

TABLE 12

Nonfederally 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
All R&D fields	23,809,028	24,506,142	25,586,784	27,531,635	29,200,310	30,673,160	32,948,674	34,900,243	37,163,893	39,027,793	40,195,723	40,578,804	43,709,060
Science	18,270,250	18,582,380	19,417,860	20,844,018	22,361,727	23,526,510	25,143,562	26,732,685	28,499,704	29,869,523	30,815,204	31,242,239	33,439,948
Computer and information sciences	462,704	448,206	461,891	515,569	536,901	542,399	636,087	694,698	767,621	842,714	924,747	958,517	1,040,182
Geosciences, atmospheric sciences, and ocean sciences	977,987	971,968	969,612	1,100,260	1,177,643	1,180,177	1,091,038	1,105,544	1,111,248	1,118,701	1,172,730	1,150,327	1,211,533
Atmospheric science and meteorology	90,667	97,535	87,634	95,765	112,147	120,219	113,396	120,136	122,304	129,922	141,786	140,314	140,850
Geological and earth sciences	348,875	342,724	350,160	395,597	418,477	414,470	393,192	398,414	433,950	444,692	462,412	469,638	495,157
Ocean sciences and marine sciences	354,927	343,778	351,584	389,199	408,321	402,440	432,824	441,832	412,190	402,367	423,679	395,040	425,585
Geosciences, atmospheric sciences, and ocean sciences nec	183,518	187,931	180,234	219,699	238,698	243,048	151,626	145,162	142,804	141,720	144,853	145,335	149,941
Life sciences	13,282,124	13,674,114	14,446,569	15,329,592	16,668,389	17,605,229	19,064,204	20,348,974	21,741,690	22,791,200	23,385,186	23,903,005	25,539,490
Agricultural sciences	2,053,440	2,074,100	2,162,369	2,236,681	2,296,963	2,382,663	2,310,427	2,296,289	2,356,617	2,437,010	2,551,645	2,452,544	2,669,754
Biological and biomedical sciences	3,367,260	3,641,934	3,870,192	4,074,381	4,460,845	4,600,220	5,328,378	5,543,405	5,945,124	6,129,242	6,429,141	6,560,060	7,211,814
Health sciences	7,199,426	7,213,782	7,648,898	8,165,912	8,965,144	9,575,233	10,286,046	11,302,266	12,380,493	13,091,995	13,285,953	13,729,166	14,375,633
Natural resources and conservation ^a	na	na	na	na	na	na	376,714	420,183	459,112	471,946	490,907	505,316	532,877
Life sciences nec	661,998	744,298	765,110	852,618	945,437	1,047,113	762,639	786,831	600,344	661,007	627,540	655,919	749,412
Mathematics and statistics	174,425	181,505	183,927	206,193	216,273	216,306	234,910	263,211	293,555	302,025	315,033	297,288	342,204
Physical sciences	1,237,497	1,241,486	1,235,539	1,335,737	1,458,140	1,536,789	1,588,261	1,665,331	1,759,629	1,859,184	1,881,938	1,889,228	1,955,178
Astronomy and astrophysics	167,275	174,884	171,364	158,341	186,081	223,564	203,808	207,291	213,751	220,579	237,391	231,128	232,248
Chemistry	548,345	539,837	535,409	568,962	642,701	662,184	675,920	693,488	736,091	782,777	761,614	760,252	804,413
Materials science ^a	na	na	na	na	na	na	60,465	85,353	92,399	93,436	95,475	111,601	91,057
Physics	441,311	447,963	453,342	529,152	544,856	573,973	583,326	606,241	635,909	669,251	699,397	696,219	727,243
Physical sciences nec	80,566	78,802	75,424	79,282	84,502	77,068	64,742	72,958	81,479	93,141	88,061	90,028	100,217
Psychology	319,135	323,732	319,823	351,926	390,564	419,929	457,759	481,810	501,106	538,171	555,868	517,115	568,564
Social sciences	1,098,933	1,115,831	1,137,782	1,274,649	1,292,596	1,393,429	1,461,863	1,621,914	1,783,954	1,867,215	1,987,871	1,877,785	2,089,970
Anthropology ^a	na	na	na	na	na	na	56,330	72,214	74,766	81,389	80,486	78,664	92,645
Economics	225,032	238,299	238,959	271,028	289,270	304,023	283,011	323,258	353,745	366,370	438,009	411,706	473,326
Political science and government	222,356	222,051	248,807	284,079	280,713	322,783	280,296	308,226	339,742	361,007	347,007	338,518	393,117
Sociology, demography, and population studies	193,433	200,650	213,272	244,805	252,935	261,957	234,467	271,288	323,557	320,363	346,241	325,926	343,459
Social sciences nec	458,112	454,831	436,744	474,737	469,678	504,666	607,759	646,928	692,144	738,086	776,128	722,971	787,423
Sciences nec	717,445	625,538	662,717	730,092	621,221	632,252	609,440	551,203	540,901	550,313	591,831	648,974	692,827
Engineering	3,606,870	3,757,042	3,841,125	4,234,379	4,547,292	4,604,170	4,784,133	5,082,503	5,269,823	5,546,266	5,582,586	5,578,214	5,902,256
Aerospace, aeronautical, and astronautical engineering	168,243	163,221	160,722	176,419	187,878	216,057	258,331	330,843	332,375	349,595	336,943	341,902	401,189
Bioengineering and biomedical engineering	274,845	301,778	319,362	327,770	344,118	396,415	434,298	495,439	551,698	571,042	563,794	599,842	626,049
Chemical engineering	399,894	422,987	398,860	431,680	434,913	451,495	416,666	462,778	469,554	479,355	479,624	452,139	461,601
Civil engineering	645,879	663,600	662,641	718,582	678,454	714,445	736,766	744,643	763,885	811,894	819,134	817,567	862,752
Electrical, electronic, and communications engineering	676,981	695,436	709,748	766,053	735,899	720,656	769,749	835,110	862,577	888,487	908,953	870,276	952,689

