NATIONAL FOUNDATION FOR AMERICAN POLICY

NFAP POLICY BRIEF » JULY 2013

THE IMPORTANCE OF INTERNATIONAL STUDENTS TO AMERICA

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EXECUTIVE SUMMARY

International students provide a key source of talent for U.S. employers and are crucial to enhancing the ability of U.S. universities to conduct research and offer high quality academic programs to U.S. students. International students also provide cultural and foreign policy benefits to the United States and are an important and inexpensive way to promote American ideas and values abroad.

Table 1
Full-time Graduate Students and the Percent of International Students by Field (2010)

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Electrical Engineering	70.3%	21,073	8,904
Computer Science	63.2%	20,710	12,072
Industrial Engineering	60.4%	5,057	3,314
Economics	55.4%	7,587	6,117
Chemical Engineering	53.4%	4,012	3,504
Materials Engineering	52.1%	2,660	2,891
Mechanical Engineering	50.2%	8,352	8,273
Mathematics & Statistics	44.5%	7,840	9,766
Physics	43.7%	5,716	7,369
Civil Engineering	43.7%	6,202	7,989
Other Engineering	42.1%	7,279	9,992
Chemistry	40.3%	8,059	11,952

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. U.S. students include lawful permanent residents.

Among the findings in this report:

- International students account for 70 percent of the full-time graduate students (master's and Ph.D.s) in electrical engineering, 63 percent in computer science, 60 percent in industrial engineering, and more than 50 percent in economics, chemical engineering, materials engineering and mechanical engineering. These students represent a vital source of talented professionals, researchers and innovators for U.S. employers.
- In electrical engineering, at 145 U.S. universities, representing nearly 90 percent of the U.S. graduate school programs with at least 30 students, the majority of full-time graduate students are international students.

- In computer science, at 152 universities, representing 76 percent of the U.S. graduate school programs with at least 30 students, the majority of full-time graduate students are international students.
- Foreign graduate students are crucial in assisting in research that attracts top faculty and strengthens the academic programs at U.S. schools, which benefits U.S. students and ensures America retains its preeminence as a teaching center in science, technology, engineering and math (STEM) fields.
- By assisting in important research foreign graduate students foster innovation at U.S. universities that benefits U.S. society and the American economy. In 2010, U.S. universities conducted 51 percent of all basic research performed in the United States, according to the National Science Foundation.
- International students often become contributors to the U.S. economy as professors, researchers and entrepreneurs. Nearly 40 percent of immigrant entrepreneurs in recent venture-funded companies first entered the country as international students, according to a survey conducted by the National Venture Capital Association.
- Legislation pending in Congress would allow foreign graduate students in science, technology, engineering and mathematics (STEM) fields to be sponsored without being subject to the current green card quota (S. 744) or, at minimum, to wait less than they would today (H.R. 2131).

A grant from the Ewing Marion Kauffman Foundation funded the research for this paper. The contents are solely the responsibility of the National Foundation for American Policy.

INTERNATIONAL STUDENTS A MAJORITY IN MANY U.S. GRADUATE SCHOOL PROGRAMS

Examining the number of schools where international students account for a majority of the full-time graduate students (master's and Ph.D.s) in a program helps illustrate the importance of international students. In electrical engineering, at 145 U.S. universities, representing nearly 90 percent of the U.S. graduate school programs with at least 30 students, the majority of full-time graduate students are international students. In computer science, at 152 universities, representing 76 percent of the U.S. graduate school programs with at least 30 students, the majority of full-time graduate students are international students.[1]

Table 2
U.S. University Graduate Programs with a Majority of International Students

Field	Number of U.S. Universities with More Than 50 Percent International Students in Graduate School Program (2010)	Percentage of U.S. Universities with a Majority of International Students in Graduate School Program (2010)
Electrical Engineering	145	87 percent
Computer Science	152	76 percent

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. U.S. students include lawful permanent residents; National Foundation for American Policy analysis. Note: analysis limited to programs with at least 30 full-time students.

INTERNATIONAL STUDENTS: A KEY SOURCE OF TALENT AND INNOVATION

International students represent a key source of talent for U.S. employers. What do U.S. employers find when they recruit on college campuses in key technology fields? At most schools, U.S. companies find a high percentage of the graduate students in science and engineering are international students. As Tables 1 illustrates, foreign nationals account for 70 percent of the full-time graduate students in electrical engineering, 63 percent in computer science, 60 percent in industrial engineering, and more than 50 percent in economics, chemical engineering, materials engineering and mechanical engineering in 2010.[2] (See Appendix for individual universities.) In comparison, in 1982, foreign nationals accounted for 44 percent of the full-time graduates students in electrical engineering and 35 percent in computer science.[3]

[1]National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. U.S. students include lawful permanent residents; National Foundation for American Policy analysis. Note: analysis limited to programs with at least 30 full-time students.
[2] National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
[3] Ibid.

Would it aid the U.S. economy or the competitiveness of individual businesses if U.S. companies ignored or were prevented from hiring more than half or even two-thirds of today's talented graduates in science and technology fields from American universities? Does anyone believe the global competitors of U.S. companies would refuse to hire these students?

