

Fields of R&D for the **FY 2016** Higher Education Research and Development Survey

HERD 2016 Fields	Changes from FY 2015 HERD Survey
A. Computer and Information Sciences	
Artificial intelligence Computer and information technology administration and management Computer science Computer software and media applications Computer systems analysis Computer systems networking and telecommunications Data processing Information sciences, studies Information technology	Disciplines removed from this field: <ul style="list-style-type: none"> • Management information systems moved to Non-S&E Fields, Business Management and Business Administration.
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	Disciplines removed from this field: <ul style="list-style-type: none"> • Petroleum engineering moved to Other Engineering. • Wood science moved to Life Sciences, Agricultural Sciences.

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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	Disciplines removed from this field: <ul style="list-style-type: none"> • Architecture moved to Non-S&E Fields, Other Non-S&E Fields.
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 NEW FIELD	
Industrial engineering Manufacturing engineering Operations research Systems engineering	Disciplines added to this field: <ul style="list-style-type: none"> • Industrial, manufacturing and systems engineering moved from Other Engineering. • Operations research moved from Mathematics and Statistics.
7. Mechanical Engineering	
Electromechanical engineering Mechatronics, robotics, and automation engineering	Disciplines removed from this field: <ul style="list-style-type: none"> • Engineering mechanics moved to Other Engineering.

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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	Disciplines removed from this field: <ul style="list-style-type: none"> • Materials science moved to the new field of Materials Science under Physical Sciences.
9. Other Engineering	
Agricultural engineering Engineering design Engineering mechanics, physics, and 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	Disciplines removed from this field: <ul style="list-style-type: none"> • Industrial, manufacturing and systems engineering moved to Industrial and Manufacturing Engineering. Disciplines added to this field: <ul style="list-style-type: none"> • Engineering mechanics, physics, and science moved from Mechanical Engineering. • Petroleum engineering moved from Chemical Engineering.
C. Geosciences, Atmospheric, and Ocean Sciences (previously called Environmental Sciences)	
1. Atmospheric Science and Meteorology	
Aeronomy Atmospheric chemistry and climatology Atmospheric physics and dynamics Extraterrestrial atmospheres Meteorology Solar Weather modification	

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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	Disciplines removed from this field: <ul style="list-style-type: none"> • Cartography moved to Social Sciences, Other Social Sciences.
3. Ocean Sciences and Marine Sciences	
Biological oceanography Geological oceanography Marine biology Marine oceanography Marine sciences Oceanography, chemical and physical	
4. Other Geosciences, Atmospheric and Ocean Sciences	
Other fields that cannot be classified using the fields listed above.	

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D. Life Sciences

1. Agricultural Sciences

<p>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</p>	<p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Conservation moved to Natural Resources and Conservation. • Fishing and fisheries sciences and management moved to Natural Resources and Conservation. • Forestry moved to Natural Resources and Conservation. • Renewable natural resources moved to Natural Resources and Conservation. • Landscape architecture moved to Non S&E Fields, Other Non-S&E Fields. • All veterinary disciplines moved to Health Sciences. <p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Agricultural economics moved from Social Sciences, Economics. • Wood science moved from Engineering, Chemical Engineering.
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2. Biological and Biomedical Sciences (previously Biological Sciences)

<p>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</p>	<p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Foods and nutrition studies moved to Non-S&E Fields, Other Non-S&E Fields. • Nutritional sciences (renamed Dietetics and clinical nutrition services) moved to Health Sciences. • Physical anthropology moved to Social Sciences, Anthropology. • All veterinary disciplines moved to Health Sciences. <p>Disciplines added to this fields:</p> <ul style="list-style-type: none"> • Neurobiology and neuroscience moved from Health Sciences.
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3. Health Sciences (previously Medical Sciences)	
<p>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</p>	<p>Several medical fields that had been previously listed as individual examples here have been clustered under the name Clinical medicine research.</p> <p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Neurosciences moved to Biological and Biomedical Sciences. • Pharmacology moved to Biological and Biomedical Sciences. <p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Clinical/medical laboratory technologies moved from Other Life Sciences. • Communication disorders sciences and services moved from Other Life Sciences. • Gerontology, health sciences moved from Other Life Sciences. • Health and medical administration services moved from Other Life Sciences. • Nursing moved from Other Life Sciences. • Registered nursing, nursing administration, nursing research and clinical nursing moved from Other Life Sciences. • All therapy and rehabilitation fields moved from Other Life Sciences. • Nutritional sciences (renamed Dietetics and clinical nutrition services) moved from Biological and Biomedical Sciences. • All Veterinary disciplines are now included in this field. Subdisciplines may have moved from Agricultural Sciences or Biological and Biomedical Sciences.
4. Natural Resources and Conservation	
<p>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</p>	<p style="text-align: right; color: red;">NEW FIELD</p> <p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Most disciplines in this field moved from Agricultural Sciences. • Natural resources economics moved from Social Sciences, Economics.

