



NATIONAL SCIENCE FOUNDATION
ARLINGTON, VA 22230

**SURVEY OF RESEARCH AND DEVELOPMENT EXPENDITURES
AT UNIVERSITIES AND COLLEGES, FY 1996**

Organizations are requested to complete and return this form to:

Quantum Research Corporation
7315 Wisconsin Avenue, Suite 400W
Bethesda, MD 20814-3202

If you prefer, your response to the survey may be sent by e-mail to:
kgreenbe@qrc.com

This form should be returned by February 7, 1997.

Your cooperation in returning the survey questionnaire promptly is very important.

This information is solicited under the authority of the National Science Foundation Act of 1950, as amended. Your response is entirely voluntary and your failure to provide some or all of the information will in no way adversely affect your institution.

All financial data requested on this form should be reported in thousands of dollars; for example, an expenditure of \$25,342 should be rounded to the nearest thousand dollars and reported as \$25.

Where exact data are not available, estimates are acceptable. Your estimates will be better than ours.

Include data for branches and all organizational units of your institution, such as medical schools and agricultural experiment stations. Data on research centers and facilities administered by your institution should be included. In addition, include hospitals or clinics owned, operated, or controlled by universities, and integrated operationally with the clinical programs of your medical schools. **Exclude** data for federally funded research and development centers (FFRDCs). Data for these facilities are collected separately.

Please correct if name or address has changed

If you have any questions please contact Marge Machen of NSF at (703) 306-1772, or Kevin Greenberg of QRC at (301) 657-3077, ext. 180.

Financial data are requested for your institution's 1996 fiscal year.
Please circle the month in which your institution's fiscal year begins

1	2	3	4	5	6	7	8	9	10	11	12
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It is estimated that response to this survey will require 18 hours. If you wish to comment on this burden, please contact Herman Fleming of NSF at (703) 306-1243.

How many person hours were required to complete this form? _____

Date submitted _____

Scope:

This survey collects data on expenditures by universities and colleges for separately budgeted research and development (R&D) in science and engineering. Definitions used are compatible with OMB Circular A-21, revised April 26, 1996. Items 1 and 2 ask for *current fund expenditures* by source of funds and by field of science and engineering. Item 3 collects data on that *portion of current fund expenditures* reported in items 1 and 2 that went for the purchase of scientific and engineering research equipment.

Definitions:

Research and Development (R&D). R&D for purposes of this survey is the same as "organized research" as defined in Section B.1.b. of OMB Circular A-21 (revised). It includes all R&D activities of an institution that are *separately budgeted and accounted for*. R&D includes both "sponsored research" activities (sponsored by Federal and non-Federal agencies and organizations) and "university research" (separately budgeted under an internal application of institutional funds).

Research is systematic study directed toward fuller knowledge or understanding of the subject studied. Research is classified as either basic or applied, according to the objectives of the investigator.

Development is systematic use of the knowledge or understanding gained from research, directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes.

Current fund expenditures. These are expenditures of funds available for current operations. Such expenditures include all unrestricted gifts and restricted current funds to the extent that such funds were expended for current operating purposes.

PERSON WHO SUBMITTED THIS FORM (PLEASE TYPE OR PRINT)

NAME:	TELEPHONE NUMBER:
TITLE:	E-MAIL:

PERSON WHO PREPARED THIS FORM (IF DIFFERENT FROM ABOVE)

NAME:	TELEPHONE NUMBER:
TITLE:	E-MAIL:

Instructions for Items 1 and 2

Separately budgeted research and development (R&D) includes all funds expended for activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the institution. *Include* research equipment purchased under research project awards from "current fund" accounts. Also *include* research funds for which an outside organization, educational or other, is a subrecipient. *Exclude* training grants, public service grants, demonstration projects, clinical trials, and departmental research expenditures that are not separately budgeted. Also, *exclude* any R&D expenditures in the fields of education, law, humanities, music, the arts, physical education, library science, as well as all other non-science fields. Allocate funding to the original sources whenever possible, as specified below. If this information is unknown, report the proximate funding source.

