

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank			2022									
		2020	2021	All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
All institutions	-	13,702,434	14,291,729	15,596,634	1,647,191	1,726,307	1,108,245	1,647,038	3,436,892	615,228	2,062,508	886,681	2,466,544
Johns Hopkins U. ^a	1	1,205,632	1,237,980	1,324,646	164,961	82,261	24,980	18,090	567,218	100,873	247,082	37,033	82,148
Georgia Institute of Technology	2	695,176	839,071	935,632	281,775	49,446	28,746	23,950	378,019	68,872	65,814	21,127	17,883
SUNY, Polytechnic Institute	3	353,542	462,562	411,929	0	1,230	0	0	1	0	34	0	410,664
Texas A&M U., College Station and Health Science Center	4	357,559	385,656	402,999	32,301	27,673	19,620	110,000	29,267	12,286	38,297	11,116	122,439
Massachusetts Institute of Technology	5	419,636	382,569	397,946	36,986	105,214	49,094	16,428	51,752	603	49,402	29,280	59,187
Pennsylvania State U., University Park and Hershey Medical Center	6	367,730	378,667	385,594	34,060	33,997	13,450	12,444	123,291	6,773	107,002	54,577	0
U. Texas, Austin	7	259,935	279,730	319,719	14,072	10,324	46,906	41,873	80,126	72	70,078	24,710	31,558
Purdue U., West Lafayette	8	280,592	285,469	312,394	29,644	21,868	24,850	32,784	61,840	8,859	59,435	16,790	56,324
U. Michigan, Ann Arbor	9	283,329	279,682	299,254	15,615	29,990	15,462	21,267	80,277	5,384	48,222	13,520	69,517
Virginia Polytechnic Institute and State U.	10	263,711	246,965	260,158	26,384	28,433	5,291	32,674	67,367	34,760	24,678	13,007	27,564
Utah State U.	11	226,616	247,332	259,482	229,932	1,993	0	11,555	11,984	0	2,953	0	1,065
U. Illinois, Urbana-Champaign	12	203,564	216,233	228,786	16,647	15,966	20,595	26,706	56,110	0	31,526	19,386	41,850
Wichita State U.	13	134,848	157,430	226,111	219,716	165	0	0	1,543	748	1,178	0	2,761
Ohio State U.	14	175,109	163,509	219,388	803	4,213	12,200	19,553	32,558	18,026	84,396	23,085	24,554
U. California, San Diego	15	182,495	177,564	212,583	90	65,665	52	689	101,813	0	19,971	3,228	21,075
U. California, Berkeley	16	209,293	199,711	206,541	0	160	7,364	31,779	120,849	27	618	0	45,744
U. Dayton	17	153,082	180,158	195,856	18,896	308	6,636	737	7,550	54,874	8,302	87,386	11,167
Arizona State U.	18	155,015	145,574	192,681	0	15,232	7,780	36,223	52,683	12,354	10,404	6,583	51,422
U. Colorado Boulder	19	160,423	177,604	191,531	115,323	11,317	12,273	16,411	13,387	0	15,740	1,366	5,714
U. Washington, Seattle	20	152,919	157,622	172,004	10,064	32,757	9,292	21,696	41,353	1,957	18,658	6,645	29,582
North Carolina State U.	21	174,740	172,900	171,162	2,454	19,872	35,741	19,321	23,258	7,063	12,597	20,174	30,682
U. Maryland ^b	22	153,109	154,163	164,304	14,446	24,576	11,741	39,169	13,659	484	19,750	14,237	26,242
U. Wisconsin-Madison	23	133,600	131,709	148,673	0	16,734	15,061	14,220	20,315	5,387	16,882	13,129	46,945
Stanford U.	24	130,950	136,251	142,213	15,995	30,636	15,593	14,092	22,074	6,685	25,314	10,185	1,639
Carnegie Mellon U.	25	102,955	112,597	138,117	2,028	17,229	11,915	8,523	29,542	4,908	37,838	10,963	15,171
U. Florida	26	119,066	122,704	134,339	4,288	25,593	5,587	27,354	37,630	2,350	16,131	12,833	2,573
Iowa State U.	27	109,473	123,428	132,475	8,492	16,789	8,421	23,902	12,017	0	9,094	9,811	43,949
U. Minnesota, Twin Cities	28	120,929	121,637	131,042	10,420	33,495	21,128	14,114	19,282	1,501	24,802	6,300	0

