

TABLE 10

Federally financed 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 | 37,477,582 | 40,768,251 | 40,142,223 | 39,445,931 | 37,961,118 | 37,846,802 | 38,788,615 | 40,248,797 | 41,863,137 | 44,482,526 | 46,143,829 |
| Science | 30,791,579 | 33,373,047 | 32,497,010 | 31,764,827 | 30,399,957 | 30,316,863 | 31,093,059 | 32,204,064 | 33,521,628 | 35,571,485 | 36,778,903 |
| Computer and information sciences | 1,175,343 | 1,294,280 | 1,360,430 | 1,552,301 | 1,390,715 | 1,419,694 | 1,443,376 | 1,497,681 | 1,630,119 | 1,794,620 | 2,000,937 |
| Geosciences, atmospheric sciences, and ocean sciences | 2,013,754 | 2,181,206 | 2,203,399 | 2,094,690 | 2,049,405 | 2,065,883 | 1,991,778 | 2,042,291 | 2,048,266 | 2,067,199 | 2,109,065 |
| Atmospheric science and meteorology | 338,687 | 383,740 | 389,095 | 397,620 | 389,374 | 453,710 | 513,280 | 503,368 | 485,737 | 460,463 | 471,158 |
| Geological and earth sciences | 735,094 | 799,906 | 818,785 | 767,770 | 740,500 | 698,976 | 604,474 | 685,630 | 697,934 | 676,550 | 696,991 |
| Ocean sciences and marine sciences | 666,930 | 705,852 | 673,888 | 662,219 | 663,079 | 647,119 | 665,139 | 656,802 | 649,212 | 698,401 | 713,086 |
| Geosciences, atmospheric sciences, and ocean sciences nec | 273,043 | 291,708 | 321,631 | 267,081 | 256,452 | 266,078 | 208,885 | 196,491 | 215,383 | 231,785 | 227,830 |
| Life sciences | 21,702,125 | 23,663,408 | 22,753,602 | 22,227,278 | 21,270,307 | 21,163,826 | 21,795,284 | 22,749,759 | 23,867,788 | 25,458,209 | 26,254,002 |
| Agricultural sciences | 957,710 | 1,042,740 | 1,137,729 | 1,111,006 | 1,085,147 | 1,096,997 | 977,258 | 978,308 | 950,634 | 989,763 | 1,072,057 |
| Biological and biomedical sciences | 7,579,196 | 8,213,534 | 7,741,440 | 7,604,786 | 7,238,421 | 7,103,267 | 7,699,352 | 8,179,596 | 8,572,870 | 9,263,466 | 9,339,917 |
| Health sciences | 12,068,659 | 13,184,595 | 12,681,515 | 12,287,408 | 11,742,527 | 11,723,297 | 12,101,391 | 12,688,424 | 13,395,870 | 14,194,037 | 14,733,751 |
| Natural resources and conservation ^a | na | na | na | na | na | na | 316,604 | 271,470 | 320,412 | 369,968 | 410,120 |
| Life sciences nec | 1,096,560 | 1,222,539 | 1,192,918 | 1,224,078 | 1,204,212 | 1,240,265 | 700,679 | 631,961 | 628,002 | 640,975 | 698,157 |
| Mathematics and statistics | 417,775 | 458,966 | 490,534 | 464,608 | 441,394 | 424,534 | 444,392 | 437,059 | 456,806 | 467,039 | 486,259 |
| Physical sciences | 3,384,275 | 3,527,330 | 3,474,586 | 3,311,037 | 3,155,471 | 3,111,644 | 3,288,095 | 3,384,673 | 3,472,447 | 3,691,358 | 3,789,237 |
| Astronomy and astrophysics | 405,954 | 408,963 | 535,180 | 400,440 | 380,887 | 403,037 | 417,930 | 441,536 | 454,491 | 514,424 | 542,725 |
| Chemistry | 1,200,120 | 1,243,767 | 1,213,495 | 1,134,945 | 1,080,342 | 1,095,107 | 1,097,435 | 1,097,830 | 1,129,872 | 1,182,460 | 1,166,743 |
| Materials science ^a | na | na | na | na | na | na | 111,806 | 142,472 | 162,048 | 165,880 | 156,894 |
| Physics | 1,557,421 | 1,660,377 | 1,532,612 | 1,567,937 | 1,509,951 | 1,463,126 | 1,525,643 | 1,549,492 | 1,570,749 | 1,657,797 | 1,736,916 |
| Physical sciences nec | 220,780 | 214,223 | 193,299 | 207,715 | 184,291 | 150,374 | 135,281 | 153,343 | 155,287 | 170,797 | 185,959 |
| Psychology | 758,520 | 835,448 | 859,500 | 776,402 | 752,525 | 763,657 | 765,247 | 764,737 | 759,524 | 789,562 | 808,565 |
| Social sciences | 901,009 | 947,176 | 915,874 | 897,604 | 917,699 | 921,781 | 899,559 | 932,660 | 937,772 | 938,491 | 969,278 |
| Anthropology ^a | na | na | na | na | na | na | 39,602 | 38,715 | 43,464 | 43,003 | 38,847 |
| Economics | 127,858 | 148,737 | 144,446 | 137,236 | 138,812 | 149,572 | 112,576 | 110,746 | 102,152 | 91,722 | 121,461 |
| Political science and government | 152,547 | 148,643 | 141,267 | 143,375 | 145,664 | 136,486 | 103,691 | 103,875 | 98,306 | 86,710 | 78,462 |
| Sociology, demography, and population studies | 226,462 | 232,834 | 247,739 | 237,479 | 251,803 | 262,252 | 268,827 | 280,578 | 285,166 | 289,763 | 253,213 |
| Social sciences nec | 394,142 | 416,962 | 382,422 | 379,514 | 381,420 | 373,471 | 374,863 | 398,746 | 408,684 | 427,293 | 477,295 |
| Sciences nec | 438,778 | 465,233 | 439,085 | 440,907 | 422,441 | 445,844 | 465,328 | 395,204 | 348,906 | 365,007 | 361,560 |
| Engineering | 5,718,852 | 6,275,548 | 6,442,986 | 6,499,507 | 6,424,314 | 6,458,748 | 6,583,093 | 6,828,853 | 7,093,806 | 7,668,349 | 8,120,891 |
| Aerospace, aeronautical, and astronautical engineering | 466,991 | 504,536 | 501,722 | 513,134 | 474,623 | 516,051 | 623,637 | 659,882 | 678,126 | 820,576 | 957,795 |
| Bioengineering and biomedical engineering | 470,432 | 515,611 | 552,555 | 556,651 | 606,943 | 606,696 | 651,534 | 725,241 | 791,996 | 879,999 | 906,145 |
| Chemical engineering | 421,269 | 490,918 | 504,753 | 478,542 | 471,561 | 462,829 | 467,519 | 471,749 | 461,480 | 498,223 | 521,758 |
| Civil engineering | 460,880 | 544,992 | 570,303 | 578,390 | 577,964 | 570,426 | 591,837 | 557,671 | 590,886 | 621,055 | 606,519 |
| Electrical, electronic, and communications engineering | 1,373,311 | 1,511,458 | 1,601,917 | 1,642,771 | 1,742,336 | 1,771,589 | 1,742,704 | 1,891,480 | 1,981,349 | 2,049,544 | 2,143,397 |

