, or equivalent within your university system. Each campus is asked to respond separately.

Question 1. How much of your total expenditures for research and development (R&D) came from the following sources in FY 2016? (See definition of R&D on the previous page.)

- In rows a, b, c, d, and f: Include both **direct** and **recovered indirect costs** (reimbursement of F&A costs from external sponsors).
- Report the **original source** of funds, when possible.
- Include **all** fields of R&D (e.g., sciences, engineering, humanities, education, law, arts). See full listing on pages 9–11.

Source of funds

R&D expenditures
(Dollars in thousands)
(for example, report \$25,342 as \$25)

a. U.S. federal government

Any agency of the United States government.
Include federal funds passed through from another institution.

\$

b. State and local government

Any state, county, municipality, or other local government entity in the United States, including state health agencies. Include state funds that support R&D at agricultural and other experiment stations.

\$

Public institutions should report state appropriations restricted for R&D activities here rather than in row e, Institutional funds.

c. Business

Domestic or foreign for-profit organizations. Report funds from a company's nonprofit foundation in row d.

\$

d. Nonprofit organizations

Domestic or foreign nonprofit foundations and organizations, except universities and colleges. Report funds from your institution's 501(c)3 foundation in row e1. Funds from other universities and colleges should be reported in row f.

\$

e. Institutional funds

1. Institutionally financed research

All R&D funded by your institution from accounts that are only used for research.

\$
(Confidential¹)

2. Cost sharing

Include committed cost sharing other than unrecovered indirect costs.

\$
(Confidential¹)

3. Unrecovered indirect costs

Calculate this amount as follows for your externally funded R&D only (preferably on a project-specific basis) using the appropriate cost rate—on-campus, off-campus, etc.

\$
(Confidential¹)

- First, multiply the negotiated rate by the corresponding base.
- Second, subtract recovered indirect costs.

4. Total institutional funds²

\$ TOTAL

f. All other sources

Other sources not reported above, such as funds from foreign governments, foreign or U.S. universities, and gifts designated by the donors for research.

\$

g. Total²

\$ TOTAL

¹ Information from confidential items is not published or released for individual institutions; only aggregate totals will appear in publications. In accordance with the National Science Foundation Act of 1950, as amended, and other applicable federal laws, your responses will not be disclosed in identifiable form to anyone other than agency employees or authorized persons.

² Totals for rows e4 and g are automatically generated on the Web survey.

Question 1.1. Did you include the following types of funding in your responses to Question 1, row e1?

Included

a. Competitively awarded internal grants for research

Expenditures for organized research projects, involving a proposal or statement of work with expected research outcomes.

☐

b. Startup packages/bridge funding/seed funding

Expenditures from funds provided to faculty members to begin or continue their research while seeking external sponsors.

☐

c. Other departmental funds designated for research

Expenditures for research from other departmental or central accounts which do not match the descriptions provided in rows a or b.

☐

d. Tuition assistance for student research personnel

University tuition assistance, waivers, or remission provided to students working on organized research. Please check "Included" even if these funds are reported as part of the expenditures included under Question 1 rows a, b, or c.

☐

Question 2. What were your FY 2016 R&D expenditures in the fields below? Please report federally funded expenditures in column (1) and all other expenditures in column (2).

- Examples of the disciplines included under each field are provided on pages 9–11.

R&D Fields	R&D expenditures (Dollars in thousands)		(3) Total ¹
	(1) Federal	(2) Nonfederal	
A. Computer and Information Sciences	\$	\$	\$ <u>TOTAL</u>
B. Engineering	\$	\$	\$ <u>TOTAL</u>
C. Geosciences, Atmospheric Sciences, and Ocean Sciences	\$	\$	\$ <u>TOTAL</u>
D. Life Sciences	\$	\$	\$ <u>TOTAL</u>
E. Mathematics and Statistics	\$	\$	\$ <u>TOTAL</u>
F. Physical Sciences	\$	\$	\$ <u>TOTAL</u>
G. Psychology	\$	\$	\$ <u>TOTAL</u>
H. Social Sciences	\$	\$	\$ <u>TOTAL</u>
I. Other Sciences	\$	\$	\$ <u>TOTAL</u>
J. Non-S&E Fields	\$	\$	\$ <u>TOTAL</u>
K. Total for All Fields of R&D ¹	\$ <u>TOTAL</u>	\$ <u>TOTAL</u>	\$ <u>TOTAL</u>

Total in row k, column (1) should match total reported in Question 1, row a.

Total in row k, column (2) should match total reported in Question 1, rows b–f.

¹ Row and column totals are automatically generated on the Web survey.

Question 3. How much of your R&D expenditures reported in Question 1 did your institution receive as a subrecipient from another U.S. university or college?

Please report the original source of funds in columns (a) and (b).

