

TABLE 11

Nonfederally financed 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	23,809,028	24,506,142	25,586,784	27,567,207	29,237,972	30,703,080	32,964,880	34,909,873	37,177,974	39,041,083
Science	18,270,250	18,582,380	19,417,860	20,855,631	22,389,620	23,548,083	25,156,275	26,736,904	28,507,438	29,867,258
Computer and information sciences	462,704	448,206	461,891	516,198	538,525	543,754	636,552	695,321	769,038	844,786
Geosciences, atmospheric sciences, and ocean sciences	977,987	971,968	969,612	1,100,733	1,178,457	1,181,449	1,091,881	1,105,908	1,111,733	1,117,797
Atmospheric science and meteorology	90,667	97,535	87,634	95,840	112,264	120,222	113,395	120,147	122,332	129,924
Geological and earth sciences	348,875	342,724	350,160	395,974	418,751	414,559	393,514	398,428	433,949	443,879
Ocean sciences and marine sciences	354,927	343,778	351,584	389,199	408,333	403,054	432,824	441,834	412,194	402,252
Geosciences, atmospheric sciences, and ocean sciences nec	183,518	187,931	180,234	219,720	239,109	243,614	152,148	145,499	143,258	141,742
Life sciences	13,282,124	13,674,114	14,446,569	15,337,944	16,688,457	17,609,407	19,064,676	20,349,887	21,744,557	22,786,144
Agricultural sciences	2,053,440	2,074,100	2,162,369	2,241,442	2,306,455	2,384,260	2,314,688	2,298,403	2,360,909	2,439,012
Biological and biomedical sciences	3,367,260	3,641,934	3,870,192	4,076,478	4,467,576	4,601,001	5,330,474	5,545,045	5,943,615	6,126,325
Health sciences	7,199,426	7,213,782	7,648,898	8,166,850	8,967,954	9,576,957	10,281,536	11,300,194	12,381,808	13,089,065
Natural resources and conservation ^a	na	na	na	na	na	na	375,291	419,303	457,345	470,095
Life sciences nec	661,998	744,298	765,110	853,174	946,472	1,047,189	762,687	786,942	600,880	661,647
Mathematics and statistics	174,425	181,505	183,927	206,193	216,510	216,374	235,101	263,293	293,736	302,785
Physical sciences	1,237,497	1,241,486	1,235,539	1,335,717	1,460,853	1,547,518	1,598,261	1,668,545	1,762,666	1,859,947
Astronomy and astrophysics	167,275	174,884	171,364	158,341	186,191	223,588	203,826	207,319	213,766	220,599
Chemistry	548,345	539,837	535,409	568,936	643,729	662,255	675,978	693,808	736,573	782,821
Materials science ^a	na	na	na	na	na	na	60,465	85,485	92,539	93,447
Physics	441,311	447,963	453,342	529,157	546,358	584,606	593,250	608,952	638,260	667,000
Physical sciences nec	80,566	78,802	75,424	79,283	84,575	77,069	64,742	72,981	81,528	96,080
Psychology	319,135	323,732	319,823	351,867	390,854	420,002	455,838	479,937	499,083	535,808
Social sciences	1,098,933	1,115,831	1,137,782	1,275,503	1,294,355	1,397,315	1,464,526	1,622,678	1,785,629	1,869,239
Anthropology ^a	na	na	na	na	na	na	56,330	72,256	74,884	81,409
Economics	225,032	238,299	238,959	270,917	289,592	306,871	285,796	323,843	354,502	368,068
Political science and government	222,356	222,051	248,807	284,147	281,040	322,816	280,330	308,432	339,975	361,930
Sociology, demography, and population studies	193,433	200,650	213,272	244,805	253,194	262,477	234,141	271,093	323,461	320,674
Social sciences nec	458,112	454,831	436,744	475,634	470,529	505,151	607,929	647,054	692,807	737,158
Sciences nec	717,445	625,538	662,717	731,476	621,609	632,264	609,440	551,335	540,996	550,752
Engineering	3,606,870	3,757,042	3,841,125	4,234,411	4,552,197	4,611,760	4,788,917	5,085,473	5,274,004	5,546,986
Aerospace, aeronautical, and astronautical engineering	168,243	163,221	160,722	176,419	187,833	218,122	259,403	330,814	332,411	349,416
Bioengineering and biomedical engineering	274,845	301,778	319,362	327,770	344,214	397,236	433,398	495,034	551,403	570,482
Chemical engineering	399,894	422,987	398,860	431,871	435,873	452,013	417,455	463,513	471,161	479,487
Civil engineering	645,879	663,600	662,641	718,582	678,917	716,873	738,006	745,349	764,716	811,519
Electrical, electronic, and communications engineering	676,981	695,436	709,748	766,053	737,453	720,845	769,825	835,503	862,912	889,699
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	89,486	164,972	208,407	190,815

TABLE 11

Nonfederally financed 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	505,138	524,251	514,600	586,373	557,491	557,319	574,844	598,902	638,120	649,672
Metallurgical and materials engineering	273,920	283,170	295,721	346,583	708,668	600,751	301,628	295,137	298,521	307,486
Engineering nec	661,970	702,599	779,471	880,760	901,748	948,601	1,204,872	1,156,249	1,146,353	1,298,410
Non-S&E	1,931,908	2,166,720	2,327,799	2,477,165	2,296,155	2,543,237	3,019,688	3,087,496	3,396,532	3,626,839
Business management and business administration	283,575	300,715	346,420	380,864	405,626	499,890	574,141	656,881	713,039	799,719
Communication and communications technologies	89,057	100,477	106,583	97,840	112,573	126,062	129,653	142,038	158,066	173,692
Education	457,844	488,649	544,377	554,858	581,593	648,638	714,752	731,389	823,620	857,602
Humanities	202,864	251,612	271,941	309,955	327,126	370,240	385,987	434,196	454,654	491,188
Law	78,771	97,391	106,939	150,957	125,518	150,287	158,262	190,829	215,910	224,033
Social work	82,909	89,006	89,687	100,638	116,905	112,554	116,257	124,774	130,837	152,634
Visual and performing arts	63,874	70,837	74,161	80,726	86,769	92,042	125,286	116,628	126,436	150,361
Non-S&E nec	673,014	768,033	787,691	801,327	540,045	543,524	815,350	690,761	773,970	777,610

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.