Total

- a. **Federal Government.** Report awards for R&D (including direct and reimbursed indirect costs) by all agencies of the Federal Government.
- b. **State and local governments.** Include funds for R&D (including direct and reimbursed indirect costs) from State, county, municipal, or other local governments and their agencies. Include here State funds that support R&D at agricultural and other experiment stations.
- c. **Industry.** Include all awards for R&D (including direct and reimbursed indirect costs) from profit-making organizations, whether engaged in production, distribution, research, service, or other activities. Do not include awards from nonprofit foundations financed by industry; these should be reported under "All other sources" (line 1175).
- d. **Institution funds.** Report funds, *including* related indirect costs, that your institution spent for R&D activities from the following unrestricted sources: general-purpose State or local government appropriations; general-purpose awards from industry, foundations, or other outside sources; tuition and fees; endowment income; gifts; and other institutional funds. In addition, estimate your institution's on-campus and off-campus unreimbursed indirect costs associated with externally funded R&D projects, including mandatory and voluntary cost sharing. To estimate unreimbursed indirect costs, preferably on a project-by-project basis, use your appropriate on-campus or off-campus **negotiated research indirect cost rate(s)** multiplied by the corresponding base(s) minus actual indirect cost recovery.
- e. **All other sources.** Include awards for R&D (including direct and reimbursed indirect costs) from nonprofit foundations and voluntary health agencies as well as from all other sources not elsewhere classified. Funds from foundations that are affiliated with, or granted solely to your institution, should be included under line 1160, "Institution funds." Funds for R&D received from a health agency that is a unit of a State or local government should be reported under "State and local governments" (line 1125). Also include gifts from individuals that are restricted by the donor to research.

**ITEM 1. CURRENT FUND EXPENDITURES FOR SEPARATELY BUDGETED
RESEARCH AND DEVELOPMENT IN THE SCIENCES AND ENGINEERING,
BY SOURCE OF FUNDS: FY 1996 (Include indirect costs)**

Source of Funds	Line No.	(1) Total (Dollars in Thousands)	(2) Percentages of Total & Federal Funds That Are Basic Research
a. Federal Government	1110	\$	_____ %
b. State and local governments	1125		Basic research is directed toward an increase of knowledge; it is research where the primary aim of the investigator is a fuller knowledge or understanding of the subject under study rather than a specific application thereof.
c. Industry	1150		
d. Institution funds (sum of lines 1161 and 1162)	1160		
(1) Institutionally financed organized research	1161		
(2) Unreimbursed indirect costs and related sponsored research	1162		
e. All other sources	1175		
f. TOTAL (sum of a through e)	1100	\$	_____ %

BASIC RESEARCH
Please provide the percentages of total and Federal expenditures that are basic research (not applied research) as defined in column (2).

CONFIDENTIALITY
Information received from individual institutions in lines 1161 and 1162, estimates for basic research expenditures, or data provided in item 1A will NOT be published or released; only aggregate totals will appear in tabulations.

**ITEM 1A. CURRENT FUND EXPENDITURES (TOTAL AND FEDERALLY FINANCED) FOR
SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT IN THE SCIENCES AND ENGINEERING
PASSED THROUGH THE INSTITUTION TO SUBRECIPIENTS**

How much of your total R&D (line 1100) and Federal R&D (line 1110) expenditures was passed through by your institution to subrecipients?

Subrecipients	Line No.	Dollars in Thousands	
		(1) Total	(2) Federal
Educational subrecipients	1910		
Other subrecipients	1920		
Total	1900		

For Federal awards, **subrecipient** means the entity that expends Federal awards received from a pass-through entity to carry out a Federal program, but does not include an individual that is a beneficiary of such a program. A subrecipient may also be a recipient of other Federal awards directly from a Federal awarding agency. —*OMB Circular A-133, Section .105 (revised April 22, 1996)* For awards from nonfederal sources, the subrecipient definition is analogous to the Federal one.

Educational [subrecipients] refers to all academic colleges and universities and all units owned, operated, and controlled by such institutions.

**ITEM 2. CURRENT FUND EXPENDITURES
(TOTAL AND FEDERALLY FINANCED)
FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT,
BY FIELD OF SCIENCE & ENGINEERING: FY 1996
(Include indirect costs)**

Please note that total R&D expenditures in line 1400, column (1) should be the same as reported in item 1, line 1100, column 1.

Federally financed R&D expenditures in line 1400, column (2) should be the same as reported in item 1, line 1110, column 1.

