

TABLE 11

## Federally financed higher education R&amp;D expenditures, by R&amp;D field: FYs 2010–22

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
All R&D fields	37,477,582	40,768,251	40,142,223	39,445,931	37,961,118	37,846,802	38,787,997	40,248,058	41,860,369	44,460,327	46,106,539	49,116,033	53,971,468
Science	30,791,579	33,373,047	32,497,010	31,764,798	30,400,058	30,316,969	31,092,549	32,203,558	33,519,201	35,549,587	36,748,656	39,046,586	42,786,338
Computer and information sciences	1,175,343	1,294,280	1,360,430	1,552,300	1,390,677	1,419,654	1,443,353	1,497,617	1,630,004	1,794,451	1,999,926	1,994,423	2,184,767
Geosciences, atmospheric sciences, and ocean sciences	2,013,754	2,181,206	2,203,399	2,094,769	2,049,449	2,065,928	1,991,778	2,042,334	2,048,305	2,067,218	2,108,685	2,144,257	2,478,702
Atmospheric science and meteorology	338,687	383,740	389,095	397,620	389,370	453,694	513,280	503,368	485,737	460,463	470,710	483,964	528,068
Geological and earth sciences	735,094	799,906	818,785	767,849	740,590	699,066	604,474	685,673	697,973	676,569	696,982	771,983	875,493
Ocean sciences and marine sciences	666,930	705,852	673,888	662,219	663,049	647,098	665,139	656,802	649,212	698,401	713,042	640,209	785,545
Geosciences, atmospheric sciences, and ocean sciences nec	273,043	291,708	321,631	267,081	256,440	266,070	208,885	196,491	215,383	231,785	227,951	248,101	289,596
Life sciences	21,702,125	23,663,408	22,753,602	22,227,173	21,270,352	21,163,876	21,794,872	22,749,301	23,864,701	25,435,484	26,229,693	28,446,519	30,958,717
Agricultural sciences	957,710	1,042,740	1,137,729	1,111,006	1,084,890	1,096,949	977,258	978,308	950,634	989,763	1,073,703	1,100,161	1,265,977
Biological and biomedical sciences	7,579,196	8,213,534	7,741,440	7,604,784	7,238,875	7,103,719	7,699,147	8,179,749	8,572,742	9,261,749	9,337,678	10,006,403	10,949,628
Health sciences	12,068,659	13,184,595	12,681,515	12,287,305	11,742,489	11,722,981	12,101,184	12,687,813	13,392,912	14,173,029	14,705,799	16,130,097	17,494,324
Natural resources and conservation <sup>a</sup>	na	na	na	na	na	na	316,604	271,470	320,411	369,968	410,798	429,949	480,042
Life sciences nec	1,096,560	1,222,539	1,192,918	1,224,078	1,204,098	1,240,227	700,679	631,961	628,002	640,975	701,715	779,909	768,746
Mathematics and statistics	417,775	458,966	490,534	464,608	441,383	424,522	444,385	437,040	456,773	466,994	485,550	475,602	537,322
Physical sciences	3,384,275	3,527,330	3,474,586	3,311,054	3,155,599	3,111,777	3,288,043	3,384,753	3,472,520	3,691,494	3,790,504	3,847,941	4,212,405
Astronomy and astrophysics	405,954	408,963	535,180	400,294	380,884	403,025	417,930	441,522	454,476	514,408	543,042	509,691	581,652
Chemistry	1,200,120	1,243,767	1,213,495	1,135,108	1,080,513	1,095,296	1,097,416	1,098,004	1,130,042	1,182,601	1,167,364	1,235,822	1,322,328
Materials science <sup>a</sup>	na	na	na	na	na	na	111,806	142,472	162,048	165,880	157,056	174,339	195,404
Physics	1,557,421	1,660,377	1,532,612	1,567,937	1,509,916	1,463,084	1,525,610	1,549,412	1,570,667	1,657,808	1,735,971	1,767,295	1,941,833
Physical sciences nec	220,780	214,223	193,299	207,715	184,286	150,372	135,281	153,343	155,287	170,797	187,071	160,794	171,188
Psychology	758,520	835,448	859,500	776,402	752,501	763,632	765,239	764,703	760,293	790,261	808,930	812,390	875,330
Social sciences	901,009	947,176	915,874	897,585	917,670	921,751	899,551	932,620	937,714	938,439	963,498	949,863	1,075,470
Anthropology <sup>a</sup>	na	na	na	na	na	na	39,602	38,712	43,461	43,001	38,891	29,484	40,119
Economics	127,858	148,737	144,446	137,236	138,806	149,567	112,576	110,739	102,144	91,716	120,846	138,029	194,381
Political science and government	152,547	148,643	141,267	143,356	145,662	136,482	103,690	103,869	98,298	86,702	78,384	85,375	95,363
Sociology, demography, and population studies	226,462	232,834	247,739	237,479	251,800	262,243	268,823	280,557	285,140	289,741	247,835	227,075	272,683
Social sciences nec	394,142	416,962	382,422	379,514	381,402	373,459	374,860	398,743	408,671	427,279	477,542	469,900	472,924
Sciences nec	438,778	465,233	439,085	440,907	422,427	445,829	465,328	395,190	348,891	365,246	361,870	375,591	463,625
Engineering	5,718,852	6,275,548	6,442,986	6,499,575	6,424,206	6,458,636	6,582,994	6,828,629	7,093,381	7,667,876	8,119,848	8,713,515	9,694,378
Aerospace, aeronautical, and astronautical engineering	466,991	504,536	501,722	513,134	474,601	516,035	623,637	659,882	678,118	820,576	956,641	1,110,337	1,246,002
Bioengineering and biomedical engineering	470,432	515,611	552,555	556,651	606,940	606,681	651,534	725,241	791,872	879,791	905,895	960,328	1,100,258
Chemical engineering	421,269	490,918	504,753	478,542	471,558	462,813	467,519	471,749	461,475	498,223	521,895	572,307	646,644
Civil engineering	460,880	544,992	570,303	578,390	577,958	570,405	591,837	557,671	590,881	621,055	605,760	664,406	784,286
Electrical, electronic, and communications engineering	1,373,311	1,511,458	1,601,917	1,642,771	1,742,317	1,771,541	1,742,704	1,891,348	1,981,178	2,049,393	2,143,808	2,208,461	2,484,203

