

TABLE 12

Nonfederally 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	23,809,028	24,506,142	25,586,784	27,531,635	29,200,310	30,673,160	32,949,212	34,901,335	37,165,593	39,030,069	40,199,236	40,583,040	43,694,680	49,077,015
Science	18,270,250	18,582,380	19,417,860	20,844,018	22,361,727	23,526,510	25,143,575	26,732,736	28,499,390	29,869,255	30,815,305	31,241,854	33,420,344	37,359,704
Computer and information sciences	462,704	448,206	461,891	515,569	536,901	542,399	636,070	694,681	767,608	842,691	924,840	958,748	1,041,114	1,199,410
Geosciences, atmospheric sciences, and ocean sciences	977,987	971,968	969,612	1,100,260	1,177,643	1,180,177	1,090,992	1,105,499	1,111,253	1,118,707	1,172,737	1,150,821	1,212,471	1,338,643
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	140,760	140,566
Geological and earth sciences	348,875	342,724	350,160	395,597	418,477	414,470	393,193	398,417	433,951	444,695	462,414	470,125	496,043	566,818
Ocean sciences and marine sciences	354,927	343,778	351,584	389,199	408,321	402,440	432,812	441,820	412,192	402,370	423,683	395,047	425,635	473,898
Geosciences, atmospheric sciences, and ocean sciences nec	183,518	187,931	180,234	219,699	238,698	243,048	151,591	145,126	142,806	141,720	144,854	145,335	150,033	157,361
Life sciences	13,282,124	13,674,114	14,446,569	15,329,592	16,668,389	17,605,229	19,064,205	20,348,980	21,741,368	22,790,900	23,384,989	23,901,573	25,516,867	28,308,125
Agricultural sciences	2,053,440	2,074,100	2,162,369	2,236,681	2,296,963	2,382,663	2,310,418	2,296,280	2,356,617	2,437,010	2,551,683	2,452,709	2,668,630	2,826,821
Biological and biomedical sciences	3,367,260	3,641,934	3,870,192	4,074,381	4,460,845	4,600,220	5,328,384	5,543,412	5,945,131	6,129,254	6,429,152	6,561,519	7,195,878	7,772,804
Health sciences	7,199,426	7,213,782	7,648,898	8,165,912	8,965,144	9,575,233	10,286,050	11,302,273	12,380,502	13,092,003	13,285,983	13,727,083	14,368,770	16,333,749
Natural resources and conservation ^a	na	na	na	na	na	na	376,714	420,183	459,048	471,623	490,630	504,361	534,617	566,841
Life sciences nec	661,998	744,298	765,110	852,618	945,437	1,047,113	762,639	786,832	600,070	661,010	627,541	655,901	748,972	807,910
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	297,257	342,152	399,254
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	1,889,349	1,955,608	2,323,006
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	231,124	232,214	307,344
Chemistry	548,345	539,837	535,409	568,962	642,701	662,184	675,920	693,488	736,091	782,777	761,614	760,267	805,193	887,613
Materials science ^a	na	na	na	na	na	na	60,465	85,353	92,399	93,436	95,475	111,601	91,057	113,305
Physics	441,311	447,963	453,342	529,152	544,856	573,973	583,326	606,241	635,909	669,251	699,397	696,186	727,022	843,805
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	90,171	100,122	170,939
Psychology	319,135	323,732	319,823	351,926	390,564	419,929	457,759	481,809	501,106	538,171	555,868	517,071	569,637	659,045
Social sciences	1,098,933	1,115,831	1,137,782	1,274,649	1,292,596	1,393,429	1,461,938	1,622,022	1,783,992	1,867,264	1,988,069	1,877,973	2,089,542	2,412,681
Anthropology ^a	na	na	na	na	na	na	56,333	72,220	74,773	81,402	80,504	78,615	92,617	105,147
Economics	225,032	238,299	238,959	271,028	289,270	304,023	283,022	323,277	353,789	366,408	438,135	412,270	472,739	517,320
Political science and government	222,356	222,051	248,807	284,079	280,713	322,783	280,305	308,243	339,771	361,050	347,055	338,678	393,111	445,189
Sociology, demography, and population studies	193,433	200,650	213,272	244,805	252,935	261,957	234,477	271,306	323,582	320,392	346,264	325,925	343,409	410,669
Social sciences nec	458,112	454,831	436,744	474,737	469,678	504,666	607,801	646,976	692,077	738,012	776,111	722,485	787,666	934,356
Sciences nec	717,445	625,538	662,717	730,092	621,221	632,252	609,440	551,203	540,879	550,313	591,831	649,062	692,953	719,540
Engineering	3,606,870	3,757,042	3,841,125	4,234,379	4,547,292	4,604,170	4,784,154	5,082,534	5,269,867	5,546,320	5,582,745	5,578,477	5,903,019	6,537,119
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	341,904	401,244	488,283
Bioengineering and biomedical engineering	274,845	301,778	319,362	327,770	344,118	396,415	434,298	495,439	551,699	571,042	563,845	599,943	626,588	686,767
Chemical engineering	399,894	422,987	398,860	431,680	434,913	451,495	416,667	462,780	469,556	479,358	479,627	452,148	461,840	533,634
Civil engineering	645,879	663,600	662,641	718,582	678,454	714,445	736,769	744,648	763,895	811,914	819,156	817,595	862,615	971,499
Electrical, electronic, and communications engineering	676,981	695,436	709,748	766,053	735,899	720,656	769,753	835,115	862,582	888,491	908,959	870,283	952,640	1,044,178
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	89,486	164,731	208,012	189,643	202,337	189,761	180,995	225,378

TABLE 12

Nonfederally 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	505,138	524,251	514,600	586,370	557,011	556,623	573,632	597,985	637,307	649,318	653,271	608,040	652,837	772,973
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	297,546	345,949
Engineering nec	661,970	702,599	779,471	880,931	900,665	948,060	1,203,615	1,156,040	1,146,223	1,298,363	1,304,426	1,416,562	1,466,714	1,468,458
Non-S&E	1,931,908	2,166,720	2,327,799	2,453,238	2,291,291	2,542,480	3,021,483	3,086,065	3,396,336	3,614,494	3,801,186	3,762,709	4,371,317	5,180,192
Business management and business administration	283,575	300,715	346,420	377,889	403,862	499,714	574,047	656,411	712,838	795,017	813,882	837,238	983,181	1,108,426
Communication and communications technologies	89,057	100,477	106,583	97,436	111,706	126,051	129,651	141,252	157,382	171,156	152,705	147,378	171,048	195,329
Education	457,844	488,649	544,377	554,382	579,683	648,091	716,039	731,499	823,549	853,981	936,049	917,347	957,239	1,151,586
Humanities	202,864	251,612	271,941	309,932	327,060	370,097	386,741	434,576	455,165	489,512	511,834	504,660	644,387	781,749
Law	78,771	97,391	106,939	150,957	125,504	150,278	158,262	190,819	215,439	223,961	241,193	253,970	326,300	395,697
Social work	82,909	89,006	89,687	100,630	116,725	112,543	116,249	124,618	130,825	152,587	165,635	154,355	180,674	211,225
Visual and performing arts	63,874	70,837	74,161	80,252	86,788	92,078	125,114	116,470	126,544	150,185	159,948	167,087	207,088	263,033
Non-S&E nec	673,014	768,033	787,691	781,760	539,963	543,628	815,380	690,420	774,594	778,095	819,940	780,674	901,400	1,073,147

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.