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
Cornell U.	29	123,703	118,621	125,320	3,107	20,839	15,313	9,915	25,771	5,503	18,703	18,154	8,015
U. Delaware	30	74,258	90,327	123,997	0	10,569	74,497	11,799	14,130	0	9,265	0	3,737
New York U.	31	100,207	99,307	119,160	0	71	3,470	1,604	15,842	0	2,682	0	95,491
U. Tennessee, Knoxville ^c	32	128,542	128,579	115,464	30,537	3,011	6,717	13,606	20,024	8,586	0	10,172	22,811
U. California, Davis	33	97,951	102,370	114,118	0	31,286	210	47,509	15,736	0	12,164	0	7,213
Rice U.	34	91,913	100,872	110,648	0	45,583	8,892	12,211	27,727	0	6,847	7,535	1,853
SUNY, U. Buffalo	35	112,843	100,194	109,870	12,279	12,264	14,783	8,297	5,354	7,407	25,052	3,223	21,211
U. Pennsylvania	36	82,299	88,937	106,282	0	30,184	9,817	12	23,441	0	24,366	0	18,462
U. Notre Dame	37	84,478	90,572	103,773	42,915	0	18,892	15,644	25,114	0	0	13	1,195
Duke U.	38	95,657	94,483	102,748	0	47,302	0	9,177	34,006	0	10,424	1,723	116
Clemson U.	39	76,971	90,038	98,733	0	14,082	5,187	14,619	15,046	3,836	27,730	11,060	7,173
U. California, Los Angeles	40	93,520	93,906	98,403	0	8,259	7,416	9,975	34,774	0	18,833	6,319	12,827
U. California, Santa Barbara	41	87,681	86,303	97,329	0	19,061	6,006	1,727	53,487	0	6,963	9,613	472
Harvard U.	42	97,884	92,782	96,920	0	62,685	1,513	4,317	5,323	0	292	20,335	2,455
Auburn U., Auburn	43	70,593	78,720	93,219	5,193	2,161	10,044	17,821	9,727	11,603	18,859	1,176	16,635
Northeastern U.	44	89,954	92,723	92,855	0	7,939	4,829	12,209	33,744	9,682	18,268	0	6,184
Boston U.	45	85,651	79,757	91,643	1,867	39,008	35	0	18,718	6,406	12,965	988	11,656
Woods Hole Oceanographic Institution	46	84,333	101,989	88,997	9,112	0	0	10,131	45,773	0	23,981	0	0
Northwestern U.	47	77,150	80,735	88,008	0	17,376	13,889	6,071	8,475	4,615	7,448	16,229	13,905
Columbia U. in the City of New York	48	72,758	75,457	87,884	2,001	27,298	11,462	2,609	5,078	1,555	5,159	0	32,722
U. Arizona	49	79,463	72,158	84,682	2,561	8,817	5,579	2,386	43,553	4,463	4,268	7,398	5,657
U. North Dakota	50	52,511	86,578	84,614	0	0	1,710	51,632	2,542	0	1,935	891	25,904
New Jersey Institute of Technology	51	85,445	82,240	83,738	0	10,569	8,106	24,292	5,235	0	2,899	197	32,440
Michigan State U.	52	82,690	79,360	81,143	0	19,620	11,917	10,614	17,545	0	11,501	0	9,946
Princeton U.	53	67,014	67,231	78,831	4,480	5,643	8,167	7,730	32,101	3,898	5,306	743	10,763
Vanderbilt U. and Vanderbilt U. Medical Center	54	94,674	86,541	78,534	0	21,651	9,456	14,050	20,748	0	10,212	0	2,417
U. Missouri, Columbia	55	53,343	56,685	78,494	0	2,629	1,085	7,982	7,217	460	3,907	344	54,870
U. California, Irvine	56	59,695	65,454	75,898	0	15,980	6,486	9,889	14,587	0	14,816	9,620	4,520
Mississippi State U.	57	69,220	67,472	73,980	17,972	1,131	5,536	4,298	9,044	5,951	7,547	620	21,881
U. Connecticut	58	46,751	54,185	68,902	0	5,736	8,061	21,804	8,613	0	8,539	14,963	1,186
U. Maine	59	37,127	46,986	68,261	16	97	9,990	1,948	1,961	1,395	2,371	49,355	1,128

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
U. Massachusetts, Amherst	60	58,804	60,065	67,776	0	3,913	21,842	15,006	13,103	0	9,172	0	4,740
U. Pittsburgh, Pittsburgh	61	53,586	56,681	65,936	0	19,319	10,535	5,713	9,496	2,279	14,365	0	4,229
U. Virginia, Charlottesville	62	72,602	62,271	65,604	0	15,055	6,028	0	11,820	0	11,272	12,527	8,902
U. Houston	63	55,210	56,555	64,026	0	11,622	14,041	9,167	11,191	551	7,554	904	8,996
U. Southern California	64	78,005	78,179	63,694	4,996	7,801	8,307	3,608	32,486	2,572	0	0	3,924
Rensselaer Polytechnic Institute	65	70,156	67,810	63,146	0	8,233	9,971	3,369	14,865	440	17,423	5,813	3,032
U. Texas, Arlington	66	59,395	58,154	61,467	5,890	4,880	0	13,842	6,928	12,597	5,889	0	11,441
U. Kentucky	67	46,976	52,361	61,287	0	3,028	3,262	11,874	2,243	1,109	5,732	5,093	28,946
Colorado School of Mines	68	46,694	54,062	60,371	1,384	1,998	4,141	13,493	491	2,508	3,250	13,612	19,494
U. Central Florida	69	59,627	57,620	59,060	14,651	73	0	8,191	9,547	2,980	10,922	4,480	8,216
Oregon State U.	70	50,900	52,731	58,552	0	2,150	2,306	16,363	14,790	4,711	6,876	607	10,749
Florida State U.	71	56,493	52,153	58,212	2,334	2,327	1,481	6,463	17,653	4,202	19,751	2,654	1,347
Rutgers, State U. New Jersey, New Brunswick	72	55,880	51,289	57,490	0	4,883	5,911	2,670	6,895	312	7,215	2,508	27,096
George Mason U.	73	52,423	49,826	57,196	0	7,892	0	5,780	20,900	19,862	1,295	955	512
U. Nebraska, Lincoln	74	51,685	53,927	56,068	0	13,382	3,331	18,859	7,618	423	4,869	5,434	2,152
U. California, Santa Cruz	75	41,752	49,576	55,542	0	1,439	0	0	6,933	0	0	0	47,170
Montana State U., Bozeman	76	38,833	51,785	54,188	0	7,225	2,426	6,800	6,567	18	8,063	0	23,089
Louisiana State U., Baton Rouge	77	40,084	39,104	53,974	0	0	8,733	14,299	5,273	1,230	7,067	5,130	12,242
U. Alabama, Huntsville	78	51,198	55,510	53,958	32,628	120	1,117	3,469	6,422	4,347	3,689	754	1,412
New Mexico Institute of Mining and Technology	79	13,084	13,002	53,897	340	0	2,028	0	316	0	1,829	1,294	48,090
California Institute of Technology	80	51,693	51,630	51,975	7,418	6,392	7,286	11,452	7,780	0	183	96	11,368
U. Texas, Dallas	81	50,812	50,646	51,310	0	14,392	0	0	11,903	1,164	9,581	5,999	8,271
U. South Florida ^d	82	37,162	50,547	50,859	161	6,121	2,906	20,822	8,256	1,635	4,767	0	6,191
U. Alabama, Tuscaloosa	83	33,019	43,941	49,885	4,741	0	6,263	12,969	11,696	0	7,166	7,043	7
U. Iowa	84	48,433	47,722	49,233	0	1,377	948	19,430	2,174	681	1,740	0	22,883
Florida International U.	85	39,826	41,740	48,549	0	5,186	0	15,560	13,396	795	9,167	702	3,743
Michigan Technological U.	86	45,263	46,733	48,400	0	3,049	4,055	3,893	7,611	0	24,096	3,261	2,435
Colorado State U., Fort Collins	87	42,839	41,575	47,833	0	1,198	4,028	15,066	9,042	1,196	14,058	0	3,245
U. Utah	88	57,608	48,225	47,060	0	9,552	4,170	9,583	8,112	0	2,052	722	12,869
U. Cincinnati	89	43,098	42,434	46,955	7,787	2,804	3,684	7,945	11,173	0	11,273	0	2,289

