DOCUMENT RESUME

ED 476 764 SE 067 822

AUTHOR	Burrelli, Joan S.
TITLE	Graduate Enrollment Increases in Science and Engineering Fields, Especially in Engineering and Computer Sciences. InfoBrief: Science Resources Statistics.
INSTITUTION	National Science Foundation, Arlington, VA. Div. of Science Resources Statistics.
REPORT NO	NSF-03-315
PUB DATE	2003-04-00
NOTE	5p.
AVAILABLE FROM	Tel: 301-947-2722; e-mail: paperpubs@nsf.gov; Web site: http://www.nsf.gov/sbe/srs/.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - General (140)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Administration; *Computer Science; Educational Trends; *Engineering Education; *Enrollment Rate; Higher Education; Science Education

ABSTRACT

This brief describes graduate enrollment increases in the science and engineering fields, especially in engineering and computer sciences. Graduate student enrollment is summarized by enrollment status, citizenship, race/ethnicity, and fields. (KHR)

INFOBRIEF
Science Resources Statistics
National Science Foundation
Directorate for Social, Behavioral, and Economic Sciences
NSF 03-315
April 2003

GRADUATE ENROLLMENT INCREASES IN SCIENCE AND ENGINEERING FIELDS, ESPECIALLY IN ENGINEERING AND COMPUTER SCIENCES

by Joan S. Burrelli

In fall 2001, approximately 429,500 students were enrolled in science and engineering (S&E) programs at the graduate level, a 4 percent increase from the fall 2000 number of approximately 414,700 (table 1). Despite the increases, the number of science and engineering graduate students in 2001 was still below the 1993 peak of approximately 435,700. Full-time enrollment increased 4 percent, while part-time enrollment increased 2 percent, from 2000 to 2001. About 70 percent of science and engineering graduate students are enrolled full time.

Enrollment by Citizenship

An increase of students with temporary visas accounts for much of the recent increase in graduate science and engineering enrollment. Enrollment of students with temporary visas increased 9 percent from approximately 121,800 in 2000 to approximately 133,300 in 2001 (table 1). Increases for such students were greatest in engineering (up 11 percent) and computer sciences (up 16 percent) (figure 1). The number of computer sciences graduate students with temporary visas rose 133 percent between 1994 and 2001. Students with temporary visas now make up almost half of graduate students in computer sciences and in engineering.

The number of U.S. citizens and permanent residents enrolled in graduate science and engineering programs increased 1 percent from 2000 to 2001, reversing a decline that began in 1994. Among U.S. citizens and permanent residents, the number of white, non-Hispanic graduate S&E students was about the same in 2001 as it was in 2000, signalling a possible halt in the decline in white enrollment. Between 1993 and 2001, enrollment of white graduate students in science and engineering programs dropped 20 percent. Minority enrollment in graduate S&E programs increased from 2000 to 2001, continuing steady increases in most years throughout the period from 1993 to 2001. Enrollment of black and Hispanic graduate students rose 4 percent and enrollment of American Indian/Alaskan Native graduate students rose 5 percent from 2000 to 2001. The number of U.S. citizen and permanent resident Asians/Pacific Islanders enrolled in graduate S&E programs increased 5 percent in that time period (table 1).

Computer sciences enrollment was up 10 percent.

Enrollment by Field

Graduate enrollment rose in most science fields in 2001, although the numbers of students remained lower than in the early 1990s. The greatest gain in enrollment (10 percent) was in computer sciences. The only major field experiencing declines in enrollment was earth, atmospheric, and ocean sciences (down 1 percent) (table 2).

Engineering enrollment rose 5 percent in 2001, the third increase in as many years. Graduate enrollment in all

