

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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	-	6,828,226	7,092,526	7,667,373	820,512	879,674	498,380	620,862	2,049,254	366,535	1,055,725	483,774	892,657
Johns Hopkins U. <sup>a</sup>	1	1,030,067	1,038,797	1,100,587	117,726	45,276	18,543	17,403	520,210	94,033	199,793	21,928	65,675
Georgia Institute of Technology	2	426,068	466,780	506,061	143,707	23,024	15,036	9,979	202,108	62,172	30,891	14,924	4,220
Pennsylvania State U., University Park and Hershey Medical Center	3	233,587	244,868	258,324	15,086	10,225	13,545	2,771	86,178	26,696	74,650	29,173	0
Massachusetts Institute of Technology	4	221,898	220,744	230,312	16,002	76,740	15,457	3,632	38,762	0	18,195	15,946	45,578
Utah State U.	5	100,965	124,950	183,794	175,166	341	0	2,562	2,500	0	2,133	0	1,092
U. Michigan, Ann Arbor	6	180,969	178,020	175,137	10,434	15,218	6,259	11,110	50,284	3,044	23,748	8,048	46,992
U. Texas, Austin	7	148,099	154,761	160,506	11,206	7,828	12,147	8,918	49,011	279	40,091	16,828	14,198
U. Dayton	8	109,805	127,079	146,841	9,753	0	9,010	4,288	6,923	27,233	4,013	72,816	12,805
U. Illinois, Urbana-Champaign	9	122,848	126,826	130,075	8,322	7,601	10,526	12,546	43,278	0	19,914	11,520	16,368
Purdue U., West Lafayette	10	105,798	105,657	111,292	14,283	5,974	8,601	5,938	24,966	5,438	15,425	9,769	20,898
U. Washington, Seattle	11	98,022	103,714	108,560	7,087	19,498	6,200	14,018	25,978	1,238	9,090	4,186	21,265
Virginia Polytechnic Institute and State U.	12	84,497	98,261	104,138	8,239	11,108	2,136	8,098	29,778	7,712	14,827	7,178	15,062
U. Colorado Boulder	13	85,054	86,829	92,099	42,269	9,435	8,543	10,754	9,646	0	8,076	947	2,429
North Carolina State U.	14	83,799	84,304	91,264	277	6,037	11,518	5,641	27,532	1,874	7,880	14,587	15,918
U. California, San Diego	15	67,172	73,246	88,846	0	33,201	0	0	37,286	0	9,667	0	8,692

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. Maryland <sup>b</sup>	16	na	na	86,168	11,492	12,174	4,537	11,381	14,035	0	9,160	9,778	13,611
Ohio State U.	17	75,799	84,724	85,547	194	2,561	6,329	2,250	18,135	3,510	29,705	16,525	6,338
U. California, Berkeley	18	73,820	75,316	81,194	0	0	3,413	4,274	63,110	0	0	0	10,397
Stanford U.	19	86,833	91,628	79,988	8,538	17,937	6,698	8,930	13,205	0	17,682	3,644	3,354
Texas A&M U., College Station and Health Science Center	20	62,158	70,000	77,456	8,027	12,212	6,183	16,318	8,980	2,207	5,624	6,557	11,348
Arizona State U.	21	60,045	61,096	72,655	0	8,785	3,151	10,846	31,355	1,035	8,222	2,305	6,956
Duke U.	22	63,439	64,601	72,560	0	27,783	0	3,649	28,827	0	6,041	4,091	2,169
Woods Hole Oceanographic Institution	23	52,263	52,285	72,016	0	0	0	0	0	0	0	0	72,016
U. Minnesota, Twin Cities	24	63,781	67,776	71,695	9,227	16,647	12,842	5,953	13,274	666	9,433	3,653	0
U. Wisconsin-Madison	25	87,881	63,684	68,617	0	7,339	6,464	4,914	9,953	2,001	6,174	5,946	25,826
U. Tennessee, Knoxville	26	61,438	62,428	67,165	12,713	1,674	3,754	7,050	14,633	11,821	0	6,192	9,328
Cornell U.	27	51,604	55,763	63,696	865	11,618	6,579	5,428	11,498	2,621	12,439	10,666	1,982
Northeastern U.	28	36,564	48,634	61,116	0	4,746	3,279	7,740	22,858	9,138	11,496	0	1,859
U. Florida	29	49,985	49,486	60,844	3,799	13,433	3,173	416	17,509	832	7,053	6,915	7,714
Columbia U. in the City of New York	30	57,636	61,834	59,672	2,541	15,619	4,754	1,610	3,199	772	3,370	0	27,807
New Jersey Institute of Technology	31	37,648	41,611	53,994	0	4,857	3,104	14,996	1,753	0	474	0	28,810
Vanderbilt U. and Vanderbilt U. Medical Center	32	44,770	47,036	52,742	0	10,259	5,706	8,964	21,503	0	4,928	0	1,382
U. Southern California	33	39,663	46,803	52,737	1,017	7,010	1,903	3,497	29,629	1,874	4,960	0	2,847