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
Texas Tech U.	90	42,856	41,962	46,952	0	0	8,432	10,384	10,791	3,297	7,698	0	6,350
Washington State U.	91	39,533	48,031	45,571	407	2,412	4,391	9,005	8,748	192	7,857	3,584	8,975
U. New Mexico	92	42,739	41,317	45,191	8,696	707	4,171	9,062	11,907	996	1,756	524	7,372
U. Oklahoma, Norman and Health Science Center	93	36,643	39,785	44,727	6,991	3,450	5,241	6,452	15,798	1,357	0	0	5,438
U. Massachusetts, Lowell	94	35,847	36,339	44,358	0	6,080	14,402	2,601	7,989	0	13,076	0	210
West Virginia U.	95	40,786	39,855	43,972	1,155	0	8,566	5,181	5,319	2,154	13,630	2,353	5,614
Stevens Institute of Technology	96	33,103	33,983	43,702	0	2,101	1,132	6,862	5,387	19,362	4,698	0	4,160
Missouri U. of Science and Technology	97	36,447	43,470	43,119	1,488	58	2,374	6,863	7,120	1,383	4,369	18,532	932
U. Chicago	98	24,468	30,018	41,866	0	0	0	0	0	0	0	0	41,866
Case Western Reserve U.	99	37,911	39,079	41,783	0	17,281	10,565	1,025	4,911	0	7,616	0	385
U. Texas, El Paso	100	25,172	26,599	40,798	42	1,266	0	5,850	4,940	2,184	23,507	833	2,176
U. Arkansas, Fayetteville	101	37,758	37,818	40,691	0	7,970	4,957	6,705	12,634	3,788	2,744	0	1,893
New Mexico State U.	102	25,030	29,884	40,367	7,551	0	1,488	6,165	12,731	99	2,358	122	9,853
U. Illinois, Chicago	103	31,496	35,675	39,656	0	15,275	2,508	3,980	4,772	0	12,789	269	63
U. North Carolina, Chapel Hill	104	30,774	30,935	39,242	0	12,488	0	25,656	0	1,098	0	0	0
SUNY, Stony Brook U.	105	30,180	28,344	38,670	0	8,438	0	3,012	12,136	0	1,853	10,565	2,666
Drexel U.	106	31,230	32,665	38,649	0	8,725	5,362	3,657	3,195	0	7,256	7,980	2,474
Mercer U.	107	37,450	40,439	38,452	14,803	0	0	9	1,608	0	11,183	10,282	567
Yale U.	108	36,806	35,778	36,714	0	10,422	6,281	0	9,921	0	8,366	0	1,724
Dartmouth C. and Dartmouth Hitchcock Medical Center	109	31,140	33,559	36,219	0	11,862	3,766	2,255	8,172	7	5,735	0	4,422
Oklahoma State U., Stillwater	110	33,983	35,094	36,217	9,450	0	5,691	5,101	3,771	1,851	2,977	1,439	5,937
CUNY, City C.	111	23,140	34,710	36,189	0	4,315	2,631	4,097	8,515	974	3,107	0	12,550
U. South Carolina, Columbia	112	37,747	36,222	35,508	0	0	7,794	4,324	5,766	0	11,896	1,716	4,012
SUNY, Binghamton U.	113	32,668	39,529	33,595	0	4,010	0	0	5,581	15,458	7,656	0	890
U.S. Air Force Academy	114	29,812	29,132	33,169	1,772	0	0	479	327	895	28,282	314	1,100
U. California, Riverside	115	31,937	34,888	32,758	0	2,135	6,741	9,555	8,992	0	4,136	184	1,015
Tufts U.	116	26,662	24,017	32,535	183	13,580	2,814	5,069	4,267	0	3,532	849	2,241
U. Nevada, Reno	117	23,939	27,769	32,454	1,540	1,963	3,510	9,968	488	4	7,014	2,042	5,925
U. Louisiana, Lafayette	118	27,878	30,295	32,259	0	0	7,505	5,716	3,643	0	9,967	4,728	700
Worcester Polytechnic Institute	119	23,758	27,108	31,514	688	2,084	3,303	576	3,046	0	18,938	1,294	1,585

