

TABLE 11

Federally financed higher education R&D expenditures, by R&D field: FYs 2010–23

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
All R&D fields	37,477,582	40,768,251	40,142,223	39,445,931	37,961,118	37,846,802	38,787,982	40,248,055	41,860,383	44,460,361	46,106,870	49,117,850	53,974,897	59,603,993
Science	30,791,579	33,373,047	32,497,010	31,764,798	30,400,058	30,316,969	31,092,374	32,203,390	33,519,092	35,549,478	36,749,644	39,048,571	42,723,833	46,947,867
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	1,629,987	1,794,430	2,000,234	1,995,236	2,160,601	2,417,938
Geosciences, atmospheric sciences, and ocean sciences	2,013,754	2,181,206	2,203,399	2,094,769	2,049,449	2,065,928	1,991,517	2,042,078	2,048,318	2,067,231	2,108,912	2,144,414	2,440,465	2,693,891
Atmospheric science and meteorology	338,687	383,740	389,095	397,620	389,370	453,694	513,280	503,371	485,737	460,464	470,711	483,964	528,092	583,161
Geological and earth sciences	735,094	799,906	818,785	767,849	740,590	699,066	604,482	685,679	697,980	676,577	697,201	772,134	851,764	921,482
Ocean sciences and marine sciences	666,930	705,852	673,888	662,219	663,049	647,098	664,867	656,536	649,217	698,405	713,048	640,213	785,738	891,194
Geosciences, atmospheric sciences, and ocean sciences nec	273,043	291,708	321,631	267,081	256,440	266,070	208,888	196,492	215,384	231,785	227,952	248,103	274,871	298,054
Life sciences	21,702,125	23,663,408	22,753,602	22,227,173	21,270,352	21,163,876	21,794,958	22,749,389	23,864,617	25,435,400	26,230,572	28,448,591	30,958,946	33,896,235
Agricultural sciences	957,710	1,042,740	1,137,729	1,111,006	1,084,890	1,096,949	977,260	978,310	950,636	989,766	1,074,030	1,100,603	1,267,486	1,458,868
Biological and biomedical sciences	7,579,196	8,213,534	7,741,440	7,604,784	7,238,875	7,103,719	7,699,190	8,179,789	8,572,785	9,261,802	9,337,535	10,006,560	10,934,362	11,753,581
Health sciences	12,068,659	13,184,595	12,681,515	12,287,305	11,742,489	11,722,981	12,101,219	12,687,853	13,392,951	14,173,059	14,705,970	16,130,296	17,505,745	19,390,822
Natural resources and conservation ^a	na	na	na	na	na	na	316,604	271,472	320,399	369,793	411,178	430,711	481,915	512,675
Life sciences nec	1,096,560	1,222,539	1,192,918	1,224,078	1,204,098	1,240,227	700,685	631,965	627,846	640,980	701,859	780,421	769,438	780,289
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	475,732	537,338	661,446
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	3,789,953	3,846,606	4,211,858	4,621,763
Astronomy and astrophysics	405,954	408,963	535,180	400,294	380,884	403,025	417,930	441,522	454,476	514,408	542,868	509,728	581,674	659,781
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	1,234,985	1,321,823	1,413,489
Materials science ^a	na	na	na	na	na	na	111,806	142,472	162,048	165,880	157,056	174,339	195,404	205,797
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	1,736,203	1,767,509	1,942,446	2,123,118
Physical sciences nec	220,780	214,223	193,299	207,715	184,286	150,372	135,281	153,343	155,287	170,797	186,462	160,045	170,511	219,578
Psychology	758,520	835,448	859,500	776,402	752,501	763,632	765,239	764,703	760,293	790,261	808,930	812,460	876,792	978,784
Social sciences	901,009	947,176	915,874	897,585	917,670	921,751	899,551	932,620	937,702	938,422	963,623	949,941	1,074,208	1,202,546
Anthropology ^a	na	na	na	na	na	na	39,602	38,712	43,461	43,001	38,891	29,484	40,092	46,631
Economics	127,858	148,737	144,446	137,236	138,806	149,567	112,576	110,739	102,144	91,716	120,987	138,184	192,678	206,477
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	95,240	111,794
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	272,658	317,113
Social sciences nec	394,142	416,962	382,422	379,514	381,402	373,459	374,860	398,743	408,659	427,262	477,526	469,823	473,540	520,531
Sciences nec	438,778	465,233	439,085	440,907	422,427	445,829	465,328	395,190	348,882	365,246	361,870	375,591	463,625	475,264
Engineering	5,718,852	6,275,548	6,442,986	6,499,575	6,424,206	6,458,636	6,583,092	6,828,730	7,093,485	7,667,982	8,119,690	8,713,379	9,759,899	10,931,327
Aerospace, aeronautical, and astronautical engineering	466,991	504,536	501,722	513,134	474,601	516,035	623,639	659,883	678,124	820,576	956,662	1,110,350	1,246,002	1,425,681
Bioengineering and biomedical engineering	470,432	515,611	552,555	556,651	606,940	606,681	651,544	725,254	791,877	879,804	905,901	960,334	1,100,598	1,198,449
Chemical engineering	421,269	490,918	504,753	478,542	471,558	462,813	467,523	471,758	461,482	498,228	521,681	572,091	646,399	713,248
Civil engineering	460,880	544,992	570,303	578,390	577,958	570,405	591,848	557,682	590,891	621,071	605,902	664,545	823,619	929,044
Electrical, electronic, and communications engineering	1,373,311	1,511,458	1,601,917	1,642,771	1,742,317	1,771,541	1,742,716	1,891,364	1,981,195	2,049,405	2,143,819	2,208,478	2,510,415	2,794,497
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	147,193	186,352	306,763	366,712	384,724	384,331	434,473	481,861