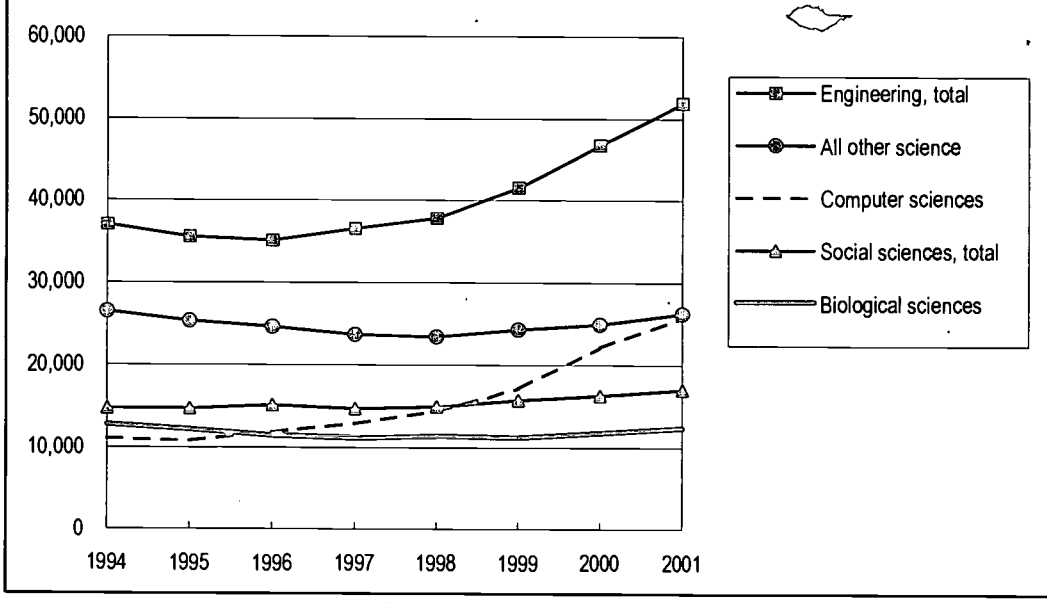
Information and data from SRS—the Division of Science Resources Statistics—are available on the web at: <http://www.nsf.gov/sbe/srs/>. For more information about obtaining reports, contact paperpubs@nsf.gov or call 301-947-2722. For NSF's Telephonic Device for the Deaf, dial 703-292-5090.

Table 1. **Graduate student enrollment in science and engineering, by enrollment status, citizenship, and race/ethnicity: 1993-2001**

Characteristic	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total	435,703	431,114	422,438	415,148	407,597	404,809	411,257	414,683	429,492
Full time	293,902	292,975	287,164	284,033	280,664	278,941	283,911	292,020	304,476
Part time	141,801	138,139	135,274	131,115	126,933	125,868	127,346	122,663	125,016
Men	279,178	272,021	262,248	253,499	245,608	241,406	242,832	243,882	251,848
Women	156,525	159,093	160,190	161,649	161,989	163,403	168,425	170,801	177,644
U.S. citizens and permanent residents	330,037	328,998	323,935	317,043	308,636	302,837	301,367	292,845	296,194
White, non-Hispanic	256,755	255,633	245,831	238,001	227,975	220,631	216,785	206,163	205,757
Asian or Pacific Islander	24,047	26,470	25,901	25,928	26,012	26,724	27,575	26,226	27,659
Black, non-Hispanic	17,111	17,610	18,285	19,066	19,341	19,649	20,330	20,977	21,773
Hispanic	13,380	13,273	14,112	14,571	14,984	15,485	16,533	17,220	17,983
American Indian/Alaskan Native	1,309	1,382	1,516	1,538	1,599	1,607	1,556	1,604	1,687
Other or unknown race/ethnicity	17,435	14,630	18,290	17,939	18,725	18,741	18,588	20,655	21,335
Students with temporary visas	105,666	102,116	98,503	98,105	98,961	101,972	109,890	121,838	133,298

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2001.

Figure 1. **Graduate science and engineering enrollment of students with temporary visas, by field: 1994-2001**



SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2001.