Openness to international students and U.S. employment-based immigration policies are closely connected. Legislation pending in Congress would allow foreign graduate students in science, technology, engineering and mathematics (STEM) fields to be sponsored without being subject to the current green card quota (S. 744) or at least to be given priority and wait less time than they would today (H.R. 2131). Such a policy change would be important, since the wait time for green cards can be many years for skilled immigrants, particularly for Indian and Chinese immigrants, sending a signal that America may not be the best place to build a career.[4]

Economists support ways to retain talented international students in the United States, including providing a clear path for permanent residence for graduates of U.S. universities in science and engineering fields. University of California, Davis economist Giovanni Peri, writes, "The United States has the enormous international advantage of being able to attract talent in science, technology, and engineering from all over the world to its most prestigious institutions . . . The country is certainly better off by having the whole world as a potential supplier of highly talented individuals rather than only the native-born."[5]

Peri describes why his research shows a gain from immigration to native-born Americans with a college degree:

> The relatively large positive effect of immigrants on the wages of native-born workers with a college degree or more is driven by the fact that creative, innovative, and complex professions benefit particularly from the complementarities brought by foreign-born scientists, engineers, and other highly skilled workers. A team of engineers may have greater productively than an engineer working in isolation, implying that a foreign-born engineer may increase the productivity of native-born team members . . . Technological and scientific innovation is the acknowledged engine of U.S. economic growth and human talent is the main input in generating this growth.[6]

[4] The per country limit affects immigrants from countries with large populations the most, resulting in longer wait times for employment-based green cards.
[5] Giovanni Peri, *Immigrants, Skills, and Wages: Measuring the Economic Gains from Immigration*, (Washington, DC: Immigration Policy Center, March 2006), p. 7.
[6] Ibid., p. 6.

Foreign graduate students, particularly those who study science or engineering, are a boon to the U.S. economy and education system. "Foreign students, skilled immigrants, and doctorates in science and engineering play a major role in driving scientific innovation in the United States," according to a study by Keith Maskus, an economist at the University of Colorado, Aaditya Mattoo, lead economist at the World Bank's Development Economics Group, and Gnanaraj Chellaraj, a consultant to the World Bank.[7]

Maskus, Mattoo, and Chellaraj found that for every 100 international students who receive science or engineering Ph.D.'s from American universities, the nation gains 63 future patent applications.[8] The researchers concluded, "Larger enrollments of international graduate students as a proportion of total graduate students result in a significant increase in patents awarded to both university and non-university institutions as well as increases in total patent applications. This finding points out the importance of scientific contributions made by international graduate students in both settings."[9] Their bottom line conclusion: "[R]educing foreign students by tighter enforcement of visa restraints could reduce innovative activity significantly" in the United States.[10]

In addition to increasing the supply of skilled labor and becoming innovators for U.S. companies, international students also become entrepreneurs. In a survey conducted by the National Venture Capital Association, 38 percent of immigrant entrepreneurs at venture-funded companies said they first entered the United States as international students.[11] For example, Alex Mehr and Shayan Zadeh, co-founders of the online romantic social network Zoosk, came to America as graduate students at the University of Maryland. Another surprising contribution of international students to America may be their children. Fourteen of the 40 finalists (35 percent) at the 2011 Intel Science Talent Search competition, the leading science contest for high school seniors, had a parent who originally arrived in America as an international student.[12]

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[7] Gnanaraj Chellaraj, Keith E. Maskus, and Aaditya Mattoo, "The Contribution of Skilled Immigration and International Graduate Students to U.S. Innovation," World Bank Policy Research Working Paper 3588, May 2005, p. 23.
[8] Ibid., p. 21.
[9] Ibid., pp. 22-23.
[10] Ibid., p. 26.
[11] Stuart Anderson, *American Made 2.0: How Immigant Entrepreneurs Continue to Contribute to the U.S. Ecoomy, National Venture Capital Association*, July 2013, p. 16. The respondents were not randomly selected, meaning it is possible a different sample of respondents could hold different characteristics.
[12] Stuart Anderson, *The Impact of the Children of Immigrants on Scientific Achievement in America*, National Foundation for American Policy, NFAP Policy Brief, May 2011, p. 3.

INTERNATIONAL STUDENTS ARE CRUCIAL TO SUPPORTING RESEARCH AT U.S. UNIVERSITIES

International students are key to supporting research at U.S. universities, which helps retain and attract top faculty. Tables 3 through 8 illustrate that at schools such as Rice University, Indiana University, Purdue University, Ohio State and others, international students generally comprise 60 to 80 percent of the graduate students in electrical engineering, computer science, chemical engineering and other fields. In 2010, U.S. universities conducted 51 percent of all basic research performed in the United States, according to the National Science Foundation.[13]

"We are a research university, and in computer science that means that much of the research is done by teams led by professors with experiments carried out by graduate students," explains Professor Christopher Raphael, chair of the computer science department at Indiana University. "This model only works if we can get high-quality Ph.D. students and we would be hard pressed to get the number we need solely from the United States."[14]

The high level of international students plays a role in universities being able to attract and retain faculty, which benefits U.S. students. "If we were not to place such a heavy emphasis on research, we wouldn't be able to get faculty that teach the wide range of things we do, with the appropriate expertise, so our educational mission would suffer," said Professor Raphael. "Really the most important part of the educational experience is to work closely with high quality faculty, as one does directly at the Ph.D. stage. So the research and the education are of a piece."[15]

Professor Stuart Cooper, department chair of chemical and biomolecular engineering at Ohio State University, also points to the connection between research and teaching at U.S. colleges. "There is a synergy. To get tenure and perform research, professors require a significant number of graduate students and there are not enough domestic students alone in certain fields," said Professor Cooper. "The advances made by professors and graduate students, including international students and post-docs, provide new knowledge and benefits society."[16]

Without the ability to perform high-level research at U.S. universities, many talented individuals would not take or seek faculty positions, leaving U.S. schools far weaker and unable to educate U.S. students in important fields.