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. California, Los Angeles	34	44,469	50,048	52,488	0	4,798	6,457	2,659	21,690	0	8,335	4,229	4,320
SUNY, U. Buffalo	35	54,253	53,279	50,811	11,801	5,009	7,138	4,743	2,768	7,662	10,544	0	1,146
Carnegie Mellon U.	36	55,895	53,672	49,854	943	5,791	5,208	2,295	15,871	0	8,878	4,941	5,927
U. Delaware	37	31,785	37,656	47,975	0	3,485	26,055	6,828	6,067	0	5,539	0	1
Northwestern U.	38	48,089	48,724	47,948	0	8,256	9,065	2,223	9,057	2,131	3,991	10,752	2,473
Harvard U.	39	62,792	51,742	45,835	0	28,223	0	1,126	6,584	0	567	9,335	0
Boston U.	40	36,082	42,903	45,017	1,354	18,196	0	0	12,283	9	6,328	0	6,847
U. Virginia, Charlottesville	41	30,045	38,600	43,878	0	10,673	1,601	5,412	11,668	0	6,396	7,077	1,051
Iowa State U.	42	40,035	43,677	43,241	2,666	0	4,207	10,797	11,967	1,907	4,562	0	7,135
Princeton U.	43	47,262	42,147	41,480	2,247	3,799	2,071	3,377	10,064	1,818	5,436	9,232	3,436
U. Notre Dame	44	37,603	36,062	40,258	11,816	0	4,380	9,682	13,774	0	0	606	0
U. Pennsylvania	45	35,965	36,750	39,422	0	12,518	5,619	0	9,224	0	12,038	0	23
Clemson U.	46	30,795	33,781	39,395	0	6,968	2,936	8,804	4,997	2,343	4,144	8,203	1,000
Florida State U.	47	31,794	39,060	39,126	1,176	3,604	2,492	2,310	11,813	1,217	14,781	1,733	0
Rice U.	48	36,165	34,520	37,781	0	14,464	2,613	5,431	9,950	0	1,733	3,452	138
U. Alabama, Birmingham	49	36,558	38,086	37,724	8,369	5,508	3,525	638	3,029	0	4,284	11,903	468
U. California, Davis	50	34,594	35,375	37,549	0	14,459	1,982	7,703	9,917	0	907	0	2,581
SUNY, Polytechnic Institute	51	38,545	39,897	36,816	0	0	0	0	0	0	59	0	36,757
Oregon State U.	52	33,223	34,437	36,090	29	1,509	3,210	6,270	8,609	2,176	6,431	285	7,571
Rutgers, State U. New Jersey, New Brunswick	53	38,224	35,299	35,917	0	3,396	2,531	160	4,551	351	5,246	2,599	17,083
U. Arizona	54	29,669	30,716	35,880	1,229	2,939	2,657	1,063	20,328	1,752	2,108	1,723	2,081
Mississippi State U.	55	26,419	24,187	33,935	5,819	650	3,138	3,950	2,887	2,233	11,172	1,033	3,053

TABLE 56  
**Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019**  
(Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. California, Santa Barbara	56	36,323	35,964	33,589	0	9,078	4,058	0	13,908	0	5,128	914	503
U. Central Florida	57	23,499	33,002	33,413	12,553	0	0	1,434	5,074	3,208	4,795	2,236	4,113
U. Utah	58	30,543	25,847	32,365	0	6,647	1,554	1,994	6,726	0	7,227	3,154	5,063
U. Alabama, Huntsville	59	22,595	24,961	31,957	20,480	0	362	1,905	4,026	3,139	1,517	308	220
U. Pittsburgh, Pittsburgh	60	27,229	27,599	31,347	0	9,458	7,409	2,033	4,282	1,432	6,733	0	0
George Mason U.	61	8,870	13,550	31,276	98	2,058	0	3,486	2,568	22,526	230	0	310
Colorado State U., Fort Collins	62	28,929	29,104	31,135	0	512	2,290	11,796	8,370	0	7,922	0	245
Colorado School of Mines	63	20,764	23,277	31,066	160	1,242	3,955	3,833	551	0	4,630	11,826	4,869
U. New Mexico	64	27,345	27,521	30,449	5,050	755	3,257	3,320	8,984	420	1,582	736	6,345
Michigan State U.	65	27,668	27,900	29,787	0	2,971	6,156	3,236	9,671	0	5,024	0	2,729
Case Western Reserve U.	66	31,395	33,187	29,335	0	14,309	5,003	695	3,736	0	5,509	0	83
U. Kentucky	67	23,967	25,067	28,999	2,123	733	3,875	6,283	743	39	1,432	3,253	10,518
U. North Dakota	68	20,059	30,506	28,684	0	0	437	25,091	236	0	57	143	2,720
U.S. Air Force Academy	69	31,629	26,453	28,489	2,830	0	0	50	140	0	25,090	0	379
Rensselaer Polytechnic Institute	70	29,363	28,136	28,307	0	3,604	3,049	1,657	5,608	572	11,090	2,249	478
U. Massachusetts, Amherst	71	27,264	27,568	26,896	0	277	10,932	4,636	6,373	0	4,202	0	476
U. Connecticut	72	22,275	22,920	26,390	0	2,458	2,818	8,245	5,707	0	2,693	3,756	713
Tufts U.	73	13,858	22,470	26,143	225	16,838	3,155	1,737	2,273	0	1,788	0	127
Wright State U.	74	20,850	28,136	25,868	0	15,119	0	0	6,811	1,267	1,051	0	1,620
Auburn U., Auburn	75	23,274	21,497	25,694	1,411	194	1,700	2,039	3,102	2,288	6,268	281	8,411