The **subrecipient** for an award carries out the work but receives the funds from a pass-through entity rather than directly from the original funding source. Subrecipients tend to be the co-authors of publications, writers of technical reports discussing findings, inventors, etc. Do **not** include contractor or vendor relationships. A contractor or vendor receives payment for goods and services provided. See 2 CFR Part 200 Subpart D Section 330.

Funds received from other U.S. higher education institutions	Originating source of R&D expenditures (Dollars in thousands)		
	(a) Federal	(b) Nonfederal	(c) Total ¹
Include colleges and universities and units owned, operated, and controlled by such institutions.	\$	\$	\$ <u>TOTAL</u>

¹ The row total is automatically generated on the Web survey.

Question 4. How much of your R&D expenditures reported in Question 1 did your institution pass through to subrecipients at other U.S. universities or colleges?

Please report the original source of funds in columns (a) and (b).

Funds passed through to other U.S. higher education institutions	Originating source of R&D expenditures (Dollars in thousands)		
	(a) Federal	(b) Nonfederal	(c) Total ¹
Include colleges and universities and units owned, operated, and controlled by such institutions.	\$	\$	\$ <u>TOTAL</u>

¹ The row total is automatically generated on the Web survey.

Question 5.

- a. Contact information:** Please complete the contact information for the person responsible for the survey and an alternate contact.

	Primary contact	Alternate contact
Name		
Title		
Institution name		
Department/office		
Mailing address (line 1)		
Mailing address (line 2)		
City, state, and ZIP code		
Phone number		
E-mail address		

- b. Fiscal year:** In what month did your institution's 2016 fiscal year end?

- c. Additional comments:**

EXAMPLES OF DISCIPLINES UNDER EACH R&D FIELD

A. Computer and Information Sciences

Artificial intelligence	Computer software and media applications	Data processing
Computer and information technology administration and management	Computer systems analysis	Information sciences, studies
Computer science	Computer systems networking and telecommunications	Information technology

B. Engineering

1. Aerospace, Aeronautical, and Astronautical Engineering

Aerodynamics
Aerospace engineering
Space technology

2. Bioengineering and Biomedical Engineering

Biological and biosystems engineering
Biomaterials engineering
Biomedical technology
Medical engineering

3. Chemical Engineering

Biochemical engineering
Chemical and biomolecular engineering
Engineering chemistry
Paper science
Petroleum refining process
Polymer, plastics engineering

4. Civil Engineering

Architectural engineering
Construction engineering
Engineering management, administration
Environmental, environmental health engineering
Geotechnical and geoenvironmental engineering
Sanitary engineering
Structural engineering
Surveying engineering
Transportation and highway engineering
Water resources engineering

5. Electrical, Electronic, and Communications Engineering

Communications engineering
Computer engineering
Computer hardware engineering
Computer software engineering
Electrical and electronics engineering
Laser and optical engineering
Power
Telecommunications engineering

6. Industrial and Manufacturing Engineering

Industrial engineering
Manufacturing engineering
Operations research
Systems engineering

7. Mechanical Engineering

Electromechanical engineering
Mechatronics, robotics, and automation engineering

8. Metallurgical and Materials Engineering

Ceramic sciences and engineering
Geophysical, geological engineering
Materials engineering
Metallurgical engineering
Mining and mineral engineering
Textile sciences and engineering
Welding

9. Other Engineering

Agricultural engineering
Engineering design
Engineering mechanics, physics, and science
Engineering physics
Engineering science
Forest engineering
Nanotechnology
Naval architecture and marine engineering
Nuclear engineering
Ocean engineering
Petroleum engineering

Other engineering fields that cannot be classified using the fields listed above

C. Geosciences, Atmospheric Sciences, and Ocean Sciences

1. Atmospheric Science and Meteorology

Aeronomy
Atmospheric chemistry and climatology
Atmospheric physics and dynamics
Extraterrestrial atmospheres
Meteorology
Solar
Weather modification

2. Geological and Earth Sciences

Earth and planetary sciences
Geochemistry
Geodesy and gravity
Geology
Geomagnetism
Geophysics and seismology
Hydrology and water resources
Minerology and petrology
Paleomagnetism
Paleontology
Physical geography
Stratigraphy and sedimentation
Surveying

3. Ocean Sciences and Marine Sciences

Biological oceanography
Geological oceanography
Marine biology
Marine oceanography
Marine sciences
Oceanography, chemical and physical

4. Other Geosciences, Atmospheric Sciences, and Ocean Sciences

Other fields that cannot be classified using the fields listed above

Examples of disciplines continue on next page.