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
U. Alabama, Birmingham	120	53,030	46,844	30,637	999	7,608	349	1,765	3,155	0	7,713	7,790	1,258
Virginia Commonwealth U.	121	29,811	32,233	30,592	0	6,127	4,212	0	8,940	0	7,014	0	4,299
Kansas State U.	122	28,155	27,743	29,980	1,491	0	4,357	4,360	4,182	1,547	6,378	0	7,665
Brown U.	123	23,965	23,587	29,569	28	10,799	3,028	0	3,283	0	3,821	3,499	5,111
Lehigh U.	124	24,054	25,835	28,948	0	3,269	4,106	5,711	2,209	2,115	6,751	4,752	35
U. Wyoming	125	20,317	24,675	28,379	214	760	14,886	5,420	907	0	2,028	116	4,048
Old Dominion U.	126	25,869	25,811	28,288	1,485	0	0	1,088	8,687	14,708	2,320	0	0
Washington U., Saint Louis	127	23,821	26,574	28,151	0	11,340	6,035	164	4,836	0	0	5,415	361
Air Force Institute of Technology	128	23,947	26,780	27,794	4,892	0	0	1,036	5,905	14,097	0	1,864	0
U. New Hampshire	129	23,457	22,509	25,040	0	0	1,964	6,101	11,718	0	4,849	408	0
U. Hawaii, Manoa	130	25,423	23,966	24,574	43	967	0	4,785	11,857	0	1,786	0	5,136
U. Texas, San Antonio	131	22,922	21,499	24,403	0	4,096	0	7,198	4,575	821	3,312	0	4,401
George Washington U.	132	22,682	22,749	23,736	1,697	6,442	0	2,428	6,271	2,270	1,439	83	3,106
U. Louisville	133	18,105	20,965	23,630	0	6,652	2,259	1,870	5,224	1,186	2,713	9	3,717
U. North Texas, Denton	134	15,205	18,285	23,078	7	3,486	0	0	2,550	0	1,831	14,597	607
Rochester Institute of Technology	135	20,910	20,874	22,869	0	1,677	1,094	10	5,983	2,293	2,655	0	9,157
U. Georgia	136	19,273	20,289	22,379	0	1,724	6,268	9,385	4,292	0	0	0	710
U. Rochester	137	16,116	16,780	22,179	0	5,664	1,647	0	5,945	0	7,745	0	1,178
U. Kansas	138	19,830	21,363	22,075	2,269	0	7,420	6,504	3,308	0	2,232	0	342
Syracuse U.	139	24,272	24,698	21,602	0	4,027	50	2,263	7,000	0	7,441	0	821
Naval Postgraduate School	140	22,933	24,254	21,556	5,364	71	24	391	4,013	592	2,301	4,029	4,771
North Dakota State U.	141	14,007	13,963	20,187	211	2	729	8,659	1,993	615	2,066	213	5,699
Brigham Young U., Provo	142	15,943	20,162	19,599	0	0	4,083	1,863	6,042	907	6,605	0	99
North Carolina A&T State U.	143	10,393	11,616	18,186	0	0	441	2,173	4,572	1,138	721	0	9,141
U. Alaska, Fairbanks	144	17,843	17,314	17,869	401	0	0	5,916	8,429	0	443	339	2,341
Ohio U.	145	16,291	16,645	17,216	3,418	0	4,365	2,386	505	32	513	434	5,563
South Dakota School of Mines and Technology	146	12,677	13,658	17,162	0	891	6,467	1,739	489	76	421	4,652	2,427
Florida Atlantic U.	147	10,574	17,064	16,449	85	0	1,550	2,121	23	0	0	0	12,670
Emory U.	148	11,349	11,488	16,415	0	16,415	0	0	0	0	0	0	0
Embry-Riddle Aeronautical U.	149	12,015	11,279	16,049	14,396	0	0	416	0	0	721	0	516
Rowan U.	150	11,784	11,570	15,432	0	2,657	3,895	4,452	666	0	340	0	3,422