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. California, Santa Cruz	76	21,460	18,845	25,568	0	0	0	0	2,087	0	0	0	23,481
Mercer U.	77	18,153	17,021	25,358	7,515	0	0	12	165	0	11,748	5,918	0
Montana State U., Bozeman	78	17,969	18,950	25,349	0	2,179	791	5,035	1,638	0	1,521	0	14,185
California Institute of Technology	79	28,501	22,700	24,690	5,250	222	5,203	9,074	1,628	0	368	0	2,945
Yale U.	80	19,546	23,606	24,674	75	9,718	2,329	53	7,324	0	5,171	0	4
U. California, Irvine	81	26,637	26,914	24,021	0	6,684	5,191	1,967	5,392	0	4,505	0	282
U. Houston	82	19,323	21,593	23,838	1,783	6,420	4,179	4,022	2,686	0	2,618	972	1,158
Wichita State U.	83	17,734	13,677	22,954	21,745	0	0	0	301	203	547	0	158
U. South Florida, Tampa	84	24,425	24,747	22,743	0	1,515	1,192	15,960	1,768	170	2,125	0	13
U. Texas, Arlington	85	17,441	20,698	22,053	1,790	2,547	0	1,866	4,129	8,027	1,790	0	1,904
Michigan Technological U.	86	16,068	19,638	21,801	0	1,196	966	1,096	6,378	0	10,761	1,265	139
U. Iowa	87	23,137	22,494	21,473	0	48	252	10,050	2,945	450	638	0	7,090
Dartmouth C. and Dartmouth Hitchcock Medical Center	88	20,668	21,403	21,279	0	8,751	3,376	421	2,306	0	6,425	0	0
Drexel U.	89	20,342	21,222	20,443	0	3,381	4,661	2,194	2,713	0	2,754	3,851	889
U. Nebraska, Lincoln	90	18,514	18,358	20,375	0	2,599	480	8,411	4,240	0	2,279	2,314	52
Naval Postgraduate School	91	16,272	17,019	20,124	6,037	7	0	12	3,793	19	930	570	8,756
Florida International U.	92	15,502	17,220	19,899	0	3,392	0	7,443	6,032	0	407	1,082	1,543
West Virginia U.	93	18,587	18,904	19,835	17	0	2,237	2,190	3,057	1,458	8,237	284	2,355
U. Texas, Dallas	94	14,837	15,884	19,512	0	9,776	0	0	4,079	215	2,850	1,602	990