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[13] National Center for Science and Engineering Statistics, National Patterns of R&D Resources: 2010–11 Data Update, National Science Foundation, NSF13-319, April 2013, Table 3.
[14] Interview, via email with, Christopher Raphael.
[15] Ibid.
[16] Interview with Stuart Cooper.

Graduate students also directly support the educational mission for undergraduates by serving as teaching assistants. Their duties include conducting study sessions and grading, which "takes some of the burden off the faculty" to focus on teaching, according to Professor Cooper.[17]

INTERNATIONAL STUDENTS HELP MAINTAIN HIGH-LEVEL GRADUATE PROGRAMS AT MANY U.S. UNIVERSITIES

Many excellent U.S. universities rely on international students to maintain their graduate school programs at a high level. At Rice University, in 2010, 58 of the 100 full-time graduate students in electrical engineering were foreign nationals. In computer science, 38 of the 63 graduate students (60 percent) were foreign nationals. International graduate students accounted for 72 percent of the full-time students (48 of 67) in chemical engineering and 58 percent (60 of 104) in chemistry.[18]

Table 3
Rice University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	60%	38	25
Electrical Engineering	58%	58	42
Chemical Engineering	72%	48	19
Chemistry	58%	60	44

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

At Indiana University, 297 of the 438 full-time graduate students (68 percent) in computer science were foreign nationals in 2010. In electrical engineering, 66 out of the 96 graduate students (69 percent) were international students. In economics: 66 percent international students in the graduate program (55 of 83). In physics: 50 percent international students (61 of 122). In math/statistics: 85 out of 158 (54 percent) were foreign nationals.[19]

[17] Ibid.
[18] National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. U.S. students include lawful permanent residents.
[19] Ibid.

Table 4
Indiana University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	68%	297	141
Electrical Engineering	69%	66	30
Math/Statistics	54%	85	73
Physics	50%	61	61

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

At Purdue University, foreign nationals accounted for 70 percent (161 of 229) of full-time graduate students in computer science and 55 percent (59 of 108) in chemical engineering.[20]

Table 5
Purdue University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	70%	161	68
Chemical Engineering	55%	59	49

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

[20] Ibid.

At Ohio State, in 2010, 79 percent of the full-time graduate students (266 of 336) in computer science were foreign nationals. In chemical engineering, international graduate students filled 67 percent of the full-time slots (57 of 85).[21]

Table 6
Ohio State University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	79%	266	70
Chemical Engineering	67%	57	28

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

The electrical engineering program at the University of Iowa appears to be almost completely reliant on foreign nationals. International graduate students filled 34 of the 40 full-time slots in 2010.[22]

At Texas A&M, 74 percent of the full-time graduate students in computer science (183 of 248) and 82 percent of the graduate students in electrical engineering (408 of 500) were foreign nationals in 2010.[23]

Table 7
Texas A&M University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	74%	183	65
Electrical Engineering	82%	408	92

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

[21] Ibid.
[22] Ibid.
[23] Ibid.

At Carnegie Mellon University, a surprising 66 percent (583 of 887) of full-time graduate students in computer science were foreign nationals in 2010. In chemistry, international graduate students filled 43 of the 75 slots (57 percent).[24]

Table 8
Carnegie Mellon University

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Computer Science	66%	583	304
Chemistry	57%	43	32

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov.
U.S. students include lawful permanent residents.

DO INTERNATIONAL STUDENTS CROWD OUT U.S. STUDENTS?

One question raised by openness towards international students is whether such students "crowd out" Americans who wish to attend college. "The first priority is U.S. citizens, we get as many who qualify as we can," said Ohio State Professor Stuart Cooper. "I don't think there is crowding out. There is a lot of pressure to have more U.S. citizens. We try for that. The reality is there are not enough to go around."[25]

Economists Maskus, Mattoo, and Chellaraj dispute a contention by Harvard economist George Borjas that suggests U.S. domestic and foreign graduate students are highly substitutable. Pointing to research by Richard Freeman, Maskus, Mattoo, and Chellaraj note that data over the last three decades show: "The number of Ph.D.s granted to undergraduates of U.S. institutions, most of whom were U.S. citizens, did not change much during this period, while there was a substantial growth in the number of foreign bachelor's graduates obtaining U.S. doctorates. Thus the change in proportion is mostly due to the expansion of Ph.D. programs, with a majority of the new slots being taken for foreign students rather than through substitution."[26]