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
U. Puerto Rico, Mayaguez	182	16,903	11,397	8,482	0	0	1,657	1,779	2,867	74	664	300	1,141
U. Massachusetts, Dartmouth	183	7,944	8,049	8,480	0	1,036	0	2,038	2,827	0	2,295	0	284
California Polytechnic State U., San Luis Obispo	184	4,646	5,522	8,472	3,861	372	0	1,453	169	45	983	4	1,585
Southern Illinois U., Edwardsville	185	1,424	1,786	8,439	130	7,553	0	82	2	0	672	0	0
Morgan State U.	186	7,228	8,031	8,375	210	0	0	2,973	3,394	320	0	0	1,478
California State U., Sacramento	187	7,744	5,986	8,253	0	0	0	8,064	21	0	168	0	0
U. Wisconsin-Milwaukee	188	9,683	8,577	8,246	0	349	0	2,323	1,262	208	2,290	904	910
U. Maryland, Baltimore County	189	6,671	6,668	8,140	589	2,246	372	725	1,447	303	1,336	194	928
U. Mississippi	190	13,661	6,033	8,095	346	1,077	256	1,893	1,609	0	1,334	524	1,056
U. Texas Rio Grande Valley	191	4,018	5,354	7,844	55	249	16	668	961	2,111	2,437	136	1,211
Medical C. Wisconsin	192	8,542	7,560	7,618	0	7,618	0	0	0	0	0	0	0
U. Akron	193	11,345	7,714	7,558	10	768	1,613	1,268	703	5	2,886	0	305
Tennessee Technological U.	194	7,559	8,455	7,436	0	0	214	1,325	2,403	382	2,989	0	123
U. Southern Mississippi	195	5,999	5,963	7,380	0	0	0	123	0	0	0	0	7,257
Southern Methodist U.	196	9,798	9,972	7,313	0	0	0	779	2,300	0	1,178	0	3,056
San Jose State U.	197	2,863	3,664	6,968	342	18	1,452	760	2,189	590	772	0	845
Wright State U.	198	29,519	8,129	6,843	1	1,243	0	0	4,276	0	1,167	91	65
Tulane U.	199	6,881	6,662	6,823	0	3,081	3,720	6	0	0	0	0	16
California State Polytechnic U., Humboldt	200	4,261	5,564	6,779	0	349	0	1,108	3,207	12	0	0	2,103
U. Michigan, Dearborn	201	7,088	6,223	6,703	0	0	0	0	3,375	1,522	1,600	0	206
U.S. Military Academy	202	5,297	7,772	6,640	0	0	210	179	1,569	1,136	2,389	0	1,157
Indiana U.-Purdue U., Indianapolis	203	7,177	6,604	6,626	0	1,642	0	14	1,381	0	3,078	0	511
U.S. Naval Academy	204	7,376	6,719	6,342	709	0	0	0	987	0	1,353	0	3,293
U. South Alabama	205	3,640	5,085	6,231	0	0	2,044	2,134	905	0	519	0	629
U. Miami	206	5,060	4,527	5,961	0	475	0	3,718	521	0	580	0	667
Florida A&M U.	207	4,796	5,222	5,752	0	0	1,080	1,317	636	892	889	0	938
U. of the District of Columbia	208	1,388	3,134	5,725	472	0	0	1,231	242	1,130	2,650	0	0
Portland State U.	209	6,719	6,668	5,582	200	0	0	1,988	2,079	150	716	170	279
Prairie View A&M U.	210	5,222	4,687	5,305	98	323	343	293	2,604	49	1,030	32	533
Brandeis U.	211	1,048	2,221	5,264	141	5,123	0	0	0	0	0	0	0

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
Florida Institute of Technology	212	5,362	5,891	5,100	740	534	205	390	364	13	1,039	0	1,815
Idaho State U.	213	5,014	4,411	4,752	0	0	0	198	160	0	90	0	4,304
U. Oregon	214	0	0	4,656	0	4,656	0	0	0	0	0	0	0
Miami U.	215	3,783	4,356	4,474	0	741	1,703	0	1,359	558	113	0	0
Montana Technological U.	216	4,331	5,834	4,473	0	0	5	316	209	0	319	3,575	49
SUNY, U. Albany	217	3,319	3,133	4,266	0	0	0	0	1,666	0	0	0	2,600
Northern Arizona U.	218	4,996	6,497	4,194	0	1,139	158	369	1,579	0	278	3	668
U. Puerto Rico, Rio Piedras	219	341	1,152	4,135	0	4,135	0	0	0	0	0	0	0
Northern Illinois U.	220	1,467	4,134	4,132	0	0	0	0	194	2,921	442	0	575
Texas A&M U.-Kingsville	221	2,653	4,622	4,044	181	0	40	240	673	45	935	0	1,930
U. Colorado Denver ^e	222	na	3,695	3,906	0	438	0	972	952	0	1,097	0	447
U. Tennessee, Chattanooga	223	3,319	3,578	3,823	0	0	202	543	994	0	334	0	1,750
California State U., Long Beach	224	4,733	4,574	3,671	34	917	722	812	149	0	561	0	476
U. Denver	225	4,461	3,558	3,632	0	1,841	0	194	1,008	0	0	589	0
Lamar U.	226	1,825	2,437	3,536	0	0	1,259	1,098	120	884	175	0	0
Milwaukee School of Engineering	227	3,105	3,129	3,480	0	359	0	1,182	10	13	1,232	0	684
Alfred U.	228	2,720	2,654	3,458	0	0	0	0	0	0	0	3,458	0
Marshall U.	229	1,137	2,475	3,333	0	269	0	2,852	0	0	29	6	177
Georgia Southern U.	230	1,929	4,052	3,302	26	56	0	722	480	630	1,358	20	10
New School	231	3,205	3,793	3,301	0	0	1,425	305	18	0	1,500	0	53
Catholic U. of America	232	3,518	3,926	3,076	0	1,313	0	371	1,049	0	343	0	0
Youngstown State U.	233	3,491	1,794	3,058	0	0	0	1,631	239	0	266	87	835
Tuskegee U.	234	5,922	5,528	2,955	469	0	96	0	911	0	360	1,119	0
East Carolina U.	235	3,053	3,069	2,737	0	0	0	236	0	0	0	0	2,501
California State U., Northridge	236	1,115	1,216	2,621	0	131	0	36	111	0	1,508	30	805
Purdue U., Northwest	237	2,521	2,220	2,606	0	0	0	12	15	2,080	486	0	13
Jackson State U.	238	1,468	2,236	2,512	0	0	0	1,192	1,278	0	0	0	42
U. North Florida	239	2,433	2,119	2,472	0	0	0	539	189	0	1,567	0	177
CUNY, system office	240	1,132	1,137	2,447	0	0	0	0	0	0	0	0	2,447
San Francisco State U.	241	2,251	2,386	2,423	0	90	0	674	1,233	0	394	0	32
Franklin W. Olin C. of Engineering	242	491	936	2,380	202	0	0	20	504	0	980	0	674
Morehead State U.	243	1,271	756	2,312	2,147	0	0	0	165	0	0	0	0

