

TABLE 10

## Higher education R&amp;D expenditures, by R&amp;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	61,286,610	65,274,393	65,729,007	66,977,566	67,161,428	68,519,962	71,737,194	75,149,390	79,025,976	83,490,430	86,306,106	89,700,890	97,669,577	108,681,008
Science	49,061,829	51,955,427	51,914,870	52,608,816	52,761,785	53,843,479	56,235,949	58,936,126	62,018,482	65,418,733	67,564,949	70,290,425	76,144,177	84,307,571
Computer and information sciences	1,638,047	1,742,486	1,822,321	2,067,869	1,927,578	1,962,053	2,079,423	2,192,298	2,397,595	2,637,121	2,925,074	2,953,984	3,201,715	3,617,348
Geosciences, atmospheric sciences, and ocean sciences	2,991,741	3,153,174	3,173,011	3,195,029	3,227,092	3,246,105	3,082,509	3,147,577	3,159,571	3,185,938	3,281,649	3,295,235	3,652,936	4,032,534
Atmospheric science and meteorology	429,354	481,275	476,729	493,385	501,517	573,913	626,676	623,507	608,041	590,386	612,497	624,278	668,852	723,727
Geological and earth sciences	1,083,969	1,142,630	1,168,945	1,163,446	1,159,067	1,113,536	997,675	1,084,096	1,131,931	1,121,272	1,159,615	1,242,259	1,347,807	1,488,300
Ocean sciences and marine sciences	1,021,857	1,049,630	1,025,472	1,051,418	1,071,370	1,049,538	1,097,679	1,098,356	1,061,409	1,100,775	1,136,731	1,035,260	1,211,373	1,365,092
Geosciences, atmospheric sciences, and ocean sciences nec	456,561	479,639	501,865	486,780	495,138	509,118	360,479	341,618	358,190	373,505	372,806	393,438	424,904	455,415
Life sciences	34,984,249	37,337,522	37,200,171	37,556,765	37,938,741	38,769,105	40,859,163	43,098,369	45,605,985	48,226,300	49,615,561	52,350,164	56,475,813	62,204,360
Agricultural sciences	3,011,150	3,116,840	3,300,098	3,347,687	3,381,853	3,479,612	3,287,678	3,274,590	3,307,253	3,426,776	3,625,713	3,553,312	3,936,116	4,285,689
Biological and biomedical sciences	10,946,456	11,855,468	11,611,632	11,679,165	11,699,720	11,703,939	13,027,574	13,723,201	14,517,916	15,391,056	15,766,687	16,568,079	18,130,240	19,526,385
Health sciences	19,268,085	20,398,377	20,330,413	20,453,217	20,707,633	21,298,214	22,387,269	23,990,126	25,773,453	27,265,062	27,991,953	29,857,379	31,874,515	35,724,571
Natural resources and conservation <sup>a</sup>	na	na	na	na	na	na	693,318	691,655	779,447	841,416	901,808	935,072	1,016,532	1,079,516
Life sciences nec	1,758,558	1,966,837	1,958,028	2,076,696	2,149,535	2,287,340	1,463,324	1,418,797	1,227,916	1,301,990	1,329,400	1,436,322	1,518,410	1,588,199
Mathematics and statistics	592,200	640,471	674,461	670,801	657,656	640,828	679,295	700,251	750,328	769,019	800,583	772,989	879,490	1,060,700
Physical sciences	4,621,772	4,768,816	4,710,125	4,646,791	4,613,739	4,648,566	4,876,304	5,050,084	5,232,149	5,550,678	5,671,891	5,735,955	6,167,466	6,944,769
Astronomy and astrophysics	573,229	583,847	706,544	558,635	566,965	626,589	621,738	648,813	668,227	734,987	780,259	740,852	813,888	967,125
Chemistry	1,748,465	1,783,604	1,748,904	1,704,070	1,723,214	1,757,480	1,773,336	1,791,492	1,866,133	1,965,378	1,928,978	1,995,252	2,127,016	2,301,102
Materials science <sup>a</sup>	na	na	na	na	na	na	172,271	227,825	254,447	259,316	252,531	285,940	286,461	319,102
Physics	1,998,732	2,108,340	1,985,954	2,097,089	2,054,772	2,037,057	2,108,936	2,155,653	2,206,576	2,327,059	2,435,600	2,463,695	2,669,468	2,966,923
Physical sciences nec	301,346	293,025	268,723	286,997	268,788	227,440	200,023	226,301	236,766	263,938	274,523	250,216	270,633	390,517
Psychology	1,077,655	1,159,180	1,179,323	1,128,328	1,143,065	1,183,561	1,222,998	1,246,512	1,261,399	1,328,432	1,364,798	1,329,531	1,446,429	1,637,829
Social sciences	1,999,942	2,063,007	2,053,656	2,172,234	2,210,266	2,315,180	2,361,489	2,554,642	2,721,694	2,805,686	2,951,692	2,827,914	3,163,750	3,615,227
Anthropology <sup>a</sup>	na	na	na	na	na	na	95,935	110,932	118,234	124,403	119,395	108,099	132,709	151,778
Economics	352,890	387,036	383,405	408,264	428,076	453,590	395,598	434,016	455,933	458,124	559,122	550,454	665,417	723,797
Political science and government	374,903	370,694	390,074	427,435	426,375	459,265	383,995	412,112	438,069	447,752	425,439	424,053	488,351	556,983
Sociology, demography, and population studies	419,895	433,484	461,011	482,284	504,735	524,200	503,300	551,863	608,722	610,133	594,099	553,000	616,067	727,782
Social sciences nec	852,254	871,793	819,166	854,251	851,080	878,125	982,661	1,045,719	1,100,736	1,165,274	1,253,637	1,192,308	1,261,206	1,454,887
Sciences nec	1,156,223	1,090,771	1,101,802	1,170,999	1,043,648	1,078,081	1,074,768	946,393	889,761	915,559	953,701	1,024,653	1,156,578	1,194,804
Engineering	9,325,722	10,032,590	10,284,111	10,733,954	10,971,498	11,062,806	11,367,246	11,911,264	12,363,352	13,214,302	13,702,435	14,291,856	15,662,918	17,468,446
Aerospace, aeronautical, and astronautical engineering	635,234	667,757	662,444	689,553	662,479	732,092	881,970	990,726	1,010,499	1,170,171	1,293,605	1,452,254	1,647,246	1,913,964
Bioengineering and biomedical engineering	745,277	817,389	871,917	884,421	951,058	1,003,096	1,085,842	1,220,693	1,343,576	1,450,846	1,469,746	1,560,277	1,727,186	1,885,216
Chemical engineering	821,163	913,905	903,613	910,222	906,471	914,308	884,190	934,538	931,038	977,586	1,001,308	1,024,239	1,108,239	1,246,882
Civil engineering	1,106,759	1,208,592	1,232,944	1,296,972	1,256,412	1,284,850	1,328,617	1,302,330	1,354,786	1,432,985	1,425,058	1,482,140	1,686,234	1,900,543
Electrical, electronic, and communications engineering	2,050,292	2,206,894	2,311,665	2,408,824	2,478,216	2,492,197	2,512,469	2,726,479	2,843,777	2,937,896	3,052,778	3,078,761	3,463,055	3,838,675
Industrial and manufacturing engineering <sup>a</sup>	na	na	na	na	na	na	236,679	351,083	514,775	556,355	587,061	574,092	615,468	707,239