Field of science & engineering	Line No.	(Dollars in thousands)	
		(1) Total	(2) Federal
a. ENGINEERING (TOTAL)	1410	\$	\$
(1) Aeronautical & astronautical	1411		
(2) Chemical	1412		
(3) Civil	1413		
(4) Electrical	1414		
(5) Mechanical	1415		
(6) Metallurgical & materials	1417		
(7) Other	1416		
b. PHYSICAL SCIENCES (TOTAL)	1420		
(1) Astronomy	1421		
(2) Chemistry	1422		
(3) Physics	1423		
(4) Other	1424		
c. ENVIRONMENTAL SCIENCES (TOTAL)	1430		
(1) Atmospheric	1431		
(2) Earth sciences	1432		
(3) Oceanography	1433		
(4) Other	1434		
d. MATHEMATICAL SCIENCES (TOTAL)	1441		
e. COMPUTER SCIENCES (TOTAL)	1442		
f. LIFE SCIENCES (TOTAL)	1450		
(1) Agricultural	1451		
(2) Biological	1452		
(3) Medical	1453		
(4) Other	1454		
g. PSYCHOLOGY (TOTAL)	1460		
h. SOCIAL SCIENCES (TOTAL)	1470		
(1) Economics	1471		
(2) Political science	1472		
(3) Sociology	1473		
(4) Other	1474		
i. OTHER SCIENCES, not elsewhere classified (TOTAL)	1480		
j. TOTAL (sum of a through i)	1400	\$	\$

Please **EXCLUDE** from your response any R&D expenditures in the fields of education, law, humanities, music, the arts, physical education, library science, and all other non-science and engineering fields.

**ITEM 3. CURRENT FUND EXPENDITURES FOR RESEARCH EQUIPMENT (TOTAL AND FEDERALLY FINANCED)
FOR SEPARATELY BUDGETED RESEARCH AND DEVELOPMENT,
BY FIELD OF SCIENCE & ENGINEERING: FY 1996**

Please report that *portion* of current fund expenditures reported in items 1 and 2 that went for the purchase of research equipment. This includes all research equipment purchased under sponsored research project awards from current fund accounts.

For column (1) report current fund expenditures for R&D from all sources: Federal Government, State, county, municipal or other governments and their agencies (including State funds supporting R&D at agricultural experiment stations); industry; institution funds; and private foundations and voluntary health agencies, individuals, and associations.

For column (2) include funds from awards for R&D sponsored by agencies of the Federal Government.

Field of science & engineering	Line No.	(Dollars in thousands)	
		(1) Total	(2) Federal
a. ENGINEERING (TOTAL)	1810	\$	\$
(1) Aeronautical & astronautical	1811		
(2) Chemical	1812		
(3) Civil	1813		
(4) Electrical	1814		
(5) Mechanical	1815		
(6) Metallurgical & materials	1817		
(7) Other	1816		
b. PHYSICAL SCIENCES (TOTAL)	1820		
(1) Astronomy	1821		
(2) Chemistry	1822		
(3) Physics	1823		
(4) Other	1824		
c. ENVIRONMENTAL SCIENCES (TOTAL)	1830		
(1) Atmospheric	1831		
(2) Earth sciences	1832		
(3) Oceanography	1833		
(4) Other	1834		
d. MATHEMATICAL SCIENCES (TOTAL)	1841		
e. COMPUTER SCIENCES (TOTAL)	1842		
f. LIFE SCIENCES (TOTAL)	1850		
(1) Agricultural	1851		
(2) Biological	1852		
(3) Medical	1853		
(4) Other	1854		
g. PSYCHOLOGY (TOTAL)	1860		
h. SOCIAL SCIENCES (TOTAL)	1870		
(1) Economics	1871		
(2) Political science	1872		
(3) Sociology	1873		
(4) Other	1874		
i. OTHER SCIENCES, not elsewhere classified (TOTAL)	1880		
j. TOTAL (sum of a through i)	1800	\$	\$

Current fund expenditures in each field for scientific research equipment is that PORTION or SUBTOTAL of the amounts reported in the corresponding cells of the "Total" and "Federal" columns in item 2.

**CROSSWALK BETWEEN NSF FIELDS OF SCIENCE & ENGINEERING AND THE
NATIONAL CENTER FOR EDUCATION STATISTICS (NCES) CLASSIFICATION OF INSTRUCTIONAL PROGRAMS**

The left-hand column shows each of the detailed fields as displayed on the questionnaire form. The right-hand column shows the NCES fields that are included within the NSF category as well as some additional illustrative disciplines. These additional disciplines are intended to be guidelines—not sharp definitions—as to what should be reported under a particular field.