TABLE 11

**Federally financed higher education R&D expenditures, by R&D field: FYs 2010–22**

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Industrial and manufacturing engineering <sup>a</sup>	na	na	na	na	na	na	147,192	186,352	306,763	366,712	384,571	384,162	434,246
Mechanical engineering	953,244	1,032,641	1,035,551	1,061,270	946,699	957,328	861,039	937,849	993,231	1,055,663	1,160,453	1,274,048	1,409,792
Metallurgical and materials engineering	429,412	455,722	462,246	465,657	494,403	501,180	442,377	440,746	464,468	483,774	504,486	559,478	589,129
Engineering nec	1,143,313	1,219,670	1,213,939	1,203,160	1,109,730	1,072,653	1,055,155	957,791	825,395	892,689	936,339	979,988	999,818
Non-S&E	967,151	1,119,656	1,202,227	1,181,558	1,136,854	1,071,197	1,112,454	1,215,871	1,247,787	1,242,864	1,238,035	1,355,932	1,490,752
Business management and business administration	86,440	99,661	96,659	95,268	77,292	69,856	68,283	69,110	71,781	73,178	74,127	97,347	97,962
Communication and communications technologies	41,339	53,266	53,337	51,060	54,334	42,461	36,763	61,310	34,258	35,637	39,806	39,465	42,707
Education	535,744	632,117	689,060	666,506	663,543	644,087	624,465	653,069	680,399	668,069	672,165	699,686	783,518
Humanities	57,510	61,420	67,692	76,804	75,113	59,961	57,170	59,050	49,999	49,801	53,655	56,701	68,956
Law	19,338	27,388	24,575	22,522	23,731	24,414	26,081	33,021	50,924	31,866	26,695	28,799	32,391
Social work	94,422	105,661	109,359	111,693	109,172	101,662	95,299	110,678	114,293	133,068	140,774	165,256	181,943
Visual and performing arts	4,843	6,521	10,435	7,039	9,049	8,603	8,585	8,334	10,796	9,102	15,118	11,482	21,188
Non-S&E nec	127,515	133,622	151,110	150,666	124,620	120,153	195,808	221,299	235,337	242,143	215,695	257,196	262,087

na = not applicable; separate data for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected prior to FY 2016.

nec = not elsewhere classified; S&E = science and engineering.

<sup>a</sup> Prior to FY 2016, expenditures for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected separately. See the FY 2016 Technical Notes, Appendix A (<https://ncesdata.nsf.gov/herd/2016>) for information detailing where these fields were previously reported.

**Note(s):**

FY 2016 R&D expenditure amounts in various fields may show increases or decreases from amounts reported in FY 2015 because of the reclassification of disciplines. See the FY 2016 Technical Notes, Appendix A (<https://ncesdata.nsf.gov/herd/2016>) for specific details about discipline changes.

**Source(s):**

National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.