TABLE 10

**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	1,458,382	1,556,892	1,550,151	1,647,640	1,503,710	1,513,951	1,434,699	1,535,866	1,630,560	1,705,001	1,813,738	1,882,114	2,062,472	2,324,946
Metallurgical and materials engineering	703,332	738,892	757,967	812,231	1,202,757	1,101,599	743,980	735,699	762,688	792,373	818,672	841,720	886,659	1,039,160
Engineering nec	1,805,283	1,922,269	1,993,410	2,084,091	2,010,395	2,020,713	2,258,800	2,113,850	1,971,653	2,191,089	2,240,469	2,396,259	2,466,359	2,611,821
Non-S&E	2,899,059	3,286,376	3,530,026	3,634,796	3,428,145	3,613,677	4,133,999	4,302,000	4,644,142	4,857,395	5,038,722	5,118,609	5,862,482	6,904,991
Business management and business administration	370,015	400,376	443,079	473,157	481,154	569,570	642,332	725,524	784,623	868,197	888,023	934,630	1,081,102	1,218,052
Communication and communications technologies	130,396	153,743	159,920	148,496	166,040	168,512	166,414	202,562	191,641	206,796	192,511	186,843	213,728	253,609
Education	993,588	1,120,766	1,233,437	1,220,888	1,243,226	1,292,178	1,340,553	1,384,611	1,503,956	1,522,064	1,607,695	1,617,052	1,740,791	2,042,372
Humanities	260,374	313,032	339,633	386,736	402,173	430,058	443,912	493,627	505,164	539,318	565,489	561,342	713,322	846,919
Law	98,109	124,779	131,514	173,479	149,235	174,692	184,344	223,843	266,365	255,830	267,888	282,769	358,689	430,807
Social work	177,331	194,667	199,046	212,323	225,897	214,205	211,548	235,296	245,120	285,655	306,409	319,611	363,069	416,735
Visual and performing arts	68,717	77,358	84,596	87,291	95,837	100,681	133,699	124,805	137,341	159,288	175,067	178,471	228,271	283,750
Non-S&E nec	800,529	901,655	938,801	932,426	664,583	663,781	1,011,197	911,732	1,009,932	1,020,247	1,035,640	1,037,891	1,163,510	1,412,747

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.

<sup>a</sup> 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.