TABLE 56  
**Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019**  
(Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. North Carolina, Chapel Hill	95	18,086	19,456	19,251	0	6,384	0	9,188	0	3,679	0	0	0
Stevens Institute of Technology	96	17,298	16,994	18,945	126	1,187	1,125	86	1,172	0	1,171	87	13,991
Washington State U.	97	19,209	19,156	18,943	0	755	2,386	3,164	3,975	0	2,145	3,687	2,831
Washington U., Saint Louis	98	21,173	20,596	18,895	0	6,845	5,326	896	3,696	0	0	1,485	647
Missouri U. of Science and Technology	99	15,125	16,249	17,711	1,030	26	947	3,616	3,408	632	3,636	3,588	828
Brown U.	100	17,904	20,893	17,289	0	4,847	2,281	0	1,920	0	2,490	3,299	2,452
U. Chicago	101	10,546	12,919	17,275	0	0	0	0	0	0	0	0	17,275
New Mexico State U.	102	18,248	14,388	17,202	6,344	0	1,779	2,165	1,849	23	713	0	4,329
CUNY, City C.	103	15,021	17,753	16,998	0	4,519	707	6,935	1,624	0	2,533	0	680
U. Alabama, Tuscaloosa	104	8,986	10,874	16,390	1,293	117	1,249	1,971	7,626	0	2,063	2,071	0
U. California, Riverside	105	15,932	16,293	16,217	0	1,686	4,957	2,640	3,594	0	3,122	218	0
U. South Carolina, Columbia	106	16,166	15,596	16,076	0	0	3,722	1,604	4,049	0	6,701	0	0
SUNY, Stony Brook U.	107	15,587	15,013	15,637	0	3,762	0	392	3,322	0	2,643	4,392	1,126
Lehigh U.	108	16,202	16,053	15,374	0	75	2,082	3,310	3,548	1,081	3,364	1,914	0
New York U.	109	11,912	13,790	14,986	0	0	1,583	745	7,025	0	2,193	0	3,440
U. Illinois, Chicago	110	11,897	13,558	14,707	0	4,814	927	2,043	2,209	0	4,714	0	0
U. Arkansas, Fayetteville	111	14,228	15,886	14,659	0	1,818	1,879	2,265	6,363	713	1,376	0	245
George Washington U.	112	10,791	10,987	14,597	1,489	3,343	0	2,332	3,886	1,159	1,536	0	852
U. Kansas	113	11,002	10,149	14,177	569	4,139	1,519	1,441	4,792	0	503	0	1,214

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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.	114	9,809	10,888	14,017	0	0	3,154	2,805	5,629	532	1,583	0	314
Air Force Institute of Technology	115	18,736	16,075	14,015	2,488	0	0	151	4,677	6,339	0	360	0
U. Oklahoma, Norman and Health Science Center	116	12,372	12,084	13,783	1,793	426	638	2,373	5,723	887	0	0	1,943
U. Maine	117	7,708	10,014	13,614	0	0	3,294	238	947	0	480	8,619	36
U. Missouri, Columbia	118	9,308	11,057	13,466	0	1,773	803	3,059	4,152	191	2,278	99	1,111
U. Massachusetts, Lowell	119	7,695	11,828	13,443	0	2,720	3,440	413	2,976	0	2,806	0	1,088
New Mexico Institute of Mining and Technology	120	10,048	12,044	13,004	262	0	4,293	264	196	0	1,198	85	6,706
Kansas State U.	121	8,976	9,819	12,503	144	0	2,478	1,421	1,506	535	5,314	0	1,105
U. New Hampshire	122	10,218	9,291	12,286	0	0	1,219	6,470	491	0	3,970	136	0
Illinois Institute of Technology	123	9,160	10,861	12,061	1,006	6,283	148	387	2,798	320	412	212	495
U. Cincinnati	124	11,038	10,598	12,015	1,191	471	652	3,162	2,479	0	2,688	0	1,372
U. Texas, El Paso	125	14,621	15,228	11,995	0	855	0	2,289	2,254	994	4,537	178	888
Oklahoma State U., Stillwater	126	15,538	11,982	11,962	4,644	0	696	2,748	719	347	0	170	2,638
U. Rochester	127	7,098	9,658	11,814	0	5,618	710	0	3,812	0	1,674	0	0
Worcester Polytechnic Institute	128	12,191	10,668	11,735	0	1,968	1,122	146	1,011	0	7,153	0	335
Louisiana State U., Baton Rouge	129	9,822	11,227	11,587	0	0	1,716	2,379	1,112	54	2,462	17	3,847
Cleveland State U.	130	9,469	8,971	11,036	0	9,191	576	56	458	0	739	0	16

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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. Hawaii, Manoa	131	16,702	15,744	10,777	0	240	0	1,575	6,628	0	1,506	0	828
Oregon Health and Science U.	132	8,665	8,694	10,649	0	10,649	0	0	0	0	0	0	0
North Carolina Agricultural and Technical State U.	133	10,538	10,933	9,713	0	145	0	1,382	1,702	1,212	2,417	0	2,855
Virginia Commonwealth U.	134	6,870	7,362	9,482	0	2,645	2,864	0	1,457	0	2,516	0	0
Brigham Young U., Provo	135	8,940	8,727	9,188	0	0	1,178	773	3,554	14	3,284	0	385
U. Alaska, Fairbanks	136	5,140	7,642	9,090	784	0	0	2,626	3,908	0	132	0	1,640
U. Puerto Rico, Mayaguez	137	6,211	7,275	8,892	0	0	2,490	1,226	1,568	0	581	1,460	1,567
U. Nevada, Reno	138	8,102	7,474	8,785	51	1,479	508	4,269	307	0	876	1,178	117
U. Idaho	139	7,876	7,521	8,525	912	478	285	2,373	745	0	360	548	2,824
U. Louisville	140	5,943	6,949	8,248	0	1,603	951	69	2,797	258	749	60	1,761
Old Dominion U.	141	10,931	7,601	8,179	1,509	0	0	1,270	4,353	425	622	0	0
Rochester Institute of Technology	142	9,880	8,298	8,136	0	975	575	16	3,199	155	807	0	2,409
U. North Carolina, Charlotte	143	5,716	6,776	7,845	0	0	0	1,952	1,656	0	2,650	0	1,587
Syracuse U.	144	8,408	9,100	7,616	507	1,731	0	632	3,458	0	1,288	0	0
South Dakota School of Mines and Technology	145	9,199	8,581	7,570	0	0	2,095	958	363	1	326	1,465	2,362
U. Rhode Island	146	4,352	5,282	7,329	0	223	191	1,321	1,340	0	823	0	3,431
U.S. Naval Academy	147	7,335	7,667	7,311	768	0	0	0	1,009	0	2,113	0	3,421



TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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 Atlantic U.	148	4,384	6,467	7,007	52	0	27	1,586	97	0	0	0	5,245
Wayne State U.	149	6,063	6,264	6,640	0	1,530	1,880	1,072	824	202	883	0	249
U. Akron	150	11,311	8,155	6,447	0	647	2,213	1,168	861	0	1,558	0	0
Boise State U.	151	4,824	6,297	6,377	20	519	240	473	1,730	10	73	2,653	659
SUNY, Binghamton U.	152	4,936	6,470	6,356	0	760	0	0	1,409	2,517	1,544	0	126
U. Georgia	153	5,393	4,964	6,292	0	515	1,700	2,644	1,433	0	0	0	0
Embry-Riddle Aeronautical U.	154	9,113	10,728	6,291	5,311	0	0	0	286	0	338	0	356
Emory U.	155	2,910	2,925	6,256	0	6,256	0	0	0	0	0	0	0
U. Nevada, Las Vegas	156	6,582	7,839	6,161	14	67	0	2,068	1,061	0	2,860	0	91
U. Wyoming	157	8,326	4,369	6,075	0	0	2,127	1,286	1,229	0	1,433	0	0
U. Toledo	158	5,177	5,781	6,062	0	186	928	364	311	0	2,962	0	1,311
Howard U.	159	7,212	7,260	6,046	0	0	199	970	3,074	0	1,054	210	539
Medical C. Wisconsin	160	0	4,864	6,029	0	6,029	0	0	0	0	0	0	0
U. North Texas, Denton	161	5,943	7,918	5,962	0	391	0	0	375	0	265	4,768	163
U. Texas, San Antonio	162	6,534	5,947	5,949	0	908	0	1,366	855	274	589	0	1,957
Clarkson U.	163	4,371	5,553	5,883	0	0	1,061	1,957	1,939	0	925	0	1
U. Missouri, Kansas City	164	1,011	2,105	5,349	0	0	0	164	4,877	0	308	0	0
Ohio U.	165	6,144	5,512	5,252	2,244	0	1,139	737	43	0	310	86	693
U. Vermont	166	7,027	5,683	5,190	1,165	288	0	1,199	1,435	0	1,055	0	48
Southern Methodist U.	167	3,053	3,220	5,145	0	0	0	710	2,353	0	2,020	0	62
Portland State U.	168	4,107	4,531	4,887	191	0	0	2,126	1,344	0	972	138	116
Indiana U., Bloomington	169	4,043	3,649	4,864	0	0	0	0	0	4,864	0	0	0



TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
North Dakota State U.	188	2,600	2,750	3,254	0	0	0	599	755	190	915	0	795
Prairie View A&M U.	189	2,151	2,641	3,183	0	0	68	166	2,424	0	111	0	414
Missouri State U.	190	1,120	2,200	3,176	0	0	0	0	0	0	0	3,176	0
Marquette U.	191	2,566	2,424	3,033	0	1,970	0	120	640	0	303	0	0
U. Tennessee, Knoxville, Institute of Agriculture	192	2,840	2,946	2,937	0	0	0	0	0	0	0	0	2,937
South Dakota State U.	193	3,238	3,283	2,925	0	0	0	595	498	0	223	0	1,609
Jackson State U.	194	3,546	2,806	2,908	0	0	0	1,165	1,683	0	0	0	60
U. Massachusetts, Dartmouth	195	2,598	2,751	2,696	0	624	0	798	692	0	582	0	0
Youngstown State U.	196	2,680	3,333	2,667	0	0	0	71	171	171	2,254	0	0
U. Wisconsin-Milwaukee	197	2,229	2,373	2,537	0	2	0	352	1,088	30	1,062	0	3
U. Miami	198	3,242	2,658	2,532	0	768	0	408	414	0	536	0	406
U. Memphis	199	2,503	3,063	2,489	0	905	0	976	152	0	212	0	244
Tennessee Technological U.	200	2,451	2,539	2,402	0	0	115	372	714	330	845	0	26
Florida Institute of Technology	201	2,379	2,306	2,391	937	116	0	189	153	0	379	0	617
California State U., Long Beach	202	1,044	3,008	2,109	166	375	185	824	278	81	155	0	45
Texas A&M U.-Corpus Christi	203	1,260	2,121	2,020	1,096	0	0	96	30	0	89	0	709
Catholic U. of America	204	1,549	1,610	1,961	0	440	0	136	706	0	679	0	0