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
Pittsburg State U.	244	1,659	2,250	2,309	32	50	1,709	0	0	0	0	518	0
Southern Illinois U., Carbondale	245	2,333	3,120	2,308	0	0	2	189	589	0	768	67	693
Virginia State U.	246	1,058	1,273	2,260	1,002	0	0	0	0	186	0	8	1,064
U. North Carolina, general administration	247	2,467	2,068	2,232	17	531	742	0	508	0	384	0	50
U. New Orleans	248	2,282	1,897	2,134	0	0	0	213	810	0	497	0	614
CUNY, Advanced Science Research Center	249	2,289	2,928	2,083	0	242	359	896	0	0	0	0	586
North Carolina Central U.	250	2,675	1,773	2,074	0	2,074	0	0	0	0	0	0	0
Western Illinois U.	251	79	780	1,983	0	0	0	0	0	0	0	1,983	0
California State U., Fresno	252	1,748	1,290	1,970	0	0	0	1,080	843	0	13	0	34
U. Alaska, Anchorage	253	1,101	1,674	1,957	32	0	0	1,060	219	0	409	144	93
Southern U. and A&M C., Baton Rouge	254	1,424	2,282	1,938	0	0	0	5	271	0	1,662	0	0
Alabama A&M U.	255	1,603	1,787	1,925	0	0	0	334	786	131	472	202	0
U. Minnesota, Duluth	256	2,186	2,392	1,892	0	0	163	718	138	622	0	0	251
U. Colorado Colorado Springs	257	1,367	902	1,883	23	0	0	0	958	0	890	0	12
Kent State U.	258	2,743	3,732	1,847	802	11	92	0	316	50	104	14	458
Pennsylvania State U., Behrend	259	1,232	2,395	1,799	0	567	18	0	6	544	383	281	0
California State Polytechnic U., Pomona	260	1,875	1,516	1,759	282	0	709	629	3	77	58	1	0
Santa Clara U.	261	948	1,588	1,741	0	509	0	1	432	0	799	0	0
West Texas A&M U.	262	1,277	1,400	1,713	0	0	813	323	0	42	0	0	535
Norfolk State U.	263	1,312	1,413	1,656	0	0	0	0	0	0	0	0	1,656
Kennesaw State U.	264	1,478	1,858	1,652	0	0	0	517	174	0	300	0	661
U. Texas Medical Branch	265	1,192	1,259	1,643	0	1,643	0	0	0	0	0	0	0
Bucknell U.	266	1,690	1,494	1,589	0	163	415	254	239	0	285	0	233
U. Arkansas, Little Rock	267	1,627	809	1,571	1,439	76	8	0	1	0	0	47	0
Saint Louis U.	268	2,621	1,999	1,559	49	476	0	180	22	0	777	0	55
U. Nebraska, Omaha	269	1,195	1,051	1,510	390	536	4	536	0	18	0	0	26
Western New England U.	270	ne	ne	1,464	0	34	0	186	819	54	371	0	0
U. South Dakota	271	1,385	1,429	1,447	134	1,313	0	0	0	0	0	0	0
Wake Forest U.	272	859	1,204	1,427	0	0	0	0	0	0	0	0	1,427
California State U., Los Angeles	273	922	1,486	1,423	0	0	0	787	167	0	469	0	0
U. Oklahoma, Tulsa	274	1,816	1,289	1,368	0	143	0	0	1,224	0	0	0	1

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022										
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec	
Florida Polytechnic U.	275	689	829	1,310	0	0	0	0	0	527	0	189	483	111
SUNY, C. of Environmental Science and Forestry	276	912	1,085	1,291	1	163	295	746	77	0	0	0	0	9
Tennessee State U.	277	2,922	1,768	1,278	38	0	0	466	0	0	0	661	0	113
U. Massachusetts, Boston	278	1,206	1,266	1,218	0	24	0	0	865	10	0	0	0	319
Hampton U.	279	866	827	1,215	0	0	12	0	1,203	0	0	0	0	0
SUNY, Cobleskill	280	ne	ne	1,211	0	0	0	0	0	0	0	0	0	1,211
California State U., Chico	281	1,120	1,236	1,192	0	0	0	403	264	82	414	0	0	29
New York Institute of Technology	282	458	775	1,181	0	0	0	0	814	0	367	0	0	0
Montclair State U.	283	14	104	1,129	0	1,041	32	56	0	0	0	0	0	0
California State U., Fullerton	284	616	661	1,062	30	0	0	275	237	0	184	0	0	336
U. Ana G. Mendez, Gurabo	285	884	1,034	996	0	0	0	0	0	0	0	0	0	996
U. Colorado Anschutz Medical Campus ^e	286	na	1,204	957	0	957	0	0	0	0	0	0	0	0
U. Central Oklahoma	287	1	1	928	0	182	0	0	746	0	0	0	0	0
Oregon Institute of Technology	288	679	761	902	0	0	0	123	224	72	144	0	0	339
Manhattan C.	289	716	1,122	899	0	0	308	577	11	0	3	0	0	0
Middle Tennessee State U.	290	182	592	889	167	0	0	420	0	0	0	0	0	302
Minnesota State U., Mankato	291	1,486	996	871	0	0	0	346	26	0	95	0	0	404
U. of St. Thomas (MN)	292	976	3,212	862	0	0	0	8	316	114	214	0	0	210
U. San Diego	293	1,252	980	820	0	0	0	0	0	68	0	0	0	752
James Madison U.	294	305	174	808	0	67	0	0	0	31	0	0	0	710
U. Texas of the Permian Basin	295	217	792	797	0	0	29	0	262	0	11	0	0	495
U. of the Virgin Islands	296	902	832	790	790	0	0	0	0	0	0	0	0	0
South Carolina State U.	297	687	712	773	0	0	245	0	0	0	0	0	0	528
U. Hartford	298	1,002	963	752	725	0	0	0	0	0	27	0	0	0
Lawrence Technological U.	299	806	555	726	0	58	0	496	61	0	99	0	0	12
Tarleton State U.	300	156	166	685	0	0	0	129	0	0	299	0	0	257
California State U., San Bernardino	301	1,598	1,382	658	0	7	0	651	0	0	0	0	0	0
U. Tennessee, Health Science Center	302	648	687	640	0	640	0	0	0	0	0	0	0	0
Fort Lewis C.	303	505	605	623	51	56	18	0	0	0	0	0	0	498
Savannah State U.	304	639	588	609	0	228	183	0	0	0	0	0	0	198
Harvey Mudd C.	305	628	515	608	6	51	60	49	103	6	143	6	6	184