Looking at U.S. graduate programs for the years 1982 through 1995, Mark Regets of the National Science Foundation found no evidence that international students displaced U.S. citizens in graduate programs. The data showed increases in international students in a graduate department were associated with increases, not

[24] Ibid.
[25] Interview with Stuart Cooper.
[26] Maskus, Mattoo, and Chellaraj, p. 8.

decreases, in the enrollment of U.S. citizens and permanent residents (approximately one additional U.S. student for every three added international students). Rising enrollment for one group associated with enrollment increases for all groups is "a result inconsistent with displacement," according to Regets.[27]

A study by the Association of American Universities and the Association of Graduate Schools concluded, "[The] acceptance and enrollment rates of minority applicants are significantly higher in comparison to those of non-U.S. citizen applicants . . . [T]his finding does suggest that institutions do show a preference for admitting U.S. minority applicants rather than non-U.S. citizen applicants."[28]

CONCLUSION

International students benefit U.S. universities, U.S. students and the nation in at least four important ways. First, international students expose American students to new ideas and cultures. Without ever leaving campus, U.S. students can make lasting friendships, interactions and connections that will shape and expand their view of the world.

Second, admitting international students benefits U.S. foreign policy. The list of prominent foreign leaders and officials who studied in America during their youth is long and includes today many people rising to important positions in government in China, the Middle East and elsewhere.

Third, attending U.S. universities exposes international students to new ideas and models, which can exert a profound impact on their home countries, such as the move away from socialism to the free market in India. Palaniappan Chidambaram, a former Indian finance minister who was a socialist before attending Harvard Business School, said, "First, the phenomenal success achieved by Indians abroad by practicing free enterprise meant that if Indians were allowed to function in an open market, they could replicate some of that success here [in India]. Secondly, by 1991, sons and daughters of political leaders and senior civil servants were all going abroad and studying abroad and living and working abroad. I think they played a great part in influencing the thinking of their parents."[29]

Fourth, as focused on in this analysis, international students may make it possible for many universities to offer academic programs in technical fields that would be of lower caliber or be unable to attract top-flight faculty without international students. International students are crucial to enhancing the ability of U.S. universities to

[27] Mark Regets, "Research Issues in the International Migration of Highly Skilled Workers: A Perspective with Data from the United States," Working Paper, SRS 07-203, June 2007, p. 11.
[28] Association of Graduate Schools, "Participation in Doctoral Education at Major Research Universities by U.S. Citizens, Women, and Underrepresented Minorities," vol. 1, no. 1 (April 1993), pp. 2–3.
[29] Robert Guest, *Borderless Economics*, Palgrave Macmillan, New York, 2011, pp. 33-34.

conduct research, recruit and retain teaching talent and offer high quality academic programs to U.S. students. Moreover, international students provide a key source of talented professionals and researchers for U.S. employers. Reforms in Congress that would make it easier for international students to come to America and remain if offered a job will benefit the U.S. economy. A policy of welcoming international students helps America maintain its leadership as a center of learning and innovation.

APPENDIX

FULL-TIME STUDENTS IN U.S. GRADUATE SCHOOL PROGRAMS

ELECTRICAL ENGINEERING (2010)

FIELD	SCHOOL	U.S. Citizens/Perm Residents	International Students	Percent International Student
Electrical Engineering	University of Texas at Arlington	16	229	93.5%
Electrical Engineering	Fairleigh Dickinson University	3	42	93.3%
Electrical Engineering	Illinois Institute of Technology	31	400	92.8%
Electrical Engineering	University of Houston	16	180	91.8%
Electrical Engineering	SUNY at Buffalo	19	189	90.9%
Electrical Engineering	New Jersey Institute of Technology	21	201	90.5%
Electrical Engineering	Rochester Institute of Technology	11	105	90.5%
Electrical Engineering	Rutgers the State Univ. of New Jersey	20	172	89.6%
Electrical Engineering	Oklahoma State University	15	120	88.9%
Electrical Engineering	Wichita State University	20	142	87.7%
Electrical Engineering	San Jose State University	48	331	87.3%
Electrical Engineering	Arizona State University	66	455	87.3%
Electrical Engineering	University of Cincinnati	37	253	87.2%
Electrical Engineering	Louisiana State University	15	101	87.1%
Electrical Engineering	SUNY at Stony Brook	19	122	86.5%
Electrical Engineering	Polytechnic Institute of New York University	57	365	86.5%
Electrical Engineering	University of Southern California	121	770	86.4%
Electrical Engineering	New York Institute of Technology	13	80	86.0%
Electrical Engineering	University of Iowa	6	34	85.0%
Electrical Engineering	California State University, Sacramento	9	50	84.7%
Electrical Engineering	South Dakota State University	9	49	84.5%
Electrical Engineering	George Mason University	17	92	84.4%
Electrical Engineering	Southern Illinois Univ. at Carbondale	24	128	84.2%
Electrical Engineering	Stevens Institute of Technology	34	181	84.2%
Electrical Engineering	Northeastern University	74	387	83.9%
Electrical Engineering	University of Detroit Mercy	5	24	82.8%
Electrical Engineering	University of Florida	160	768	82.8%
Electrical Engineering	University of Massachusetts at Amherst	29	136	82.4%
Electrical Engineering	Florida Institute of Technology	16	72	81.8%
Electrical Engineering	Northern Illinois University	8	36	81.8%
Electrical Engineering	Texas A&M University	92	408	81.6%
Electrical Engineering	University of Rochester	18	79	81.4%
Electrical Engineering	University of North Texas	13	57	81.4%