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
Western Michigan U. and Homer Stryker M.D. School of Medicine	205	2,715	2,590	1,945	355	88	23	940	432	53	54	0	0
Norfolk State U.	206	1,791	1,501	1,940	0	0	0	0	22	0	0	0	1,918
U. Denver	207	1,524	1,558	1,879	0	401	0	205	884	0	0	389	0
Kent State U.	208	920	1,183	1,860	141	509	432	0	234	0	87	0	457
U. Nebraska, central administration	209	ne	2,800	1,687	0	148	0	218	976	0	345	0	0
Alabama A&M U.	210	2,890	2,236	1,581	0	0	0	341	812	0	428	0	0
California Polytechnic State U., San Luis Obispo	211	2,707	2,136	1,566	187	6	0	748	1	165	340	0	119
Villanova U.	212	1,571	1,535	1,543	0	0	358	315	661	0	209	0	0
U. Tulsa	213	1,760	1,647	1,520	0	0	288	0	239	0	993	0	0
U. South Alabama	214	1,025	1,098	1,467	0	0	519	301	425	0	137	0	85
Alfred U.	215	854	1,374	1,459	0	0	0	0	0	0	0	1,459	0
Southern U. and A&M C., Baton Rouge	216	730	1,342	1,454	0	0	0	42	24	0	1,388	0	0
California State U., Bakersfield	217	280	928	1,453	0	0	0	0	95	0	0	0	1,358
U. South Carolina, Aiken	217	1,404	1,490	1,453	0	0	0	0	0	0	0	0	1,453
Baylor U.	219	1,297	1,189	1,440	155	240	455	0	351	0	239	0	0
CUNY, Advanced Science Research Center	220	631	1,274	1,289	0	278	25	986	0	0	0	0	0
U. South Dakota	221	586	663	1,280	0	1,280	0	0	0	0	0	0	0

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019										
				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. Arkansas, Little Rock	222	1,206	1,060	1,224	1,070	0	40	0	0	0	0	110	0	4
Delaware State U.	223	760	1,500	1,218	1,218	0	0	0	0	0	0	0	0	0
U. Tennessee, Chattanooga	224	425	589	1,216	0	0	0	223	311	0	0	0	0	682
Idaho State U.	225	2,575	1,815	1,203	0	0	0	0	0	0	0	162	0	1,041
Texas A&M U.-Kingsville	226	1,261	964	1,187	0	0	0	42	100	0	0	854	0	191
Saint Louis U.	227	280	486	1,176	273	405	0	498	0	0	0	0	0	0
U. Texas Rio Grande Valley	228	3,283	2,798	1,134	0	134	0	60	0	0	0	141	0	799
U. Michigan, Dearborn	229	1,509	844	1,129	0	0	0	0	655	86	0	388	0	0
Northern Arizona U.	230	763	1,043	1,106	0	524	0	92	203	0	0	275	0	12
Hampton U.	231	1,730	1,296	1,049	60	0	154	0	835	0	0	0	0	0
San Jose State U.	232	569	699	1,029	0	0	261	0	474	164	0	42	0	88
Polytechnic U. Puerto Rico	233	ne	ne	1,021	0	0	0	489	0	0	0	0	0	532
U. Oklahoma, Tulsa	234	477	667	919	0	0	0	0	919	0	0	0	0	0
CUNY, system office	235	0	1,419	912	0	0	0	0	0	0	0	0	0	912
Tennessee State U.	236	1,473	1,203	824	0	0	0	200	338	0	0	286	0	0
California State U., San Marcos	237	306	344	797	0	0	0	0	0	0	0	0	0	797
U. Hartford	238	957	42	791	0	0	0	0	0	0	0	791	0	0
North Carolina Central U.	239	0	0	789	0	0	0	0	0	0	0	0	0	789
Morehead State U.	240	1,527	1,306	754	723	0	0	0	0	0	31	0	0	0

