



NATIONAL SCIENCE FOUNDATION
ALEXANDRIA, VA 22314

HIGHER EDUCATION RESEARCH AND DEVELOPMENT SURVEY
FY 2018 Short Form

Please submit your survey data by January 31, 2019.

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.hersurvey.org>

Or mail this form to:

ICF
530 Gaither Road, Suite 500
Rockville, MD 20850

Questions?

Technical support:

Support@HERDsurvey.org
(866) 936-9376

General survey questions:

Michael Gibbons
National Center for Science and Engineering Statistics
National Science Foundation
mgibbons@nsf.gov
(703) 292-4590

Thank you for your participation.

What's New for FY 2018

Changes to Question 1

- On row e1, institutionally financed research, instructions were updated to clarify that expenditures for institution research administration and support (e.g., office of sponsored programs) should be excluded.

Survey Definitions and Instructions

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 **2018** fiscal year.

Fiscal Year (FY)

Please report data for your institution's 2018 fiscal year.

Research and Development (R&D)

R&D activity 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 expenditures for R&D activities 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 <i>includes</i> :	R&D does <i>not</i> include:
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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:	Please do not include:
<ul style="list-style-type: none"> • All units of your institution included in or with your financial statements, such as: <ul style="list-style-type: none"> • Agricultural experiment stations • Branch campuses • Medical schools • Hospitals or clinics • Research centers and facilities • A university 501(c)3 foundation 	<ul style="list-style-type: none"> • 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 2018? (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 10–12.

Source of funds	R&D expenditures (Dollars in thousands) (for example, report \$25,342 as \$25)
<p>a. U.S. federal government Any agency of the United States government. Include federal funds passed through from another institution. Funds from FFRDCs should be treated as direct federal funding.</p>	\$ _____
<p>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. <i>Public institutions</i> should report state appropriations restricted for R&D activities here rather than in row e, Institutional funds.</p>	\$ _____
<p>c. Business Domestic or foreign for-profit organizations. Report funds from a company's nonprofit foundation in row d.</p>	\$ _____
<p>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.</p>	\$ _____
<p>e. Institutional funds</p>	
<p>1. Institutionally financed research All R&D funded by your institution from accounts that are only used for research. Exclude institution research administration and support (e.g., office of sponsored programs).</p>	\$ _____ (Confidential ¹)
<p>2. Cost sharing Include committed cost sharing other than unrecovered indirect costs.</p>	\$ _____ (Confidential ¹)
<p>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.</p> <ul style="list-style-type: none"> • First, multiply the <u>negotiated</u> rate by the corresponding base. • Second, subtract recovered indirect costs. 	\$ _____ (Confidential ¹)
<p>4. Total institutional funds²</p>	\$ <u>TOTAL</u>
<p>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.</p>	\$ _____
<p>g. Total²</p>	\$ <u>TOTAL</u>

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. Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the federal information systems that transmit your data.

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 2018 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 10–12.

R&D Fields	R&D expenditures (Dollars in thousands)		
	(1) Federal	(2) Nonfederal	(3) Total ¹
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.	\$ <input type="text"/>	\$ <input type="text"/>	\$ <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.	\$ <input type="text"/>	\$ <input type="text"/>	\$ <u>TOTAL</u>

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

Question 5. In what month did your institution's 2018 fiscal year end?

Primary Contact Information. Please complete the contact information for the person responsible for the survey.

Name	<input type="text"/>	
Job Title	<input type="text"/>	
Institution name	<input type="text"/>	
Office/Department	<input type="text"/>	
Mailing address (line 1)	<input type="text"/>	
Mailing address (line 2)	<input type="text"/>	
City, state, and ZIP Code	<input type="text"/>	
Phone number	<input type="text"/>	E-mail address <input type="text"/>

Other Contact Information. List individuals who should be copied on all e-mails about the survey or can create a login account. Job Title should include information about office/department as appropriate (e.g., VP of Sponsored Programs, Department of Finance Manager, Analyst II in Grants Management).

Other Contact 1

Name	<input type="text"/>	
Job Title	<input type="text"/>	
Phone Number	<input type="text"/>	E-mail address <input type="text"/>

Other Contact 2

Name	<input type="text"/>	
Job Title	<input type="text"/>	
Phone Number	<input type="text"/>	E-mail address <input type="text"/>

Other Contact 3

Name	<input type="text"/>	
Job Title	<input type="text"/>	
Phone Number	<input type="text"/>	E-mail address <input type="text"/>

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
Mineralogy 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
 Food science and technology
 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

Fishing and fisheries sciences and management
 Forestry
 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.

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
 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
 City, urban, community and regional planning
 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.