Electrical Engineering	University of Massachusetts Dartmouth	6	26	81.3%
Electrical Engineering	Western Michigan University	15	64	81.0%
Electrical Engineering	University of Texas at Dallas	85	356	80.7%
Electrical Engineering	Florida International University	19	75	79.8%
Electrical Engineering	University of Nevada, Las Vegas	7	27	79.4%
Electrical Engineering	George Washington University	21	80	79.2%
Electrical Engineering	Southern Illinois Univ. at Edwardsville	10	38	79.2%
Electrical Engineering	University of Arizona	17	64	79.0%
Electrical Engineering	University of Akron	18	66	78.6%
Electrical Engineering	Iowa State University	61	220	78.3%
Electrical Engineering	University of Louisiana at Lafayette	7	25	78.1%
Electrical Engineering	New Mexico State University	24	84	77.8%
Electrical Engineering	Northwestern University	32	110	77.5%
Electrical Engineering	University of Illinois at Chicago	33	113	77.4%
Electrical Engineering	Pennsylvania State University	91	307	77.1%
Electrical Engineering	Missouri University of Science & Technology	34	114	77.0%
Electrical Engineering	University of North Carolina at Charlotte	23	76	76.8%
Electrical Engineering	University of Nebraska at Lincoln	17	56	76.7%
Electrical Engineering	University of Minnesota	91	298	76.6%
Electrical Engineering	Portland State University	22	72	76.6%
Electrical Engineering	University of Maryland at College Park	96	311	76.4%
Electrical Engineering	California State University, Northridge	24	76	76.0%
Electrical Engineering	University of Connecticut	22	69	75.8%
Electrical Engineering	Worcester Polytechnic Institute	18	56	75.7%
Electrical Engineering	Yale University	9	28	75.7%
Electrical Engineering	Purdue University	92	286	75.7%
Electrical Engineering	University of California, Irvine	49	151	75.5%
Electrical Engineering	Washington University	13	40	75.5%
Electrical Engineering	University of Texas at Austin	123	370	75.1%
Electrical Engineering	Lehigh University	15	45	75.0%
Electrical Engineering	University of Texas at San Antonio	25	74	74.7%
Electrical Engineering	Mississippi State University	22	65	74.7%
Electrical Engineering	University of Missouri-Columbia	19	55	74.3%
Electrical Engineering	University of Miami	9	26	74.3%
Electrical Engineering	California Institute of Technology	28	77	73.3%
Electrical Engineering	North Carolina State University	108	297	73.3%
Electrical Engineering	University of California, Riverside	37	101	73.2%
Electrical Engineering	University of Memphis, The	12	31	72.1%
Electrical Engineering	Ohio University	19	49	72.1%
Electrical Engineering	Old Dominion University	24	61	71.8%
Electrical Engineering	Johns Hopkins University	34	86	71.7%

Electrical Engineering	University of New Mexico	27	68	71.6%
Electrical Engineering	University of Oklahoma	31	77	71.3%
Electrical Engineering	University of Kentucky	25	62	71.3%
Electrical Engineering	Michigan Technological University	30	73	70.9%
Electrical Engineering	Colorado State University	20	46	69.7%
Electrical Engineering	Drexel University	40	92	69.7%
Electrical Engineering	Santa Clara University	20	46	69.7%
Electrical Engineering	University of Pittsburgh	26	59	69.4%
Electrical Engineering	Princeton University	50	112	69.1%
Electrical Engineering	Boston University	59	130	68.8%
Electrical Engineering	Indiana University	30	66	68.8%
Electrical Engineering	Rensselaer Polytechnic Institute	34	74	68.5%
Electrical Engineering	Carnegie Mellon University	148	322	68.5%
Electrical Engineering	Ohio State University	114	248	68.5%
Electrical Engineering	University of California, San Diego	135	289	68.2%
Electrical Engineering	University of South Carolina	45	95	67.9%
Electrical Engineering	Clemson University	46	96	67.6%
Electrical Engineering	University of Michigan	235	489	67.5%
Electrical Engineering	University of Delaware	43	88	67.2%
Electrical Engineering	Texas Tech University	48	97	66.9%
Electrical Engineering	Auburn University	45	90	66.7%
Electrical Engineering	Lamar University	45	90	66.7%
Electrical Engineering	Marquette University	13	26	66.7%
Electrical Engineering	Wayne State University	35	68	66.0%
Electrical Engineering	University of Denver	15	29	65.9%
Electrical Engineering	Michigan State University	56	108	65.9%
Electrical Engineering	Washington State University	24	46	65.7%
Electrical Engineering	University of California, Los Angeles	136	258	65.5%
Electrical Engineering	California State University, Fullerton	16	30	65.2%
Electrical Engineering	Cleveland State University	16	30	65.2%
Electrical Engineering	University of Alabama	15	28	65.1%
Electrical Engineering	Wright State University	57	106	65.0%
Electrical Engineering	California State University, Long Beach	30	55	64.7%
Electrical Engineering	University of Arkansas Main	21	38	64.4%
Electrical Engineering	University of Notre Dame	67	121	64.4%
Electrical Engineering	Southern Methodist University	35	63	64.3%
Electrical Engineering	Duke University	58	104	64.2%
Electrical Engineering	University of Alabama in Huntsville	17	30	63.8%
Electrical Engineering	Virginia Polytechnic Inst. and State University	135	231	63.1%
Electrical Engineering	University of Wisconsin-Madison	107	182	63.0%
Electrical Engineering	Cornell University	92	155	62.8%