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
California State Polytechnic U., Pomona	241	479	751	728	163	0	68	440	0	0	57	0	0
Oakland U.	242	1,040	1,076	720	0	0	0	0	299	0	421	0	0
U. of the District of Columbia	243	1,311	721	708	0	0	0	533	0	0	175	0	0
Fort Lewis C.	244	ne	ne	702	30	0	60	0	0	0	0	200	412
New York Institute of Technology	245	315	422	697	0	213	0	0	413	0	71	0	0
Milwaukee School of Engineering	246	340	631	695	0	161	0	0	0	0	83	0	451
California State U., Los Angeles	247	414	642	688	0	0	0	260	341	0	75	0	12
U. Nebraska, Omaha	248	692	398	683	590	38	0	0	55	0	0	0	0
South Carolina State U.	249	199	208	662	0	0	210	0	0	0	0	0	452
U. Colorado Colorado Springs	250	819	656	649	0	0	0	0	80	0	500	0	69
U. San Diego	251	503	756	633	0	0	0	0	0	0	30	0	603
Texas State U.	252	1,832	1,066	623	0	2	0	0	0	0	0	112	509
California State U., Maritime Academy	253	206	550	617	0	0	89	0	0	0	0	0	528
California State U., Northridge	254	899	700	604	0	17	0	114	97	0	272	67	37
Christopher Newport U.	255	332	536	575	514	61	0	0	0	0	0	0	0
U. Ana G. Mendez, Gurabo	255	4	0	575	0	0	0	0	0	0	0	0	575
U. Alaska, Anchorage	257	252	226	562	0	0	0	254	64	0	0	0	244

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
Bucknell U.	258	585	561	533	0	79	66	77	58	0	135	0	118
U. Massachusetts, Boston	258	477	609	533	0	0	0	0	533	0	0	0	0
Savannah State U.	260	302	429	526	0	0	391	0	0	0	0	0	135
SUNY, U. Albany	261	24	74	512	0	0	0	0	512	0	0	0	0
Hofstra U.	262	957	717	506	0	0	0	0	0	0	0	0	506
U. Oregon	263	0	0	505	0	505	0	0	0	0	0	0	0
Marshall U.	264	451	271	502	0	1	0	498	0	0	0	3	0
U. New Haven	265	447	557	485	49	0	1	131	0	248	56	0	0
U. North Carolina, Wilmington	266	222	531	484	0	0	0	0	484	0	0	0	0
West Texas A&M U.	267	388	534	477	0	0	0	3	5	23	0	0	446
East Carolina U.	268	182	267	475	0	0	0	209	154	0	0	0	112
Southern Illinois U., Edwardsville	268	1,425	611	475	21	0	0	110	88	0	97	0	159
Smith C.	270	588	477	463	0	166	0	191	14	0	5	0	87
CUNY, New York City C. of Technology	271	ne	579	442	0	0	0	129	0	313	0	0	0
Lamar U.	271	782	1,012	442	0	0	236	2	42	162	0	0	0
Harvey Mudd C.	273	399	340	440	0	37	10	200	37	0	65	10	81
California State U., Fresno	274	778	758	419	0	0	0	116	277	26	0	0	0
U. Texas Medical Branch	275	726	1,093	411	0	0	411	0	0	0	0	0	0
Pennsylvania State U., Behrend	276	225	277	408	0	91	0	45	91	0	90	91	0
Pace U.	277	664	395	404	0	0	0	0	0	0	404	0	0
Southern Illinois U., Carbondale	278	674	386	392	0	0	10	7	233	0	129	9	4

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
Purdue U., Northwest	279	1,459	675	376	0	0	0	4	86	0	286	0	0
Xavier U. Louisiana	279	152	241	376	0	0	0	0	0	0	0	0	376
San Francisco State U.	281	559	486	371	0	95	0	65	211	0	0	0	0
Miami U.	282	825	281	361	0	0	142	0	206	0	13	0	0
U. North Florida	283	581	439	360	0	0	0	147	47	0	0	0	166
U. New Orleans	284	524	392	344	0	0	0	0	0	0	179	0	165
Central State U.	285	112	100	340	0	0	0	77	0	250	0	0	13
Western Washington U.	286	586	535	336	0	0	0	0	0	0	2	0	334
Alcorn State U.	287	620	496	330	0	0	0	0	0	0	159	0	171
Western Illinois U.	288	444	530	321	0	0	0	0	0	0	321	0	0
U. Minnesota, Duluth	289	148	199	319	0	0	0	26	32	261	0	0	0
California State U., Fullerton	290	470	352	288	0	0	0	43	42	0	118	0	85
Florida Polytechnic U.	291	ne	ne	283	0	0	0	0	1	0	135	147	0
Maine Maritime Academy	292	1,370	773	282	0	3	39	0	0	0	0	0	240
Western Carolina U.	293	96	122	269	0	0	0	28	0	0	0	0	241
SUNY, C. of Environmental Science and Forestry	294	429	249	259	0	172	87	0	0	0	0	0	0
Benedict C.	295	453	364	246	0	0	0	0	246	0	0	0	0
Bradley U.	296	343	180	236	0	0	0	143	31	8	30	0	24
U. Wisconsin-Oshkosh	297	198	207	230	0	0	0	0	151	0	79	0	0
Northern Illinois U.	298	332	334	222	0	0	0	0	9	0	134	0	79



TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
Santa Clara U.	299	177	177	215	0	0	0	17	24	0	174	0	0
Lawrence Technological U.	300	552	386	210	0	0	0	205	5	0	0	0	0
Keck Graduate Institute	301	0 i	190 i	208 i	0 i	208 i	0 i	0 i	0 i	0 i	0 i	0 i	0 i
U. Wisconsin-Stevens Point	302	171 i	180 i	197 i	0 i	0 i	197 i	0 i	0 i	0 i	0 i	0 i	0 i
U. North Carolina, general administration	303	78	49	189	0	0	0	0	113	0	76	0	0
Kettering U.	304	689	454	184	0	0	0	0	0	0	184	0	0
James Madison U.	305	359	56	181	0	0	0	121	0	44	0	0	16
Arkansas State U., Jonesboro	306	140	142	180	0	0	0	180	0	0	0	0	0
California State U., Chico	307	20	35	179	0	0	0	174	0	0	5	0	0
Duquesne U.	307	275	208	179	0	179	0	0	0	0	0	0	0
Georgia Southern U.	309	297	196	174	0	0	0	4	21	0	149	0	0
Minnesota State U., Mankato	309	121	80	174	0	0	0	0	0	0	0	0	174
Manhattan C.	311	ne	ne	167	0	0	0	153	0	0	14	0	0
Virginia State U.	312	444	240	165	0	0	0	0	0	145	0	0	20
Central Michigan U.	313	334	276	162	0	0	3	0	159	0	0	0	0
Purdue U., Fort Wayne	314	40	93	160	0	0	0	0	0	0	100	0	60
Wake Forest U.	315	0	49	148	0	0	0	0	0	0	0	0	148
U. Wisconsin-Green Bay	316	183 i	95 i	147 i	0 i	0 i	0 i	0 i	73 i	0 i	38 i	0 i	36 i
U. Washington, Bothell	317	0	0	146	0	0	0	0	146	0	0	0	0

TABLE 56  
 Federally financed higher education R&D expenditures in engineering subfields, ranked by all FY 2019 engineering R&D: FYs 2017–19 and by subfield for FY 2019  
 (Dollars in thousands)

Institution	Rank	2017	2018	2019									
				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
Clafin U.	318	5	42	144	2	48	0	0	9	0	0	85	0
Texas Southern U.	319	82	98	130	0	0	0	0	0	0	0	0	130
Saginaw Valley State U.	320	148	136	124	0	0	0	0	0	0	0	124	0
Hope C.	321	161	52	116	0	0	0	0	0	0	116	0	0
Franklin W. Olin C. of Engineering	322	448	425	111	0	0	0	0	32	0	0	0	79
Biola U.	323	101	103	109	0	0	0	0	0	0	0	0	109
Lafayette C.	324	749	112	107	0	0	22	77	0	0	8	0	0
Kennesaw State U.	325	185	111	105	0	0	0	75	30	0	0	0	0
Oregon Institute of Technology	326	505	158	104	0	0	0	5	4	2	74	0	19
New School	327	37	0	99	0	0	0	0	5	31	0	0	63
CUNY, York C.	328	ne	ne	89	0	89	0	0	0	0	0	0	0
U. Maryland Center for Environmental Science	328	105	63	89	0	0	0	88	1	0	0	0	0
Central Connecticut State U.	330	112	ne	87	86	0	0	0	0	0	1	0	0
SUNY, Oswego	331	28	50	81	0	0	0	0	44	0	0	0	37
Seattle U.	332	319	185	72	0	50	0	0	4	0	0	0	18
U. Texas, Tyler	333	130	127	71	0	0	0	2	0	0	51	0	18
Elon U.	334	71	64	68	0	21	0	0	0	0	0	0	47
U. of the Pacific	334	145	163	68	0	0	0	0	0	0	68	0	0
U. Wisconsin-Platteville	334	83	ne	68	0	0	0	4	3	1	47	1	12
U. of the Virgin Islands	337	0	87	61	0	0	0	0	0	0	0	0	61
U. Detroit Mercy	338	0	4	59	0	0	0	0	59	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.

<sup>a</sup> Johns Hopkins University includes the Applied Physics Laboratory, with \$1,018,314 thousand in federally financed R&D expenditures in engineering in FY 2019.

<sup>b</sup> 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.

**Note(s):**

Institutions reporting zero expenditures in ranked total for FY 2019 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.