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5. Other Life Sciences	
Other life sciences that cannot be classified using the fields listed above	<p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Clinical/medical laboratory technologies moved to Health Sciences. • Communication disorders sciences and services moved to Health Sciences. • Gerontology, health sciences moved to Health Sciences. • Health and medical administration services moved to Health Sciences. • Nursing moved to Health Sciences. • Registered nursing, nursing administration, nursing research and clinical nursing moved to Health Sciences. • All therapy and rehabilitation fields moved to Health Sciences.
E. Mathematics and Statistics	
Applied mathematics Mathematics Statistics	<p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Operations research moved to Engineering, Industrial and Manufacturing Engineering.
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	<p>Disciplines removed from this field:</p> <ul style="list-style-type: none"> • Pharmaceutical chemistry moved to Life Sciences, Health Sciences. <p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Chemical physics moved from Physics.
3. Materials Science	
Materials chemistry Materials science	<p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Materials science moved from Engineering, Metallurgical and Materials Engineering.
	NEW FIELD

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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	Disciplines removed from this field: <ul style="list-style-type: none"> • Chemical physics moved to Chemistry.
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	Disciplines removed from this field: <ul style="list-style-type: none"> • Animal behavior, part of Zoology, moved to Life Sciences, Biological and Biomedical Sciences. • Art therapy, part of Rehabilitation and therapeutic professions, moved to Life Sciences, Health Sciences
H. Social Sciences	
1. Anthropology	NEW FIELD
Cultural anthropology Medical anthropology Physical and biological anthropology	Disciplines added to this field: <ul style="list-style-type: none"> • Cultural anthropology moved from Sociology, Demography and Population Studies. • Physical and biological anthropology moved from Life Sciences, Biological and Biomedical Sciences.
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	Disciplines removed from the field: <ul style="list-style-type: none"> • Agricultural economics moved to Life Sciences, Agricultural Sciences. • Resource economics moved to Life Sciences, Natural Resources and Conservation.

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3. Political Science and Government	
Comparative government Government Legal systems Political economy Political science Political theory	Disciplines removed from this field: <ul style="list-style-type: none"> • International relations and affairs moved to Other Social Sciences. • Public policy analysis moved to Other Social Sciences. • Public administration has moved to Non-S&E Fields, Other Non-S&E fields. • Regional studies moved to Other Social Sciences.
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	Disciplines removed from the field: <ul style="list-style-type: none"> • All subdisciplines of anthropology moved to Anthropology.
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 Linguistics Public policy analysis Regional studies Urban studies, affairs	Disciplines added to this field: <ul style="list-style-type: none"> • Cartography moved from Geosciences, Atmospheric, and Ocean Sciences, Geological and Earth Science. • International relations and affairs moved from Political Science and Government. • Public policy analysis moved from Political Science and Government. • Regional studies moved from Political Science and Government. Disciplines removed from this field: <ul style="list-style-type: none"> • History of science moved to Non-S&E Fields, Humanities. • City, urban, community and regional planning moved to Non-S&E Fields, Other Non-S&E fields. • Community services, part of City, urban, community and regional planning, moved to Non-S&E Fields, Other Non-S&E fields. • Urban and regional planning, part of City, urban, community and regional planning, moved to Non-S&E Fields, Other Non-S&E fields.
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.	

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J. Non-S&E Fields	
1. Business Management and Business Administration (previously Business and Management)	
Business administration Business management Business, managerial economics Management information systems and services Marketing management and research	Disciplines added to this field: <ul style="list-style-type: none"> • Management information systems moved from Computer and Information Sciences.
2. Communication and Communications Technologies (previously Communication, journalism, and library science)	
Communication and media studies Communications technologies Journalism Radio, television, and digital communication	Disciplines removed from this field: <ul style="list-style-type: none"> • Library science moved to Other Non-S&E Fields.
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	Disciplines added to this field: <ul style="list-style-type: none"> • History of science moved from Social Science, Other Social Sciences.
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	

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8. Other Non-S&E Fields	
<p>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</p> <p>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.</p>	<p>Disciplines added to this field:</p> <ul style="list-style-type: none"> • Architecture moved from Engineering, Civil Engineering. • City, urban, community and regional planning moved from Social Science, Other Social Sciences. • Food and nutrition studies moved from Life Sciences, Biological and Biomedical Sciences. • Landscape architecture moved from Life Sciences, Agricultural Sciences. • Library science moved from Communication and Communication Technologies. • Public administration moved from Social Sciences, Political Science and Government.