TABLE 10

Federally financed 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 | 147,192 | 186,352 | 306,768 | 366,712 | 384,795 |
| Mechanical engineering | 953,244 | 1,032,641 | 1,035,551 | 1,061,270 | 946,802 | 957,354 | 861,039 | 937,915 | 993,314 | 1,055,742 | 1,160,117 |
| Metallurgical and materials engineering | 429,412 | 455,722 | 462,246 | 465,657 | 494,405 | 501,195 | 442,377 | 440,746 | 464,475 | 483,774 | 504,528 |
| Engineering nec | 1,143,313 | 1,219,670 | 1,213,939 | 1,203,092 | 1,109,680 | 1,072,608 | 1,055,254 | 957,817 | 825,412 | 892,724 | 935,837 |
| Non-S&E | 967,151 | 1,119,656 | 1,202,227 | 1,181,597 | 1,136,847 | 1,071,191 | 1,112,463 | 1,215,880 | 1,247,703 | 1,242,692 | 1,244,035 |
| Business management and business administration | 86,440 | 99,661 | 96,659 | 95,227 | 77,253 | 69,815 | 68,284 | 69,069 | 71,628 | 73,039 | 74,126 |
| Communication and communications technologies | 41,339 | 53,266 | 53,337 | 51,060 | 54,335 | 42,462 | 36,764 | 61,313 | 34,260 | 35,638 | 40,830 |
| Education | 535,744 | 632,117 | 689,060 | 666,586 | 663,558 | 644,110 | 624,470 | 653,098 | 680,429 | 668,106 | 667,043 |
| Humanities | 57,510 | 61,420 | 67,692 | 76,804 | 75,114 | 59,963 | 57,171 | 59,051 | 50,006 | 49,813 | 54,155 |
| Law | 19,338 | 27,388 | 24,575 | 22,522 | 23,732 | 24,415 | 26,081 | 33,022 | 50,934 | 31,867 | 26,697 |
| Social work | 94,422 | 105,661 | 109,359 | 111,693 | 109,179 | 101,665 | 95,300 | 110,683 | 114,298 | 133,076 | 140,836 |
| Visual and performing arts | 4,843 | 6,521 | 10,435 | 7,039 | 9,050 | 8,603 | 8,585 | 8,334 | 10,798 | 9,105 | 15,140 |
| Non-S&E nec | 127,515 | 133,622 | 151,110 | 150,666 | 124,626 | 120,158 | 195,808 | 221,310 | 235,350 | 242,048 | 225,208 |

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.