

**Table 9. Higher education R&D expenditures at institutions in the standard form survey population, by R&D field: FYs 2010–24**

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
All R&D fields	61,286,610	65,274,393	65,730,064	66,978,647	67,161,428	68,520,986	71,737,194	75,150,488	79,027,030	83,490,430	86,308,537	89,706,305	97,677,440	108,696,625	117,554,145
Science	49,061,829	51,955,427	51,915,529	52,609,492	52,761,785	53,844,129	56,235,949	58,936,782	62,019,112	65,418,733	67,567,030	70,295,678	76,150,933	84,322,120	90,713,503
Computer and information sciences	1,638,047	1,742,486	1,822,322	2,067,876	1,927,578	1,962,058	2,079,423	2,192,291	2,397,588	2,637,121	2,924,931	2,953,932	3,201,158	3,614,760	3,955,529
Geosciences, atmospheric sciences, and ocean sciences	2,991,741	3,153,174	3,173,105	3,195,125	3,227,092	3,246,196	3,082,509	3,147,675	3,159,665	3,185,938	3,280,698	3,295,638	3,654,146	4,035,809	4,407,449
Atmospheric science and meteorology	429,354	481,275	476,730	493,385	501,517	573,913	626,676	623,519	608,045	590,386	612,497	624,278	668,852	723,777	737,245
Geological and earth sciences	1,083,969	1,142,630	1,168,995	1,163,498	1,159,067	1,113,575	997,675	1,084,138	1,131,953	1,121,272	1,158,214	1,242,415	1,348,120	1,489,293	1,688,053
Ocean sciences and marine sciences	1,021,857	1,049,630	1,025,478	1,051,425	1,071,370	1,049,567	1,097,679	1,098,384	1,061,461	1,100,775	1,137,181	1,035,365	1,212,107	1,366,607	1,497,079
Geosciences, atmospheric sciences, and ocean sciences nec	456,561	479,639	501,902	486,817	495,138	509,141	360,479	341,634	358,206	373,505	372,806	393,580	425,067	456,132	485,072
Life sciences	34,984,249	37,337,522	37,200,541	37,557,166	37,938,741	38,769,499	40,859,163	43,098,775	45,606,373	48,226,300	49,615,898	52,351,337	56,473,662	62,197,940	66,821,053
Agricultural sciences	3,011,150	3,116,840	3,300,111	3,347,692	3,381,853	3,479,616	3,287,678	3,274,608	3,307,251	3,426,776	3,625,713	3,553,345	3,936,027	4,285,578	4,802,906
Biological and biomedical sciences	10,946,456	11,855,468	11,611,928	11,679,403	11,699,720	11,704,129	13,027,574	13,723,363	14,518,082	15,391,056	15,767,001	16,570,118	18,130,185	19,519,285	20,769,747
Health sciences	19,268,085	20,398,377	20,330,436	20,453,325	20,707,633	21,298,361	22,387,269	23,990,328	25,773,636	27,265,062	27,992,213	29,856,130	31,872,168	35,724,459	38,512,622
Natural resources and conservation <sup>a</sup>	na	na	na	na	na	na	693,318	691,663	779,453	841,416	901,808	935,072	1,016,471	1,079,451	1,127,157
Life sciences nec	1,758,558	1,966,837	1,958,066	2,076,746	2,149,535	2,287,393	1,463,324	1,418,813	1,227,951	1,301,990	1,329,163	1,436,672	1,518,811	1,589,167	1,608,621
Mathematics and statistics	592,200	640,471	674,458	670,798	657,656	640,824	679,295	700,244	750,321	769,019	800,522	773,022	879,440	1,061,002	1,164,507
Physical sciences	4,621,772	4,768,816	4,710,123	4,646,766	4,613,739	4,648,585	4,876,304	5,050,104	5,232,168	5,550,678	5,672,351	5,737,313	6,167,231	6,947,353	7,456,024
Astronomy and astrophysics	573,229	583,847	706,550	558,641	566,965	626,595	621,738	648,823	668,240	734,987	780,259	740,845	813,890	966,939	1,078,915
Chemistry	1,748,465	1,783,604	1,748,852	1,703,975	1,723,214	1,757,431	1,773,336	1,791,437	1,866,078	1,965,378	1,929,263	1,996,422	2,126,685	2,301,368	2,517,853
Materials science <sup>a</sup>	na	na	na	na	na	na	172,271	227,825	254,447	259,316	253,173	285,999	286,460	320,597	348,922
Physics	1,998,732	2,108,340	1,985,983	2,097,123	2,054,772	2,037,092	2,108,936	2,155,696	2,206,619	2,327,059	2,435,133	2,463,415	2,669,290	2,967,820	3,107,027
Physical sciences nec	301,346	293,025	268,738	287,027	268,788	227,467	200,023	226,323	236,784	263,938	274,523	250,632	270,906	390,629	403,307
Psychology	1,077,655	1,159,180	1,179,340	1,128,351	1,143,065	1,183,587	1,222,998	1,246,541	1,261,429	1,328,432	1,364,875	1,329,356	1,445,922	1,642,048	1,730,944
Social sciences	1,999,942	2,063,007	2,053,838	2,172,411	2,210,266	2,315,299	2,361,489	2,554,795	2,721,841	2,805,686	2,951,839	2,828,295	3,164,661	3,623,437	3,909,953
Anthropology <sup>a</sup>	na	na	na	na	na	na	95,935	110,939	118,236	124,403	119,477	108,192	132,782	152,399	178,236
Economics	352,890	387,036	383,442	408,319	428,076	453,619	395,598	434,035	455,964	458,124	559,122	550,427	665,186	723,888	780,462
Political science and government	374,903	370,694	390,114	427,481	426,375	459,315	383,995	412,126	438,107	447,752	425,194	423,922	488,391	557,305	601,465
Sociology, demography, and population studies	419,895	433,484	461,053	482,340	504,735	524,226	503,300	551,878	608,743	610,133	594,100	553,195	616,054	734,588	768,731
Social sciences nec	852,254	871,793	819,229	854,271	851,080	878,139	982,661	1,045,817	1,100,791	1,165,274	1,253,946	1,192,559	1,262,248	1,455,257	1,581,059
Sciences nec	1,156,223	1,090,771	1,101,802	1,170,999	1,043,648	1,078,081	1,074,768	946,357	889,727	915,559	955,916	1,026,785	1,164,713	1,199,771	1,268,044
Engineering	9,325,722	10,032,590	10,284,155	10,734,000	10,971,498	11,062,848	11,367,246	11,911,326	12,363,411	13,214,302	13,702,266	14,292,584	15,662,654	17,476,575	19,271,406
Aerospace, aeronautical, and astronautical engineering	635,234	667,757	662,444	689,555	662,479	732,092	881,970	990,726	1,010,502	1,170,171	1,293,605	1,452,254	1,647,246	1,913,967	2,054,095
Bioengineering and biomedical engineering	745,277	817,389	871,920	884,426	951,058	1,003,097	1,085,842	1,220,695	1,343,578	1,450,846	1,470,154	1,560,357	1,727,097	1,893,897	2,081,887
Chemical engineering	821,163	913,905	903,615	910,225	906,471	914,313	884,190	934,540	931,045	977,586	1,001,307	1,024,238	1,108,239	1,246,926	1,409,387
Civil engineering	1,106,759	1,208,592	1,232,959	1,296,984	1,256,412	1,284,851	1,328,617	1,302,341	1,354,800	1,432,985	1,425,058	1,482,140	1,686,234	1,900,720	2,096,724
Electrical, electronic, and communications engineering	2,050,292	2,206,894	2,311,677	2,408,837	2,478,216	2,492,210	2,512,469	2,726,483	2,843,777	2,937,896	3,052,778	3,078,784	3,462,331	3,837,943	4,415,693
Industrial and manufacturing engineering <sup>a</sup>	na	na	na	na	na	na	236,679	351,085	514,776	556,355	587,061	574,212	615,574	707,413	747,870
Mechanical engineering	1,458,382	1,556,892	1,550,156	1,647,640	1,503,710	1,513,951	1,434,699	1,535,889	1,630,575	1,705,001	1,813,738	1,882,557	2,062,905	2,325,363	2,572,680
Metallurgical and materials engineering	703,332	738,892	757,968	812,231	1,202,757	1,101,599	743,980	735,699	762,686	792,373	818,672	841,720	886,659	1,039,160	1,141,081