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022									
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec
Smith C.	306	952	688	599	28	220	28	287	10	0	7	0	19
U. Detroit Mercy	307	119	114	560	0	0	0	8	398	0	154	0	0
Western Washington U.	307	989	587	560	0	0	0	0	0	0	0	0	560
U. Texas, Tyler	309	344	537	542	0	0	89	284	84	3	82	0	0
Chapman U.	310	102	348	539	0	42	0	0	52	0	0	0	445
U. North Carolina, Wilmington	311	640	1,064	537	309	0	0	228	0	0	0	0	0
Pace U.	312	516	706	529	0	0	0	0	0	0	529	0	0
California State U., San Marcos	313	2,408	1,682	527	0	23	0	0	0	0	0	0	504
Hofstra U.	314	299	528	521	8	38	0	13	293	18	34	0	117
Western Kentucky U.	315	689	604	510	0	0	143	42	113	0	180	0	32
Arkansas State U., Jonesboro	316	371	384	508	0	0	0	309	62	0	137	0	0
Central Michigan U.	317	736	412	499	433	5	0	40	0	0	0	0	21
Alabama State U.	318	533	366	483	0	0	0	0	0	0	0	0	483
U. Wisconsin-Green Bay	319	338	327	465	0	0	0	142	197	0	126	0	0
U. West Florida	320	277	709	450	0	0	0	0	0	0	11	0	439
Union C., Schenectady	321	204	722	446	0	185	0	0	33	0	228	0	0
California State U., Bakersfield	322	1,449	839	440	0	0	0	0	100	0	0	0	340
Boston C.	323	0	50	438	0	0	0	0	0	0	0	0	438
Christopher Newport U.	324	566	656	437	437	0	0	0	0	0	0	0	0
Hope C.	325	175	277	430	0	0	0	0	0	0	430	0	0
Kettering U.	326	1,046	295	424	0	0	30	0	146	47	167	0	34
Eastern Michigan U.	327	402	427	407	0	0	8	175	23	0	72	0	129
Wellesley C.	328	633	345	395	390	0	0	0	0	0	0	0	5
California State U., Maritime Academy	329	3,202	2,603	388	0	0	0	0	0	0	34	0	354
U. Washington, Bothell	330	0	304	387	0	0	0	0	81	0	306	0	0
Lafayette C.	331	251	201	384	0	20	188	133	19	0	8	0	16
Citadel Military C. South Carolina	332	34	250	363	0	0	0	257	14	0	92	0	0
Western Carolina U.	332	371	305	363	0	35	0	207	0	0	0	0	121
U. of the Incarnate Word	334	72	186	339	0	32	0	0	0	0	307	0	0
U. New Haven	335	533	319	329	16	10	63	1	0	107	0	0	132
Central State U.	336	166	211	314	0	0	0	240	0	0	58	0	16
Utah Valley U.	337	ne	ne	310	0	0	0	19	253	0	38	0	0

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022										
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec	
U. Wisconsin-Superior	338	9	207	297	0	0	0	0	0	0	297	0	0	0
U. Wisconsin-Oshkosh	339	152 i	158	294	0	0	0	271	11	0	12	0	0	0
C. New Jersey	340	105	283	265	0	118	0	65	51	0	9	0	0	22
Sam Houston State U.	341	20	36	253	0	0	0	0	0	0	0	0	0	253
U. Washington, Tacoma	342	59	319	250	0	119	0	0	118	0	13	0	0	0
Appalachian State U.	343	0	0	237	0	0	0	0	0	0	0	0	0	237
U. South Carolina, Aiken	344	1,331	1,322	231	0	0	0	0	0	0	0	0	0	231
U. Southern Maine	345	27	159	228	163	0	0	0	0	20	0	45	0	0
Northwest Indian C.	346	164 i	196 i	227	227	0	0	0	0	0	0	0	0	0
Alcorn State U.	347	133	181	222 i	0 i	0 i	0 i	0 i	0 i	0 i	194 i	0 i	0 i	28 i
Florida Gulf Coast U.	347	250	145	222	64	67	0	91	0	0	0	0	0	0
Roger Williams U.	349	30	32	221	0	0	0	109	0	0	25	0	0	87
Swarthmore C.	350	367	174	215	0	0	0	18	116	0	81	0	0	0
Delaware State U.	351	316 i	308	207	0	0	137	0	70	0	0	0	0	0
U. Wisconsin-Platteville	352	145 i	171 i	204 i	0 i	0 i	0 i	19 i	39 i	13 i	73 i	0 i	0 i	60 i
U. Virginia's C. Wise	353	ne	0	197	0	197	0	0	0	0	0	0	0	0
CUNY, Hunter C.	354	0	0	191	0	0	0	0	0	0	0	0	0	191
Central Connecticut State U.	355	120	100	185	90	0	8	43	0	6	21	0	0	17
Coastal Carolina U.	356	0	68	175	0	159	0	0	0	0	0	0	0	16
Purdue U., Fort Wayne	357	443	465	169	0	0	0	65	0	0	60	0	0	44
Pennsylvania State U., Harrisburg	358	74	386	160	0	33	0	7	12	0	108	0	0	0
C. Charleston	359	67	72	158	0	0	158	0	0	0	0	0	0	0
Robert Morris U.	360	ne	ne	144 i	0 i	57 i	0 i	0 i	0 i	17 i	48 i	22 i	0 i	0 i
Seattle U.	361	140	62	137	0	0	0	24	80	0	5	0	0	28
U. of the Pacific	362	89	228	135	0	135	0	0	0	0	0	0	0	0
California State U., East Bay	363	132	306	133	0	0	0	0	133	0	0	0	0	0
Calvin U.	364	84 i	107 i	129 i	0 i	10 i	0 i	2 i	0 i	0 i	36 i	0 i	0 i	81 i
Fayetteville State U.	365	0	288	127	0	0	0	0	0	0	0	0	0	127
Texas A&M International U.	365	71	241	127	0	5	0	0	0	0	0	0	0	122
Illinois State U.	367	0	0	125	0	0	0	0	0	125	0	0	0	0
Virginia Military Institute	368	ne	ne	119	38	0	0	13	2	0	66	0	0	0
Grand Valley State U.	369	236	118	117	0	0	0	0	3	0	2	0	0	112