Table 2. **Graduate student enrollment in science and engineering, by field: 1994-2001**

Field	1994	1995	1996	1997	1998	1999	2000	2001
Total, science and engineering fields	431,114	422,438	415,148	407,597	404,809	411,257	414,683	429,492
Sciences, total	318,090	315,237	311,924	306,449	304,771	309,566	309,999	319,986
Physical sciences, total	34,466	33,399	32,333	31,105	30,575	30,691	30,463	30,988
Astronomy	973	912	874	778	820	832	888	916
Chemistry	19,803	19,570	19,334	18,774	18,482	18,416	18,188	18,300
Physics	13,162	12,425	11,728	11,147	10,809	10,869	10,836	11,264
Other physical sciences	528	492	397	406	464	574	551	508
Earth, atmospheric and ocean sciences, total	15,957	15,716	15,183	14,548	14,258	14,083	13,940	13,841
Atmospheric sciences	1,109	1,072	1,086	1,092	965	913	963	924
Geosciences	7,713	7,582	7,304	6,959	6,687	6,637	6,595	6,544
Oceanography	2,870	2,723	2,615	2,479	2,562	2,624	2,668	2,585
Other earth, atmospheric, and ocean sciences	4,265	4,339	4,178	4,018	4,044	3,909	3,714	3,788
Mathematical sciences	19,573	18,504	18,008	16,719	16,485	16,257	15,646	16,663
Computer sciences	34,158	33,458	34,626	35,991	38,027	42,560	47,594	52,196
Agricultural sciences	12,242	12,422	11,974	11,852	11,844	11,988	11,684	11,911
Biological sciences	58,033	58,680	58,060	57,044	56,994	57,115	56,494	57,826
Psychology, total	54,554	53,641	53,122	53,126	52,557	51,864	50,704	50,798
Social sciences, total	89,107	89,417	88,618	86,064	84,031	85,008	83,474	85,763
Agricultural economics	2,289	2,338	2,117	2,043	1,995	2,014	2,079	2,161
Anthropology	7,665	7,693	7,773	7,560	7,577	7,633	7,633	7,491
Economics	12,913	12,673	12,080	11,097	10,701	10,562	10,778	11,340
Geography	4,502	4,371	4,331	4,287	4,326	4,250	4,044	4,276
History and philosophy of science	387	401	409	443	508	557	532	571
Linguistics	3,279	3,194	3,156	3,068	2,935	2,799	2,674	2,744
Political science	34,317	34,298	33,252	32,083	30,828	31,381	31,179	31,850
Sociology	9,498	9,564	9,425	9,413	9,058	8,966	8,689	8,775
Sociology/anthropology	987	941	923	948	857	741	745	808
Other social sciences	13,270	13,944	15,152	15,122	15,246	16,105	15,121	15,747
Engineering, total	113,024	107,201	103,224	101,148	100,038	101,691	104,684	109,506
Aerospace engineering	3,715	3,343	3,208	3,083	3,137	3,349	3,407	3,485
Biomedical engineering	2,750	2,732	2,732	2,847	2,905	3,121	3,241	3,593
Chemical engineering	7,639	7,452	7,408	7,288	7,093	6,883	7,093	6,913
Civil engineering	19,925	19,218	18,528	17,193	16,517	16,226	16,494	16,604
Electrical engineering	33,020	30,721	29,702	30,548	31,129	31,382	33,318	35,745
Industrial/manufacturing engineering	13,992	13,475	12,675	11,957	11,221	11,803	12,253	12,940
Mechanical engineering	17,761	16,363	15,509	15,045	14,696	14,956	15,457	15,831
Metallurgical/materials engineering	5,228	4,956	4,747	4,688	4,680	4,481	4,377	4,721
Other engineering	14,222	13,897	13,462	13,187	13,340	13,971	13,421	14,395

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates Science and Engineering, 2001.

engineering fields rose, with the exception of chemical engineering. The engineering fields with the greatest gains were biomedical engineering (up 11 percent), metallurgical/materials engineering (up 8 percent), and electrical engineering (up 7 percent).

Data presented in this InfoBrief are from the fall 2001 Survey of Graduate Students and Postdoctorates in Science and Engineering. Data were collected from approximately 12,000 departments at approximately 600 institutions of higher education in the United States and outlying areas. The departmental response rate was 99 percent; however, 14 percent of the responding departments required partial imputation of missing data.

More detailed data are available in the forthcoming report, *Graduate Students and Postdoctorates in Science and Engineering: Fall 2001.*

This InfoBrief was prepared by:

Joan S. Burrelli
National Science Foundation
Division of Science Resources Statistics
Human Resources Statistics Program
4201 Wilson Boulevard, Suite 965
Arlington, VA 22230
703-292-7793
jburrelli@nsf.gov

NSF 03-315

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

	This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.
X	This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").