

TABLE 9

Higher education R&D expenditures, by R&D field: FYs 2010–19

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All R&D fields	61,286,610	65,274,393	65,729,007	67,013,138	67,199,090	68,549,882	71,736,098	75,133,630	79,014,076	83,496,348
Science	49,061,829	51,955,427	51,914,870	52,620,458	52,789,252	53,864,694	56,238,891	58,925,269	62,010,922	65,418,917
Computer and information sciences	1,638,047	1,742,486	1,822,321	2,068,499	1,929,304	1,963,497	2,079,421	2,192,801	2,399,150	2,639,334
Geosciences, atmospheric sciences, and ocean sciences	2,991,741	3,153,174	3,173,011	3,195,423	3,227,971	3,247,416	3,083,705	3,148,239	3,160,061	3,185,089
Atmospheric science and meteorology	429,354	481,275	476,729	493,460	501,638	573,932	626,670	623,494	608,069	590,387
Geological and earth sciences	1,083,969	1,142,630	1,168,945	1,163,744	1,159,360	1,113,619	998,039	1,084,119	1,131,945	1,120,621
Ocean sciences and marine sciences	1,021,857	1,049,630	1,025,472	1,051,418	1,071,412	1,050,173	1,097,963	1,098,636	1,061,406	1,100,653
Geosciences, atmospheric sciences, and ocean sciences nec	456,561	479,639	501,865	486,801	495,561	509,692	361,033	341,990	358,641	373,428
Life sciences	34,984,249	37,337,522	37,200,171	37,565,222	37,958,077	38,772,701	40,853,687	43,093,254	45,603,136	48,230,138
Agricultural sciences	3,011,150	3,116,840	3,300,098	3,352,448	3,390,017	3,480,029	3,290,797	3,275,225	3,311,482	3,428,585
Biological and biomedical sciences	10,946,456	11,855,468	11,611,632	11,681,264	11,706,321	11,704,519	13,028,867	13,723,718	14,512,898	15,386,607
Health sciences	19,268,085	20,398,377	20,330,413	20,454,258	20,711,020	21,300,672	22,379,901	23,985,796	25,773,804	27,274,318
Natural resources and conservation ^a	na	na	na	na	na	na	690,737	689,592	776,070	837,959
Life sciences nec	1,758,558	1,966,837	1,958,028	2,077,252	2,150,719	2,287,481	1,463,385	1,418,923	1,228,882	1,302,669
Mathematics and statistics	592,200	640,471	674,461	670,801	657,924	640,924	679,395	700,329	750,544	769,722
Physical sciences	4,621,772	4,768,816	4,710,125	4,646,754	4,616,402	4,659,223	4,884,219	5,046,870	5,229,222	5,551,281
Astronomy and astrophysics	573,229	583,847	706,544	558,781	567,098	626,641	621,765	648,867	668,257	735,031
Chemistry	1,748,465	1,783,604	1,748,904	1,703,881	1,724,094	1,757,380	1,773,360	1,791,590	1,866,450	1,965,627
Materials science ^a	na	na	na	na	na	na	172,271	227,957	254,587	259,327
Physics	1,998,732	2,108,340	1,985,954	2,097,094	2,056,344	2,047,759	2,116,800	2,152,132	2,203,113	2,324,419
Physical sciences nec	301,346	293,025	268,723	286,998	268,866	227,443	200,023	226,324	236,815	266,877
Psychology	1,077,655	1,159,180	1,179,323	1,128,269	1,143,421	1,183,691	1,220,104	1,242,314	1,255,766	1,322,793
Social sciences	1,999,942	2,063,007	2,053,656	2,173,107	2,212,103	2,319,134	2,363,746	2,555,159	2,723,373	2,805,477
Anthropology ^a	na	na	na	na	na	na	95,932	110,971	118,348	124,225
Economics	352,890	387,036	383,405	408,153	428,415	456,451	398,143	434,449	456,536	459,140
Political science and government	374,903	370,694	390,074	427,522	426,713	459,309	383,991	412,312	438,284	448,174
Sociology, demography, and population studies	419,895	433,484	461,011	482,284	505,026	524,752	502,913	551,641	608,615	610,107
Social sciences nec	852,254	871,793	819,166	855,148	851,949	878,622	982,767	1,045,786	1,101,590	1,163,831
Sciences nec	1,156,223	1,090,771	1,101,802	1,172,383	1,044,050	1,078,108	1,074,614	946,303	889,670	915,083
Engineering	9,325,722	10,032,590	10,284,111	10,733,918	10,976,774	11,070,712	11,371,207	11,913,699	12,366,530	13,214,359
Aerospace, aeronautical, and astronautical engineering	635,234	667,757	662,444	689,553	662,456	734,173	882,974	990,654	1,010,498	1,169,928
Bioengineering and biomedical engineering	745,277	817,389	871,917	884,421	951,157	1,003,932	1,084,799	1,220,069	1,343,010	1,450,156
Chemical engineering	821,163	913,905	903,613	910,413	907,697	915,046	885,118	935,390	932,787	977,867
Civil engineering	1,106,759	1,208,592	1,232,944	1,296,972	1,256,881	1,287,299	1,329,741	1,302,908	1,355,553	1,432,381
Electrical, electronic, and communications engineering	2,050,292	2,206,894	2,311,665	2,408,824	2,479,789	2,492,434	2,512,529	2,726,759	2,843,764	2,938,953
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	236,334	351,218	515,103	557,350

TABLE 9

Higher education R&D expenditures, by R&D field: FYs 2010–19

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mechanical engineering	1,458,382	1,556,892	1,550,151	1,647,643	1,504,293	1,514,673	1,435,729	1,536,752	1,631,356	1,705,397
Metallurgical and materials engineering	703,332	738,892	757,967	812,240	1,203,073	1,101,946	744,005	735,883	762,996	791,260
Engineering nec	1,805,283	1,922,269	1,993,410	2,083,852	2,011,428	2,021,209	2,259,978	2,114,066	1,971,463	2,191,067
Non-S&E	2,899,059	3,286,376	3,530,026	3,658,762	3,433,064	3,614,476	4,126,000	4,294,662	4,636,624	4,863,072
Business management and business administration	370,015	400,376	443,079	476,091	482,883	569,708	642,427	725,952	784,662	873,015
Communication and communications technologies	130,396	153,743	159,920	148,900	166,910	168,525	166,418	203,330	192,310	209,159
Education	993,588	1,120,766	1,233,437	1,221,444	1,245,185	1,292,776	1,334,918	1,377,709	1,496,716	1,520,025
Humanities	260,374	313,032	339,633	386,759	402,242	430,204	443,159	493,248	504,656	540,935
Law	98,109	124,779	131,514	173,479	149,252	174,703	184,344	223,852	267,031	255,618
Social work	177,331	194,667	199,046	212,331	226,089	214,223	211,560	235,460	245,139	285,714
Visual and performing arts	68,717	77,358	84,596	87,765	95,819	100,645	133,871	124,962	137,234	159,452
Non-S&E nec	800,529	901,655	938,801	951,993	664,684	663,692	1,009,303	910,149	1,008,876	1,019,154

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.