Electrical Engineering	University of South Florida	82	136	62.4%
Electrical Engineering	Georgia Institute of Technology	352	560	61.4%
Electrical Engineering	University of Maryland - Baltimore County	17	27	61.4%
Electrical Engineering	Oregon State University	55	84	60.4%
Electrical Engineering	Case Western Reserve University	38	57	60.0%
Electrical Engineering	Tufts University	20	30	60.0%
Electrical Engineering	University of Massachusetts Lowell	33	49	59.8%
Electrical Engineering	University of Kansas	24	35	59.3%
Electrical Engineering	San Diego State University	16	23	59.0%
Electrical Engineering	Kansas State University	19	27	58.7%
Electrical Engineering	University of Texas at El Paso	36	51	58.6%
Electrical Engineering	University of Central Florida	75	106	58.6%
Electrical Engineering	Columbia University in the City of New York	149	208	58.3%
Electrical Engineering	Rice University	42	58	58.0%
Electrical Engineering	SUNY at Binghamton	35	48	57.8%
Electrical Engineering	University of Illinois at Urbana-Champaign	216	280	56.5%
Electrical Engineering	California State University, Los Angeles	44	57	56.4%
Electrical Engineering	Stanford University	378	482	56.0%
Electrical Engineering	University of Pennsylvania	30	38	55.9%
Electrical Engineering	University of California, Santa Barbara	112	139	55.4%
Electrical Engineering	Florida State University	28	34	54.8%
Electrical Engineering	University of Utah	66	75	53.2%
Electrical Engineering	Florida Atlantic University	18	20	52.6%
Electrical Engineering	University of Dayton	64	71	52.6%
Electrical Engineering	CUNY City College	56	62	52.5%
Electrical Engineering	Massachusetts Institute of Technology	203	224	52.5%
Electrical Engineering	University of Wyoming	15	16	51.6%
Electrical Engineering	University of Colorado	153	162	51.4%
Electrical Engineering	University of Louisville	77	79	50.6%
Electrical Engineering	University of Washington	101	103	50.5%
Electrical Engineering	University of Idaho	23	23	50.0%
Electrical Engineering	Vanderbilt University	48	47	49.5%
Electrical Engineering	University of Virginia	58	55	48.7%
Electrical Engineering	Tuskegee University	26	22	45.8%
Electrical Engineering	University of California, Berkeley	174	134	43.5%
Electrical Engineering	University of California, Davis	80	59	42.4%
Electrical Engineering	Oakland University	34	25	42.4%
Electrical Engineering	Utah State University	33	23	41.1%
Electrical Engineering	North Carolina A&T State University	47	32	40.5%

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. Some schools eliminated for space; limited to programs with at least 30 full-time students.

FULL-TIME STUDENTS IN U.S. GRADUATE SCHOOL PROGRAMS

COMPUTER SCIENCE (2010)

FIELD	SCHOOL	U.S. Citizens/Perm Residents	International Students	Percent International Student
Computer Science	San Diego State University	13	160	92.5%
Computer Science	Texas A&M University-Corpus Christi	6	70	92.1%
Computer Science	Illinois Institute of Technology	35	392	91.8%
Computer Science	University of Missouri-Kansas City	8	81	91.0%
Computer Science	University of New Haven	5	49	90.7%
Computer Science	San Jose State University	35	323	90.2%
Computer Science	Fairleigh Dickinson University	6	55	90.2%
Computer Science	Arkansas State University	4	33	89.2%
Computer Science	SUNY at Buffalo	34	273	88.9%
Computer Science	University of Detroit Mercy	9	71	88.8%
Computer Science	Bradley University	4	31	88.6%
Computer Science	Saint Joseph's University	7	54	88.5%
Computer Science	New Mexico State University	9	66	88.0%
Computer Science	Old Dominion University	9	65	87.8%
Computer Science	University of Houston	33	236	87.7%
Computer Science	Texas Tech University	14	95	87.2%
Computer Science	Fitchburg State College	4	27	87.1%
Computer Science	Wichita State University	11	74	87.1%
Computer Science	University of Central Missouri	7	46	86.8%
Computer Science	SUNY at Stony Brook	39	251	86.6%
Computer Science	SUNY at Binghamton	24	153	86.4%
Computer Science	Florida International University	11	66	85.7%
Computer Science	Kansas State University	9	54	85.7%
Computer Science	Western Illinois University	9	53	85.5%
Computer Science	California State University, Sacramento	8	47	85.5%
Computer Science	Polytechnic Inst. of New York University	48	277	85.2%
Computer Science	New York University	35	201	85.2%
Computer Science	University of Southern California	107	614	85.2%
Computer Science	University of Texas at Dallas	79	442	84.8%
Computer Science	Kent State University	9	48	84.2%
Computer Science	North Dakota State University	16	84	84.0%
Computer Science	University of San Francisco	10	52	83.9%
Computer Science	Oklahoma State University	22	111	83.5%
Computer Science	North Carolina State University	75	366	83.0%
Computer Science	Stevens Institute of Technology	21	95	81.9%