TABLE 12

Nonfederally 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 ^a	na	na	na	na	na	na	89,486	164,729	208,012	189,643	202,337	189,761	180,982
Mechanical engineering	505,138	524,251	514,600	586,370	557,011	556,623	573,625	597,970	637,290	649,298	653,204	607,932	652,716
Metallurgical and materials engineering	273,920	283,170	295,721	346,574	708,354	600,419	301,603	294,953	298,218	308,596	314,181	282,241	297,552
Engineering nec	661,970	702,599	779,471	880,931	900,665	948,060	1,203,609	1,156,038	1,146,214	1,298,356	1,304,416	1,416,554	1,466,726
Non-S&E	1,931,908	2,166,720	2,327,799	2,453,238	2,291,291	2,542,480	3,020,979	3,085,055	3,394,366	3,612,004	3,797,933	3,758,351	4,366,856
Business management and business administration	283,575	300,715	346,420	377,889	403,862	499,714	573,884	656,145	712,552	794,873	813,726	837,015	983,418
Communication and communications technologies	89,057	100,477	106,583	97,436	111,706	126,051	129,642	141,225	157,339	171,087	152,299	146,749	170,293
Education	457,844	488,649	544,377	554,382	579,683	648,091	715,757	731,190	823,178	853,566	935,218	915,922	957,266
Humanities	202,864	251,612	271,941	309,932	327,060	370,097	386,418	434,042	454,570	488,743	510,874	504,114	644,729
Law	78,771	97,391	106,939	150,957	125,504	150,278	158,253	190,798	215,420	223,923	241,171	253,911	326,302
Social work	82,909	89,006	89,687	100,630	116,725	112,543	116,247	124,614	130,817	152,567	165,597	154,352	181,136
Visual and performing arts	63,874	70,837	74,161	80,252	86,788	92,078	125,260	116,570	126,358	149,860	159,489	166,940	203,384
Non-S&E nec	673,014	768,033	787,691	781,760	539,963	543,628	815,518	690,471	774,132	777,385	819,559	779,348	900,328

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.