TABLE 11

Federally financed higher education R&D expenditures, by R&D field: FYs 2010–23

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Mechanical engineering	953,244	1,032,641	1,035,551	1,061,270	946,699	957,328	861,067	937,881	993,253	1,055,683	1,160,467	1,274,074	1,409,635	1,551,973
Metallurgical and materials engineering	429,412	455,722	462,246	465,657	494,403	501,180	442,377	440,746	464,470	483,777	504,491	559,479	589,113	693,211
Engineering nec	1,143,313	1,219,670	1,213,939	1,203,160	1,109,730	1,072,653	1,055,185	957,810	825,430	892,726	936,043	979,697	999,645	1,143,363
Non-S&E	967,151	1,119,656	1,202,227	1,181,558	1,136,854	1,071,197	1,112,516	1,215,935	1,247,806	1,242,901	1,237,536	1,355,900	1,491,165	1,724,799
Business management and business administration	86,440	99,661	96,659	95,268	77,292	69,856	68,285	69,113	71,785	73,180	74,141	97,392	97,921	109,626
Communication and communications technologies	41,339	53,266	53,337	51,060	54,334	42,461	36,763	61,310	34,259	35,640	39,806	39,465	42,680	58,280
Education	535,744	632,117	689,060	666,506	663,543	644,087	624,514	653,112	680,407	668,083	671,646	699,705	783,552	890,786
Humanities	57,510	61,420	67,692	76,804	75,113	59,961	57,171	59,051	49,999	49,806	53,655	56,682	68,935	65,170
Law	19,338	27,388	24,575	22,522	23,731	24,414	26,082	33,024	50,926	31,869	26,695	28,799	32,389	35,110
Social work	94,422	105,661	109,359	111,693	109,172	101,662	95,299	110,678	114,295	133,068	140,774	165,256	182,395	205,510
Visual and performing arts	4,843	6,521	10,435	7,039	9,049	8,603	8,585	8,335	10,797	9,103	15,119	11,384	21,183	20,717
Non-S&E nec	127,515	133,622	151,110	150,666	124,620	120,153	195,817	221,312	235,338	242,152	215,700	257,217	262,110	339,600

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.

^a 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.