Computer Science	Southern Illinois Univ. at Carbondale	8	36	81.8%
Computer Science	Western Michigan University	11	48	81.4%
Computer Science	Temple University	11	47	81.0%
Computer Science	University of Nebraska at Omaha	16	67	80.7%
Computer Science	Iowa State University	28	110	79.7%
Computer Science	Ohio State University	70	266	79.2%
Computer Science	University of Memphis, The	14	52	78.8%
Computer Science	University of Texas at Arlington	40	148	78.7%
Computer Science	Lehigh University	13	47	78.3%
Computer Science	University of Louisiana at Lafayette	26	94	78.3%
Computer Science	University of Illinois at Chicago	56	201	78.2%
Computer Science	University of Alabama in Huntsville	12	43	78.2%
Computer Science	University of Nebraska at Lincoln	21	75	78.1%
Computer Science	Northern Illinois University	21	74	77.9%
Computer Science	Duke University	21	73	77.7%
Computer Science	New York Institute of Technology	37	125	77.2%
Computer Science	Florida Institute of Technology	16	54	77.1%
Computer Science	Villanova University	19	62	76.5%
Computer Science	University of Kentucky	20	65	76.5%
Computer Science	University of Texas at San Antonio	28	89	76.1%
Computer Science	Univ. of North Carolina at Greensboro	9	27	75.0%
Computer Science	University of South Alabama	21	60	74.1%
Computer Science	Columbia University in City of New York	79	225	74.0%
Computer Science	Northeastern University	91	259	74.0%
Computer Science	Sam Houston State University	11	31	73.8%
Computer Science	Texas A&M University	65	183	73.8%
Computer Science	University of Arizona	67	184	73.3%
Computer Science	Santa Clara University	33	89	73.0%
Computer Science	George Mason University	94	251	72.8%
Computer Science	Boston University	19	50	72.5%
Computer Science	Rochester Institute of Technology	106	274	72.1%
Computer Science	Worcester Polytechnic Institute	23	59	72.0%
Computer Science	Illinois State University	15	38	71.7%
Computer Science	Michigan Technological University	14	35	71.4%
Computer Science	University of Delaware	34	85	71.4%
Computer Science	Wayne State University	25	62	71.3%
Computer Science	University of Pittsburgh	80	197	71.1%
Computer Science	University of North Carolina at Charlotte	76	185	70.9%
Computer Science	University of Connecticut	22	53	70.7%
Computer Science	Purdue University	68	161	70.3%
Computer Science	Pace University	23	54	70.1%

Computer Science	Case Western Reserve University	18	42	70.0%
Computer Science	University of Georgia	37	85	69.7%
Computer Science	University of Missouri-Columbia	14	32	69.6%
Computer Science	Syracuse University	122	276	69.3%
Computer Science	Missouri University of Sci. & Technology	16	35	68.6%
Computer Science	SUNY Inst of Technology at Utica-Rome	14	30	68.2%
Computer Science	Dartmouth College	27	57	67.9%
Computer Science	Georgia Institute of Technology	209	441	67.8%
Computer Science	Indiana University	141	297	67.8%
Computer Science	University of Arkansas at Little Rock	11	23	67.6%
Computer Science	San Francisco State University	12	25	67.6%
Computer Science	University of Illinois at Urbana-Champaign	121	252	67.6%
Computer Science	New Jersey Institute of Technology	94	193	67.2%
Computer Science	Virginia Polytechnic Inst. and State Univ.	64	130	67.0%
Computer Science	University of Utah	38	75	66.4%
Computer Science	Louisiana State University	42	81	65.9%
Computer Science	University of Illinois at Springfield	37	71	65.7%
Computer Science	Carnegie Mellon University	304	583	65.7%
Computer Science	Cleveland State University	12	23	65.7%
Computer Science	Marymount University	12	23	65.7%
Computer Science	University of Massachusetts Lowell	28	53	65.4%
Computer Science	Pennsylvania State University	36	68	65.4%
Computer Science	Arizona State University	127	236	65.0%
Computer Science	Colorado State University	16	29	64.4%
Computer Science	Georgia State University	61	108	63.9%
Computer Science	Clemson University	44	77	63.6%
Computer Science	Eastern Michigan University	20	35	63.6%
Computer Science	California State University, Long Beach	44	76	63.3%
Computer Science	Michigan State University	47	81	63.3%
Computer Science	University of California, Riverside	56	96	63.2%
Computer Science	George Washington University	73	124	62.9%
Computer Science	Oregon State University	42	71	62.8%
Computer Science	California State University, Los Angeles	38	64	62.7%
Computer Science	Ball State University	12	20	62.5%
Computer Science	Towson University	61	101	62.3%
Computer Science	University of California, Irvine	119	197	62.3%
Computer Science	University of Southern Mississippi	22	36	62.1%
Computer Science	University of California, Santa Barbara	52	83	61.5%
Computer Science	University of Maryland at College Park	110	174	61.3%
Computer Science	University of Chicago	16	25	61.0%
Computer Science	Rice University	25	38	60.3%