TABLE 56

Higher education R&D expenditures in engineering subfields, ranked by all FY 2022 engineering R&D: FYs 2020–22 and by subfield for FY 2022

(Dollars in thousands)

Institution	Rank	2020	2021	2022										
				All engineering	Aerospace, aeronautical, and astronautical engineering	Bioengineering and biomedical engineering	Chemical engineering	Civil engineering	Electrical, electronic, and communications engineering	Industrial and manufacturing engineering	Mechanical engineering	Metallurgical and materials engineering	Engineering nec	
Sonoma State U.	402	1	1	17	8	0	0	0	0	9	0	0	0	0
Hawaii Pacific U.	403	13	13	14	0	0	0	0	0	0	14	0	0	0
Azusa Pacific U.	404	31	5	10	0	0	0	0	0	0	0	10	0	0
Fisk U.	404	0	0	10	0	10	0	0	0	0	0	0	0	0
Northwestern State U. Louisiana	406	5	0	8	0	0	0	0	0	0	0	0	0	8
Dillard U.	407	0	0	7	7	0	0	0	0	0	0	0	0	0
Northeastern Illinois U.	407	0	0	7	0	0	0	0	0	0	0	0	0	7
U. Guam	409	0	0	6	0	0	0	0	0	6	0	0	0	0
California State U., Channel Islands	410	0	79	4	0	0	0	0	0	0	0	4	0	0
Marymount U.	411	ne	0	3	0	3	0	0	0	0	0	0	0	0
Northeast Ohio Medical U.	411	0	0	3	0	3	0	0	0	0	0	0	0	0
Salisbury U.	411	0	3	3	0	0	0	0	0	0	0	3	0	0
U. San Francisco	411	6	3	3	0	0	0	2	0	0	0	0	0	1
Biola U.	415	2	2	2	2	0	0	0	0	0	0	0	0	0
U. Puget Sound	416	0	ne	1	1	0	0	0	0	0	0	0	0	0
All other surveyed institutions	-	11,058	2,080	0	0	0	0	0	0	0	0	0	0	0

i = imputed. na = not applicable; institution did not exist or did not exist as a separate entity. ne = not eligible; institution did not meet the criteria for inclusion.

nec = not elsewhere classified.

^a Johns Hopkins University includes the Applied Physics Laboratory (APL), with \$1,193,795 thousand imputed for total R&D expenditures in engineering in FY 2022. Total expenditures by field for Johns Hopkins University are flagged as imputed because APL was unable to distribute a portion of institutionally funded R&D by field.

^b The University of Maryland includes expenditures from the University of Maryland, Baltimore and University of Maryland, College Park campuses. In FY 2019, the two campuses began reporting as one research unit to reflect their new strategic partnership. This relationship was codified through the University of Maryland Strategic Partnership Act passed by the Maryland General Assembly in 2016. Prior to FY 2019, both campuses reported to the survey as separate institutions.

^c The University of Tennessee, Knoxville includes expenditures from the University of Tennessee Institute of Agriculture. Due to a reorganization within the University of Tennessee system, the Institute of Agriculture now falls under the leadership of the University of Tennessee, Knoxville chancellor. Prior to FY 2020, the University of Tennessee, Knoxville, Institute of Agriculture reported to the survey separately.

^d The University of South Florida includes expenditures from the University of South Florida, Tampa; University of South Florida, Saint Petersburg; and University of South Florida, Sarasota-Manatee campuses. Due to the consolidation of the three campuses that occurred on 1 July 2020, University of South Florida, Saint Petersburg and University of South Florida, Sarasota-Manatee began reporting with the University of South Florida, Tampa as the University of South Florida. Prior to FY 2021, all three campuses reported to the survey as separate institutions.

^e The University of Colorado Denver and University of Colorado Anschutz Medical Center report to the survey separately. Prior to FY 2021, expenditures were reported together under University of Colorado Denver and Anschutz Medical Campus.

Note(s):

Institutions reporting zero expenditures in ranked total for FY 2022 are not listed in this table. Tied institutions are ranked alphabetically. Ranked institutions are geographically separate campuses headed by a campus-level president or chancellor. Some campuses are part of large, multi-campus universities; some are part of state university systems. For a complete list of campuses that belong to a larger university or system and their aggregate R&D expenditures, see table 6.

Source(s):

National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.