Questionnaire Field	NCES Classification and Additional Illustrative Disciplines			
a. ENGINEERING				
(1) Aeronautical and Astronautical	14.02 Aerospace, Aeronautical, and Astronautical Engineering (also aerodynamics, space technology)			
(2) Chemical	03.0509 Wood Science (also petroleum refining process)	14.07 Chemical Engineering 14.32 Polymer/Plastics Engineering	14.25 Petroleum Engineering	
(3) Civil	04.02 Architecture 14.14 Environmental/Environmental Health Engineering (also geotechnical, hydraulic, hydrologic, sanitary and environmental, structural, transportation)			
(4) Electrical	14.09 Computer Engineering (also power engineering)			
(5) Mechanical	14.11 Engineering Mechanics 14.19 Mechanical Engineering			
(6) Metallurgical & Materials	14.06 Ceramic Sciences and Eng. 14.18 Materials Engineering 14.28 Textile Sciences and Eng. (also welding)			
(7) Other	14.03 Agricultural Engineering 14.05 Bioengineering and Biomedical Engineering 14.12 Engineering Physics 14.13 Engineering Science 14.17 Industrial/Manufacturing Eng. 14.22 Naval Architecture and Marine Engineering 14.24 Ocean Engineering 14.29 Engineering Design 14.30 Eng./Industrial Management 14.99 Engineering, Other 30.06 Systems Science and Theory (also marine and ocean engineering systems)			
b. PHYSICAL SCIENCES				
(1) Astronomy	40.02 Astronomy (also Gamma-ray, neutrino, optical and radio, X-ray)			
(2) Chemistry	40.05 Chemistry (also analytical, inorganic, organic, organo-metallic, pharmaceutical, physical, polymer sciences (except biochemistry))			
(3) Physics	40.08 Physics (also acoustics, atomic/molecular, chemical, condensed matter, elementary particles, nuclear structure, optics, plasma, theoretical/mathematical)			
(4) Other	40.01 Physical Sciences, General 40.0799 Miscellaneous Physical Sciences, Other 40.99 Physical Sciences, Other (used for multidisciplinary projects within physical sciences and for disciplines not requested separately)			
c. ENVIRONMENTAL SCIENCES (Earth, Atmospheric, & Ocean)				
(1) Atmospheric	40.04 Atmospheric Sciences and Meteorology (also aeronomy, extraterrestrial atmospheres, solar, weather modification)			
(2) Earth Sciences	15.1102 Surveying 40.06 Geological and Related Sciences 40.0703 Earth & Planetary Sciences 45.0702 Cartography (also engineering geophysics, general geology, geodesy and gravity, geomagnetism, hydrology, inorganic, isotopic, lab geophysics, organic geochemistry, paleomagnetism, paleontology, physical geography, seismology)			
(3) Oceanography Sciences	26.0607 Marine/Aquatic Biology 40.0702 Oceanography (also biological, chemical, geological, physical)			
(4) Other	(used for multidisciplinary projects within Earth, Atmospheric, and Ocean Sciences)			
d. MATHEMATICAL SCIENCES	27.01 Mathematics, General 27.03 Applied Mathematics 27.0302 Operations Research 27.05 Mathematical Statistics 27.99 Mathematics, Other 30.08 Math./Computer Sciences (also algebra, analysis, foundations and logic, geometry, numerical analysis, topology)			
e. COMPUTER SCIENCES	11 Computer and Information Science, General 52.1201 Management Information Systems (also design, development, and application of computer capabilities to data storage and manipulation, information science)			