**Table 9. Higher education R&D expenditures at institutions in the standard form survey population, by R&D field: FYs 2010–24**

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Engineering nec	1,805,283	1,922,269	1,993,416	2,084,102	2,010,395	2,020,735	2,258,800	2,113,868	1,971,672	2,191,089	2,239,893	2,396,322	2,466,369	2,611,186	2,751,989
Non-S&E	2,899,059	3,286,376	3,530,380	3,635,155	3,428,145	3,614,009	4,133,999	4,302,380	4,644,507	4,857,395	5,039,241	5,118,043	5,863,853	6,897,930	7,569,236
Business management and business administration	370,015	400,376	443,094	473,185	481,154	569,593	642,332	725,574	784,662	868,197	888,099	934,725	1,080,584	1,218,846	1,349,055
Communication and communications technologies	130,396	153,743	159,924	148,501	166,040	168,514	166,414	202,569	191,649	206,796	192,573	186,847	213,735	253,199	263,204
Education	993,588	1,120,766	1,233,528	1,220,943	1,243,226	1,292,161	1,340,553	1,384,638	1,503,983	1,522,064	1,606,371	1,614,195	1,741,118	2,042,683	2,218,025
Humanities	260,374	313,032	339,740	386,877	402,173	430,222	443,912	493,813	505,343	539,318	565,835	561,272	712,171	845,144	926,242
Law	98,109	124,779	131,533	173,483	149,235	174,692	184,344	223,846	266,366	255,830	267,827	282,773	358,689	431,104	443,674
Social work	177,331	194,667	199,051	212,326	225,897	214,205	211,548	235,297	245,122	285,655	306,409	319,611	363,050	417,433	461,284
Visual and performing arts	68,717	77,358	84,618	87,325	95,837	100,707	133,699	124,842	137,376	159,288	174,980	178,511	228,488	284,280	302,978
Non-S&E nec	800,529	901,655	938,892	932,515	664,583	663,915	1,011,197	911,801	1,010,006	1,020,247	1,037,147	1,040,109	1,166,018	1,405,241	1,604,774

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.