

TABLE 9

Higher education R&D expenditures, by R&D field: FYs 2010–20

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
All R&D fields	61,286,610	65,274,393	65,729,007	67,013,138	67,199,090	68,549,882	71,767,849	75,147,144	79,026,269	83,534,148	86,296,178
Science	49,061,829	51,955,427	51,914,870	52,620,458	52,790,062	53,865,410	56,261,425	58,935,309	62,021,111	65,452,989	67,567,807
Computer and information sciences	1,638,047	1,742,486	1,822,321	2,068,499	1,929,197	1,963,406	2,079,944	2,192,394	2,397,782	2,639,075	2,923,149
Geosciences, atmospheric sciences, and ocean sciences	2,991,741	3,153,174	3,173,011	3,195,423	3,227,963	3,247,430	3,083,754	3,147,841	3,159,520	3,185,923	3,281,251
Atmospheric science and meteorology	429,354	481,275	476,729	493,460	501,638	573,932	626,676	623,504	608,041	590,385	612,890
Geological and earth sciences	1,083,969	1,142,630	1,168,945	1,163,744	1,159,352	1,113,633	998,082	1,084,050	1,131,890	1,121,265	1,159,627
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	1,098,634	1,061,402	1,100,768	1,136,259
Geosciences, atmospheric sciences, and ocean sciences nec	456,561	479,639	501,865	486,801	495,561	509,692	361,033	341,653	358,187	373,505	372,475
Life sciences	34,984,249	37,337,522	37,200,171	37,565,222	37,959,430	38,773,872	40,869,476	43,099,189	45,611,147	48,256,664	49,640,508
Agricultural sciences	3,011,150	3,116,840	3,300,098	3,352,448	3,392,786	3,482,399	3,294,486	3,274,597	3,307,251	3,426,773	3,626,162
Biological and biomedical sciences	10,946,456	11,855,468	11,611,632	11,681,264	11,706,344	11,704,606	13,030,223	13,722,803	14,516,633	15,392,567	15,761,876
Health sciences	19,268,085	20,398,377	20,330,413	20,454,258	20,709,668	21,299,466	22,388,131	23,991,344	25,778,953	27,293,004	28,026,662
Natural resources and conservation ^a	na	na	na	na	na	na	693,318	691,653	779,526	841,877	900,697
Life sciences nec	1,758,558	1,966,837	1,958,028	2,077,252	2,150,632	2,287,401	1,463,318	1,418,792	1,228,784	1,302,443	1,325,111
Mathematics and statistics	592,200	640,471	674,461	670,801	657,887	640,891	679,494	700,275	750,374	769,993	798,975
Physical sciences	4,621,772	4,768,816	4,710,125	4,646,754	4,616,226	4,659,068	4,887,988	5,049,994	5,232,066	5,551,490	5,667,046
Astronomy and astrophysics	573,229	583,847	706,544	558,781	567,058	626,606	621,738	648,830	668,245	735,006	780,080
Chemistry	1,748,465	1,783,604	1,748,904	1,703,881	1,724,038	1,757,330	1,773,406	1,791,311	1,865,955	1,965,712	1,926,772
Materials science ^a	na	na	na	na	na	na	172,271	227,825	254,447	259,316	252,193
Physics	1,998,732	2,108,340	1,985,954	2,097,094	2,056,264	2,047,689	2,120,550	2,155,727	2,206,653	2,327,359	2,434,467
Physical sciences nec	301,346	293,025	268,723	286,998	268,866	227,443	200,023	226,301	236,766	264,097	273,534
Psychology	1,077,655	1,159,180	1,179,323	1,128,269	1,143,347	1,183,628	1,221,218	1,244,640	1,258,635	1,326,304	1,357,081
Social sciences	1,999,942	2,063,007	2,053,656	2,173,107	2,211,962	2,319,007	2,364,783	2,554,562	2,721,772	2,808,228	2,947,338
Anthropology ^a	na	na	na	na	na	na	95,932	110,928	118,230	124,402	119,329
Economics	352,890	387,036	383,405	408,153	428,369	456,410	398,366	433,961	455,861	459,822	562,192
Political science and government	374,903	370,694	390,074	427,522	426,675	459,274	383,994	412,112	438,078	448,438	425,267
Sociology, demography, and population studies	419,895	433,484	461,011	482,284	504,965	524,697	503,610	551,875	608,747	610,435	591,754
Social sciences nec	852,254	871,793	819,166	855,148	851,953	878,626	982,881	1,045,686	1,100,856	1,165,131	1,248,796
Sciences nec	1,156,223	1,090,771	1,101,802	1,172,383	1,044,050	1,078,108	1,074,768	946,414	889,815	915,312	952,459
Engineering	9,325,722	10,032,590	10,284,111	10,733,918	10,976,180	11,070,190	11,373,163	11,911,403	12,363,782	13,216,209	13,692,756
Aerospace, aeronautical, and astronautical engineering	635,234	667,757	662,444	689,553	662,456	734,173	883,100	990,723	1,010,502	1,170,169	1,295,759
Bioengineering and biomedical engineering	745,277	817,389	871,917	884,421	951,157	1,003,932	1,086,194	1,220,680	1,343,753	1,451,159	1,468,229
Chemical engineering	821,163	913,905	903,613	910,413	907,096	914,517	884,662	934,527	931,039	977,578	999,312
Civil engineering	1,106,759	1,208,592	1,232,944	1,296,972	1,256,888	1,287,306	1,329,959	1,302,314	1,354,775	1,433,224	1,422,418
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	2,726,627	2,843,975	2,938,343	3,048,420

TABLE 9

Higher education R&D expenditures, by R&D field: FYs 2010–20

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	236,678	351,081	514,781	556,462	588,127
Mechanical engineering	1,458,382	1,556,892	1,550,151	1,647,643	1,504,293	1,514,673	1,435,885	1,535,910	1,630,637	1,705,716	1,812,916
Metallurgical and materials engineering	703,332	738,892	757,967	812,240	1,203,073	1,101,946	744,005	735,699	762,695	792,370	816,610
Engineering nec	1,805,283	1,922,269	1,993,410	2,083,852	2,011,428	2,021,209	2,260,151	2,113,842	1,971,625	2,191,188	2,240,965
Non-S&E	2,899,059	3,286,376	3,530,026	3,658,762	3,432,848	3,614,282	4,133,261	4,300,432	4,641,376	4,864,950	5,035,615
Business management and business administration	370,015	400,376	443,079	476,091	482,842	569,670	642,391	725,239	783,995	871,253	878,721
Communication and communications technologies	130,396	153,743	159,920	148,900	166,899	168,516	166,409	202,542	191,602	206,913	191,813
Education	993,588	1,120,766	1,233,437	1,221,444	1,245,104	1,292,703	1,340,240	1,384,314	1,503,631	1,526,519	1,603,978
Humanities	260,374	313,032	339,633	386,759	402,219	430,183	443,138	492,626	504,115	539,984	563,007
Law	98,109	124,779	131,514	173,479	149,242	174,695	184,339	223,825	266,378	255,797	267,565
Social work	177,331	194,667	199,046	212,331	226,075	214,211	211,549	235,299	245,117	285,850	307,145
Visual and performing arts	68,717	77,358	84,596	87,765	95,817	100,644	133,869	124,882	137,134	159,482	171,605
Non-S&E nec	800,529	901,655	938,801	951,993	664,650	663,660	1,011,326	911,705	1,009,404	1,019,152	1,051,781

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.