Computer Science	Rensselaer Polytechnic Institute	47	70	59.8%
Computer Science	CUNY City College	28	41	59.4%
Computer Science	Lamar University	22	32	59.3%
Computer Science	University of Texas at El Paso	14	20	58.8%
Computer Science	Rutgers the State Univ. of New Jersey	84	119	58.6%
Computer Science	Cornell University	106	150	58.6%
Computer Science	University of Nevada, Las Vegas	20	28	58.3%
Computer Science	University of Oklahoma	35	49	58.3%
Computer Science	University of North Carolina at Chapel Hill	63	88	58.3%
Computer Science	Johns Hopkins University	61	85	58.2%
Computer Science	Utah State University	13	18	58.1%
Computer Science	West Virginia University	26	36	58.1%
Computer Science	University of Kansas	20	27	57.4%
Computer Science	Yale University	22	29	56.9%
Computer Science	University of Massachusetts at Amherst	73	95	56.5%
Computer Science	Loyola University of Chicago	17	22	56.4%
Computer Science	University of Minnesota	158	204	56.4%
Computer Science	University of Virginia	39	50	56.2%
Computer Science	Princeton University	45	57	55.9%
Computer Science	University of California, Los Angeles	154	195	55.9%
Computer Science	California State University, East Bay	25	31	55.4%
Computer Science	University of Texas at Austin	96	119	55.3%
Computer Science	University of Wisconsin-Madison	105	130	55.3%
Computer Science	Vanderbilt University	30	37	55.2%
Computer Science	University of Maryland - Baltimore County	99	122	55.2%
Computer Science	University of California, Davis	73	86	54.1%
Computer Science	College of William & Mary	34	40	54.1%
Computer Science	University of New Mexico	35	41	53.9%
Computer Science	University of South Florida	25	29	53.7%
Computer Science	University of Rochester	21	24	53.3%
Computer Science	University of North Texas	92	105	53.3%
Computer Science	Prairie View A&M University	15	17	53.1%
Computer Science	University of Pennsylvania	128	139	52.1%
Computer Science	Brandeis University	18	19	51.4%
Computer Science	University of Oregon	28	29	50.9%
Computer Science	Northeastern Illinois University	21	21	50.0%
Computer Science	Florida State University	80	78	49.4%
Computer Science	Oakland University	24	23	48.9%
Computer Science	University of Alabama	35	33	48.5%
Computer Science	Washington State University	25	23	47.9%
Computer Science	Brown University	54	49	47.6%

Computer Science	Portland State University	42	38	47.5%
Computer Science	California State University, Fullerton	36	32	47.1%
Computer Science	Northwestern University	36	32	47.1%
Computer Science	University of Central Florida	63	55	46.6%
Computer Science	University of California, San Diego	146	127	46.5%
Computer Science	University of New Hampshire	27	23	46.0%
Computer Science	Tufts University	21	17	44.7%
Computer Science	University of Iowa	35	28	44.4%
Computer Science	Stanford University	233	181	43.7%
Computer Science	Washington University	63	46	42.2%
Computer Science	Claremont Graduate University	53	34	39.1%
Computer Science	Drexel University	59	37	38.5%
Computer Science	University of Washington	196	120	38.0%
Computer Science	University of California, Berkeley	138	84	37.8%
Computer Science	Mississippi State University	45	27	37.5%
Computer Science	St. Mary's University	27	16	37.2%
Computer Science	University of Colorado	185	108	36.9%
Computer Science	Harvard University	38	21	35.6%
Computer Science	Massachusetts Institute of Technology	218	119	35.3%
Computer Science	University of Arkansas Main	22	11	33.3%
Computer Science	East Carolina University	27	13	32.5%
Computer Science	California State University, Northridge	21	10	32.3%
Computer Science	Florida Atlantic University	35	15	30.0%

Source: National Science Foundation, Survey of Graduate Students and Postdoctorate, webcaspar.nsf.gov. Some schools eliminated for space; limited to programs with at least 30 full-time students.

ABOUT THE AUTHOR

Stuart Anderson is Executive Director of the National Foundation for American Policy, a non-profit, non-partisan public policy research organization in Arlington, Va. Stuart served as Executive Associate Commissioner for Policy and Planning and Counselor to the Commissioner at the Immigration and Naturalization Service from August 2001 to January 2003. He spent four and a half years on Capitol Hill on the Senate Immigration Subcommittee, first for Senator Spencer Abraham and then as Staff Director of the subcommittee for Senator Sam Brownback. Prior to that, Stuart was Director of Trade and Immigration Studies at the Cato Institute in Washington, D.C., where he produced reports on the military contributions of immigrants and the role of immigrants in high technology. He has an M.A. from Georgetown University and a B.A. in Political Science from Drew University. Stuart has published articles in the *Wall Street Journal*, *New York Times*, *Los Angeles Times*, and other publications. He is the author of the book *Immigration* (Greenwood, 2010).

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