Questionnaire Field	NCES Classification and Additional Illustrative Disciplines (cont.)			
f. LIFE SCIENCES (1) Agricultural	01.03 Agricultural Production 01.0303 Aquaculture 01.07 International Agriculture 02.01 Agricultural Sciences 02.04 Plant Sciences 02.05 Soil Science 03 Renewable Natural Resources 04.06 Landscape Architecture (also agricultural chemistry, agronomy, animal science, conservation, fish and wildlife, forestry, horticulture)			
(2) Biological	19.05 Foods and Nutrition Studies 26.01 Biology, General 26.0202 Biochemistry 26.0203 Biophysics 26.03 Botany 26.04 Cell and Molecular Biology 26.05 Microbiology/Bacteriology 26.0601 Anatomy 26.0603 Ecology 26.0609 Nutritional Sciences 26.0610 Parasitology 26.0612 Toxicology 26.0613 Genetics, Plant and Animal 26.0614 Biometrics 26.0615 Biostatistics 26.0699 Misc. Bio. Specializations, Other 26.0701 Zoology 26.0702 Entomology 26.0704 Pathology, Human and Animal 26.0705 Pharmacology, Human and 26.0706 Physiology, Human and 26.0799 Zoology, Other Animal 26.99 Biolog./Life Sciences, Other 51.1301 Medical Anatomy 51.1302 Medical Biochemistry 51.1307 Medical Immunology 51.1308 Medical Microbiology 51.1312 Medical Pathology 51.1313 Medical Physiology 51.1314 Medical Toxicology 51.2203 Epidemiology (also allergies and immunology, biogeography, biotechnology, pathology, physical anthropology, virology)			
(3) Medical	26.0608 Neurosciences 26.0611 Radiation Biology/Radiobiol. 51.04 Dentistry 51.1201 Medicine, General 51.1399 Med. Basic Sciences, Other 51.1610 Nursing Psychiatry/ 51.17 Optometry 51.19 Osteopathic Medicine Mental Health 51.20 Pharmacy 51.21 Podiatry 51.22 Public Health 51.24 Veterinary Medicine ¹ Anesthesiology Cardiology Colon and Rectal Surgery Dental/Oral Surgery Dermatology Family Medicine Gastroenterology General Surgery Geriatric Medicine Hematology Internal Medicine Medical Programs, Other Neonatal-Perinatal Medicine Neurological Surgery Neurology Nuclear Medicine Nuclear Radiology Obstetrics and Gynecology Oncology Ophthalmology Orthopedics/Orthopedic Surgery Otorhinolaryngology Pediatrics Pharmacology Physical and Rehabilitative Medicine Plastic Surgery Preventive Medicine Psychiatry Thoracic Surgery Urology (exclude all residency programs)			
(4) Other	30.11 Gerontology 51.02 Communication Disorders 51.07 Health and Medical 51.10 Health and Medical Laboratory Sciences and Services Administrative Services Technologies 51.16 Nursing Technologies 51.2306 Occupational Therapy 51.2308 Physical Therapy 51.2399 Rehab./Therapeutic Services 51.99 Health Professions and Related Services, Other (used for multidisciplinary projects within life sciences)			
g. PSYCHOLOGY	42.01 Psychology, General 42.02 Clinical Psychology 42.17 School Psychology 51.2301 Art Therapy (also animal behavior, educational, experimental, human development and personality, social)			
h. SOCIAL SCIENCES (1) Economics	01.0103 Agricultural Economics 45.06 Economics 52.06 Business/Managerial Econ. (also applied, development, econometrics, industrial, international, labor, public finance and fiscal policy, quantitative, resource)			
(2) Political Science	44.04 Public Administration 44.05 Public Policy Analysis 44.99 Public Admin. and Services, Other 45.09 International Relations and Affairs 45.10 Political Science and Government (also comparative government, legal systems, political theory, regional studies)			
(3) Sociology	45.02 Anthropology (Social and 45.05 Demography and 45.11 Sociology Cultural only) Population Studies (also comparative and historical, complex organizations, cultural and social structure, group interactions, social problems and welfare theory)			
(4) Other	04.03 City/Urban, Community, and 05 Area and Ethnic Studies 16.0102 Linguistics Regional Planning 43.01 Crim'l. Justice & Corrections 44.02 Community Services 45.01 Social Sciences, General 45.03 Archaeology 45.07 Geography 45.12 Urban Studies/Affairs 45.99 Social Sciences, Other (also history of science, socioeconomic geography)			
i. OTHER SCIENCES, n.e.c.	(used when the multidisciplinary and interdisciplinary aspects make the classification under one primary field impossible)			

¹ Institutions with schools of veterinary medicine should distribute R&D expenditures among the appropriate disciplines (agricultural, biological, and medical) rather than only in medical sciences.



NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

Survey of Research and Development Expenditures at Universities and Colleges, FY 1996

OPTIONAL ITEM 3A

Current Fund Expenditures for Research Equipment, FY 1996

The National Science Foundation is continuing its evaluation of data provided in item 3 of its Survey of Research and Development Expenditures at Universities and Colleges (R&D expenditures survey). To help NSF better understand what is being reported as current fund expenditures for research equipment, please complete the optional item printed below.

OPTIONAL ITEM 3A

For reporting on item 3 of this survey, does your institution use a specific dollar cutoff to classify current fund expenditures as expenditures for research equipment?

NO _____

YES _____ If yes, the cutoff level is: \$ _____

Comments: _____

