

## Fields of Science and Engineering

Fields of science and engineering in this survey are divided into eight broad categories, each consisting of a number of detailed fields. The broad categories are life sciences, psychology, physical sciences, environmental sciences, mathematics and computer sciences, engineering, social sciences, and other sciences not elsewhere classified. The term not elsewhere classified (n.e.c.) is to be used for multidisciplinary projects within a broad category and for single-discipline projects for which a separate field has not been assigned. The following listing presents the fields grouped under each of the broad categories together with illustrative disciplines. (Additional information concerning fields of science and engineering is provided under the [reporting guidelines for tables III, IV, and V](#)).

**Life sciences** consist of five detailed fields: biological (excluding environmental), environmental biology, agricultural, medical, and life sciences, n.e.c. The illustrative disciplines provided below under each of these detailed fields are intended to be guidelines, not sharp definitions; they represent examples of disciplines generally classified under each detailed field. A discipline under one detailed field may be classified under another detailed field when the major emphasis is elsewhere. Research in biochemistry could be reported as biological, agricultural, or medical, depending on the orientation of the project. Human biochemistry would be classified under biological, but animal biochemistry or plant biochemistry would be under agricultural. In no case should the research be reported under more than one field. No double counting is intended or allowed.

### *Biological (excluding environmental):*

allergies and immunology; anatomy; bacteriology; biochemistry; biogeography; biology; biometry and biostatistics; biophysics; biotechnology; botany; cell biology; ecology; entomology and parasitology; epidemiology; foods and nutrition studies; genetics; medical anatomy; medical biochemistry; medical immunology; medical microbiology; medical pathology; medical physiology; medical toxicology; microbiology; neuroscience (biological); nutrition; pathology, human and animal; pharmacology, human and animal; physical anthropology; physiology, human and animal; virology; zoology; other biological, n.e.c.\*

### *Environmental biology:*

ecosystem sciences; evolutionary biology; global warming; limnology; physiological ecology; population and biotic community ecology; population biology; systematics; other environmental biology, n.e.c.\*

### *Agricultural:*

agricultural chemistry; agricultural production; agronomy; animal sciences; conservation; fish and wildlife; food science and technology; forestry; horticulture; international agriculture; landscape architecture; plant sciences; renewable natural resources; soils and soil science; phytopathology; phytoproduction; agriculture, general; other agricultural, n.e.c.\*

### *Medical:*

anesthesiology; cardiology; colon and rectal surgery; dental/oral surgery; dentistry; dermatology; family medicine; gastroenterology; general surgery; geriatric medicine;

hematology; internal medicine; neonatal-perinatal medicine; neurological surgery; neurology; nuclear medicine; nuclear radiology; nursing psychiatry/mental health; obstetrics and gynecology; oncology; ophthalmology; optometry; orthopedics/orthopedic surgery; osteopathic medicine; otolaryngology; pathology; pediatrics; pharmacology; pharmacy; physical and rehabilitative medicine; plastic surgery; podiatry; preventive medicine; psychiatry; public health; radiation biology/radiobiology; radiology; surgery; thoracic surgery; urology; veterinary medicine; other medical, n.e.c.\*

*Life sciences, n.e.c.\*:*

administrative services; allied health, other; communication disorders; gerontology; health and medical services; health professions and related services; medical laboratory sciences and services; midwifery; nursing; nursing technologies; occupational therapy; physical therapy; rehabilitation/therapeutic services

**Psychology** deals with behavior, mental processes, and individual and group characteristics and abilities. Psychology is divided into three fields: biological aspects, social aspects, and psychological sciences, n.e.c. Examples of the disciplines under each of these fields are as follows:

*Biological aspects:*

experimental psychology; animal behavior; clinical psychology; comparative psychology; ethology

*Social aspects:*

development and personality; educational, personnel, vocational psychology, and testing; industrial and engineering psychology; social psychology

*Psychological sciences, n.e.c.*

**Physical sciences** are concerned with the understanding of the material universe and its phenomena. They comprise the fields of astronomy, chemistry, physics, and physical sciences, n.e.c.\* Examples of disciplines under each of these fields are as follows:

*Astronomy:*

laboratory astrophysics; optical astronomy; radio astronomy; theoretical astrophysics; X-ray, Gamma-ray, neutrino astronomy

*Chemistry:*

analytical; inorganic; organic; organo-metallic; pharmaceutical; physical; polymer sciences (except biochemistry)

*Physics:*

acoustics; atomic and molecular; chemical; condensed matter; elementary particles; nuclear structure; optics; plasma; solid-state; theoretical/mathematical

*Physical sciences, n.e.c.\**

**Environmental sciences (terrestrial and extraterrestrial)** are concerned with the gross nonbiological properties (with one exception) of the areas of the solar system that directly or indirectly affect man's survival and welfare; they comprise the fields of

atmospheric sciences, geological sciences, oceanography, and environmental sciences, n.e.c.\* The one exception is that obligations for studies pertaining to life in the sea or other bodies of water are to be reported as support of oceanography and not biology. Examples of disciplines under each of these fields are as follows:

*Atmospheric sciences:*

aeronomy; air pollution; extraterrestrial atmospheres; meteorology; solar; weather modification

*Geological sciences:*

engineering geophysics; general geology; geodesy and gravity; geomagnetism; hydrology; inorganic geochemistry; isotopic geochemistry; laboratory geophysics; organic geochemistry; paleomagnetism; paleontology; physical geography and cartography; seismology; soil sciences; surveying

*Oceanography:*

aquatic biology; biological oceanography; chemical oceanography; geological oceanography; marine geophysics; physical oceanography

*Environmental sciences, n.e.c.*

**Mathematics and computer sciences** employ logical reasoning with the aid of symbols and are concerned with the development of methods of operation employing such symbols, and in the case of computer sciences, with the application of such methods to automated information systems. Examples of disciplines under these fields are as follows:

*Mathematics:*

algebra; analysis; applied mathematics; foundations and logic; geometry; mathematics, general; inventory and monitoring; numerical analysis; operations research; statistics; topology; trend reporting

*Computer sciences:*

computer and information sciences (general); design, development, and application of computer capabilities to data storage and manipulation; information sciences and systems; management information systems; programming languages; systems analysis

*Mathematics and computer sciences, n.e.c. \**

**Engineering** is concerned with studies directed toward developing engineering principles or toward making specific principles usable in engineering practice. Engineering is divided into eight fields: aeronautical, astronautical, chemical, civil, electrical, mechanical, metallurgy and materials, and engineering, n.e.c.\* Examples of disciplines under each of these fields are as follows:

*Aeronautical:*

aerodynamics

*Astronautical:*

aerospace; space technology

*Chemical:*

chemical engineering; petroleum; petroleum refining process; polymer/plastics engineering; wood science

*Civil:*

architectural; environmental/environmental health engineering; geotechnical; hydraulic; hydrologic; marine; sanitary and environmental; structural; transportation

*Electrical:*

communication; computer engineering; electronic; power

*Mechanical:*

engineering mechanics; mechanical engineering

*Metallurgy and materials:*

ceramic engineering; geological engineering; geophysical engineering; materials engineering; materials research; materials science; metallurgical engineering; metallurgy; mining and mineral engineering; textile sciences and engineering; welding

*Engineering, n.e.c. \**

agricultural; bioengineering; biomedical; engineering, general; engineering design; engineering physics; engineering science; industrial and management; manufacturing engineering; nuclear; ocean engineering; systems science and theory

**Social sciences** are directed toward an understanding of the behavior of social institutions and groups and of individuals as members of a group. Social sciences include anthropology, economics, political science, sociology, and social sciences, n.e.c.\* Examples of disciplines under the fields of social science are as follows:

*Anthropology:*

applied anthropology; archaeology; cultural and personality; ethnology; social anthropology

*Economics:*

econometrics and economic statistics; economic systems and development; history of economic thought; industrial, labor, and agricultural economics; international economics; macroeconomics; microeconomics; public finance and fiscal policy; quantitative; resource; theory

*Political science:*

area or regional studies; comparative government; history of political ideas; international relations and law; national political and legal systems; political science and government; political theory; public administration

*Sociology:*

area and ethnic studies; city/urban, community, and regional planning; comparative and historical; complex organizations; criminal justice and corrections; criminology; culture

and social structure; demography; group interactions; population studies; social problems and social welfare; sociological theory; urban studies/affairs

*Social sciences, n.e.c. \**

linguistics; research in education; research in history and philosophy of science; research in law, e.g., attempts to assess impact on society of legal systems and practices; socioeconomic geography

**Other sciences, n.e.c.**, are to be used for multidisciplinary and interdisciplinary projects that cannot be classified within one of the fields of science and engineering above.

12	Chemistry	47	Metallurgy and Materials
13	Physics	49	Engineering, n.e.c.*
19	Physical sciences, n.e.c.*	51	Biological
21	Mathematics	54	Environmental biology
22	Computer sciences	55	Agricultural sciences
29	Mathematics and computer sciences, n.e.c. *	56	Medical sciences
31	Atmospheric sciences	59	Life sciences, n.e.c.*
32	Earth sciences	61	Biological aspects
33	Oceanography	62	Social aspects
39	Environmental sciences, n.e.c. *	69	Psychology, n.e.c. *
41	Aeronautical	71	Anthropology
42	Astronautical	72	Economics
43	Chemical	74	Linguistics
44	Civil	75	Political science
45	Electrical	76	Sociology
46	Mechanical	79	Social sciences, n.e.c. *
		99	Other sciences n.e.c. *

\*n.e.c. (not elsewhere classified)