D. Life Sciences

1. Agricultural Sciences

Agricultural business and management
Agricultural chemistry
Agricultural economics
Agricultural engineering—report in Engineering
Agricultural production operations
Animal sciences
Applied horticulture and horticultural business services
Aquaculture
Fishing and fisheries sciences and management
Food science and technology
Forestry
International agriculture
Plant sciences
Soil sciences
Wood science

2. Biological and Biomedical Sciences

Allergies and immunology
Biochemistry, biophysics, and molecular biology

Biogeography
Biology and biomedical sciences, general
Biomathematics, bioinformatics, and computational biology
Biotechnology
Botany and plant biology
Cell, cellular biology, and anatomical sciences
Epidemiology, ecology and population biology
Genetics
Microbiological sciences and immunology
Molecular medicine
Neurobiology and neuroscience
Pharmacology and toxicology
Physiology, pathology and related sciences
Zoology, animal biology

3. Health Sciences

Advanced, graduate dentistry and oral sciences
Allied health and medical assisting services
Bioethics, medical ethics
Clinical medicine research

Clinical/medical laboratory science/research and allied professions
Communication disorders sciences and services
Dentistry
Dietetics and clinical nutrition services
Health and medical administrative services
Health, medical preparatory programs
Gerontology, health sciences
Kinesiology and exercise science
Medical clinical science, graduate medical studies
Medical illustration and informatics
Medicine
Mental health
Nursing
Optometry
Osteopathic medicine, osteopathy
Pharmacy, pharmaceutical sciences, and administration

Podiatric medicine, podiatry
Public health
Radiological science
Registered nursing, nursing administration, nursing research and clinical nursing
Rehabilitation and therapeutic professions
Veterinary biomedical and clinical sciences
Veterinary medicine
Zoology

4. Natural Resources and Conservation

Natural resources conservation and research
Natural resources economics
Natural resources management and policy
Renewable natural resources
Wildlife and wildlands science and management

5. Other Life Sciences

Other life sciences that cannot be classified using the fields listed above

E. Mathematics and Statistics

Applied mathematics

Mathematics

Statistics

F. Physical Sciences

1. Astronomy and Astrophysics

Astronomy
Astrophysics
Planetary astronomy and science

2. Chemistry

(except Biochemistry—report in Biological and Biomedical Sciences)
Analytical chemistry
Chemical physics
Environmental chemistry
Forensic chemistry
Inorganic chemistry
Organic chemistry
Organo-metallic chemistry
Physical chemistry
Polymer chemistry
Theoretical chemistry

3. Materials Science

Materials chemistry
Materials science

4. Physics

Acoustics
Atomic, molecular physics
Condensed matter and materials physics
Elementary particle physics
Mathematical physics
Nuclear physics
Optics, optical sciences
Plasma, high-temperature physics
Theoretical physics

5. Other Physical Sciences

Other physical sciences that cannot be classified using the fields listed above

G. Psychology

Clinical psychology

Counseling and applied psychology

Human development

Research and experimental psychology

Examples of disciplines continue on next page.
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H. Social Sciences

1. Anthropology

Cultural anthropology
Medical anthropology
Physical and biological anthropology

2. Economics

Applied economics
Business development
Development economics and international development
Econometrics and quantitative economics
Industrial economics
International economics
Labor economics
Managerial economics
Public finance and fiscal policy

3. Political Science and Government

Comparative government
Government
Legal systems
Political economy
Political science
Political theory

4. Sociology, Demography, and Population Studies

Comparative and historical sociology
Complex organizations
Cultural and social structure
Demography and population studies
Group interactions
Rural sociology
Social problems and welfare theory
Sociology

5. Other Social Sciences

Archeology
Area, ethnic, cultural, gender, and group studies
Cartography
City, urban, community and regional planning
Criminal science and corrections
Criminology
Geography
Gerontology, social sciences
International relations and national security studies
Linguistics
Public policy analysis
Regional studies
Urban studies, affairs

I. Other Sciences

Use this category for R&D that involves at least one S&E field (rows A–H) if it is impossible to report multidisciplinary or interdisciplinary R&D expenditures in specific fields.

J. Non-S&E Fields

1. Business Management and Business Administration

Business administration
Business management
Business, managerial economics
Management information systems and services
Marketing management and research

2. Communication and Communications Technologies

Communication and media studies
Communications technologies
Journalism
Radio, television, and digital communication

3. Education

Education administration and supervision
Education research
Teacher education, specific levels and methods
Teaching fields

4. Humanities

English language and literature, letters
Foreign languages and literatures
History, including history and philosophy of science and technology
Humanities, general
Liberal arts and sciences
Philosophy and religious studies
Theology and religious vocations

5. Law

Law
Legal studies

6. Social Work

(no specific examples)

7. Visual and Performing Arts

Drama, theatre arts and stagecraft
Film, video, and photographic arts
Fine and studio arts
Music

8. Other Non-S&E Fields

Architecture
Family, consumer sciences and human sciences
Foods, nutrition, and wellness studies
Landscape architecture
Library science
Military technology and applied science
Parks, sports, recreation, leisure and fitness
Public administration and public affairs
Other non-S&E fields that cannot be classified using the fields listed above

Also, use this category for R&D that involves multiple non-S&E fields if it is impossible to report multidisciplinary or interdisciplinary R&D expenditures in specific fields.
