



APPENDIX TABLE 8-2

U.S. university patent awards, by technology area: 1996–2016

(Number)

Technology area	1996–2016	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All university patents	83,443	2,279	2,658	3,432	3,628	3,307	3,438	3,461	3,473	3,219	2,883	3,525	3,221	3,030	3,282	4,543	4,433	5,057	5,636	6,107	6,191	6,639
Biotechnology	14,728	401	605	822	891	722	791	710	622	567	485	671	607	555	602	746	690	760	792	888	850	953
Pharmaceuticals	12,043	359	481	599	656	602	571	575	512	430	369	455	395	366	379	562	524	655	727	876	941	1,008
Medical technology	6,809	171	178	236	273	225	225	236	311	228	200	223	187	210	216	345	375	451	561	622	651	683
Measurement	6,070	177	176	188	223	214	225	216	252	288	246	279	262	282	282	345	375	393	401	391	415	438
Organic fine chemistry	5,829	194	206	242	232	245	250	295	250	201	202	251	215	190	221	309	254	358	379	423	432	480
Computer technology	4,217	79	83	120	99	92	118	119	119	136	122	180	169	167	185	284	285	338	356	393	365	406
Analysis of biological materials	3,999	84	105	181	160	129	163	143	141	138	124	148	155	182	176	274	257	247	300	308	288	296
Optics	2,856	64	83	101	105	127	102	140	135	152	145	149	140	137	138	155	126	168	157	177	181	175
Semiconductors	2,676	50	65	70	77	81	99	106	137	99	98	101	95	79	112	162	165	171	206	229	229	244
Electrical machinery, apparatus, energy	2,652	76	73	88	99	80	80	87	99	113	98	124	100	90	99	165	133	155	179	220	231	264
Microstructural and nanotechnology	2,166	24	30	40	37	47	50	65	83	93	91	115	115	109	111	146	161	149	191	183	184	143
Chemical engineering	2,079	63	58	79	85	77	76	70	99	88	82	82	74	73	71	121	107	123	147	152	172	178
Macromolecular chemistry, polymers	1,631	74	52	59	77	69	74	77	88	57	52	68	59	40	57	93	81	81	117	109	116	131
Basic materials chemistry	1,589	55	68	55	67	61	71	51	70	59	54	60	44	47	53	73	85	96	138	118	124	139
Materials, metallurgy	1,416	58	52	67	60	58	59	62	61	51	49	55	53	40	62	74	76	82	99	86	103	111



Technology area	1996–2016	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Other special machines	1,346	33	47	62	61	64	70	78	73	53	54	51	56	43	52	70	67	71	83	78	84	94
Digital communication	1,228	14	9	14	11	25	27	25	22	32	35	63	61	55	61	87	115	120	92	128	120	113
Surface technology, coating	1,181	37	38	38	51	61	57	56	58	49	44	40	47	43	37	67	60	73	79	78	82	87
Telecommunications	1,104	23	19	33	29	24	37	50	41	59	43	56	54	49	56	62	63	86	70	78	86	85
Audio-visual technology	962	19	26	51	42	31	44	37	41	38	35	52	40	37	36	46	40	67	71	55	75	79
Environmental technology	886	36	33	41	37	40	36	43	35	37	25	43	34	26	42	42	46	44	58	73	57	56
Basic communication processes	837	21	6	23	20	20	14	20	24	44	48	44	48	51	55	48	65	50	61	57	55	62
Engines, pumps, turbines	680	14	23	20	26	23	27	25	31	24	24	30	27	31	35	42	37	45	41	50	43	63
Food chemistry	646	43	35	44	49	43	33	28	26	19	17	26	18	11	19	27	21	35	35	35	41	41
Control	579	15	13	24	18	20	20	22	24	20	19	33	25	14	21	33	32	37	48	46	40	54
Transport	418	11	8	7	22	16	18	16	14	21	19	20	17	14	11	25	28	25	34	33	33	29
Machine tools	408	19	17	21	24	13	16	17	20	21	14	18	19	14	20	18	23	21	24	30	20	17
Civil engineering	400	9	16	17	20	22	14	18	14	20	18	9	15	11	12	16	23	19	29	28	32	36
Textile and paper machines	391	11	10	20	15	14	14	20	14	21	13	19	19	14	12	20	21	21	33	25	23	32
Mechanical elements	388	12	10	15	16	19	18	19	17	19	14	18	18	11	9	17	20	23	31	29	27	27
IT methods for management	271	2	1	8	6	7	6	3	6	3	10	14	12	15	13	21	26	23	26	35	16	19
Thermal processes and apparatus	253	11	12	13	11	7	11	10	16	15	10	11	9	8	8	12	10	8	17	19	16	19
Other consumer goods	241	9	10	12	13	11	6	9	7	8	5	5	13	4	6	13	15	16	18	17	18	25
Handling	181	5	5	9	7	3	5	7	5	5	5	4	6	4	1	9	8	14	17	18	21	21



Technology area	1996–2016	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Furniture, games	156	5	4	6	5	7	6	4	6	7	5	5	7	4	6	6	7	15	12	14	11	17
Unclassified	128	1	3	4	5	5	4	1	2	5	7	3	4	5	8	9	11	14	9	7	9	13

IT = information technology.

Note(s)

Patents are allocated according to patent inventorship information. Data include institutions affiliated with academic institutions, such as university and alumni organizations, foundations, university associations, and affiliated hospitals. Universities vary in how patents are assigned (e.g., to boards of regents, individual campuses, or entities with or without affiliation with university). Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. For instance, a patent that is classified under five different technological fields will see each of its technological fields receive a 0.2 count of the patent, so that the patent accounts for a count of 1.0 across all technological fields. Patents were also fractionally allocated among regions, countries, or economies based on the proportion of residences of all assignees. As such, data across technical fields sum up to the total number of granted academic patents in the United States. Data across technical fields also sum up to the total number of U.S. Patent and Trademark Office (USPTO)-granted patents.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; USPTO patent data, accessed April 2017.

Science and Engineering Indicators 2018