STATUS AND SUMMARY OF GENDER DIVERSITY IN THE COLLEGE OF ENGINEERING

SOCIETY OF WOMEN ENGINEERS

CAMPUS PROFILE

According to the Fall 2007 Enrollment statistics from the Division of Management Information (DMI), 1 ² the College of Engineering has the largest gender bias of any college on the University's Urbana-Champaign campus, with a ratio of 5.33 male students to each female student, more than three and a half times that of the next-highest college. Engineering has the second-highest total enrollment on the campus (7,307 students), but the second *lowest* number of female students (1,154). In fact, the only college with a lower number of female students is the College of Communications, which has just $1/10^{\text{th}}$ the number of students, and a gender ratio of 0.41.

| College | Total | Men | Women | Ratio |
|-------------------------------|-------|------|-------|----------|
| Education | 1644 | 339 | 1305 | 0.25977 |
| College of Communications | 915 | 270 | 645 | 0.418605 |
| Applied Health Sciences | 1984 | 663 | 1321 | 0.501893 |
| Agr, Consumer, & Env Sciences | 2818 | 1255 | 1563 | 0.802943 |
| Fine & Applied Arts | 2784 | 1318 | 1466 | 0.899045 |
| Liberal Arts & Sciences | 17694 | 8623 | 9071 | 0.950612 |
| College of Business | 3731 | 2215 | 1516 | 1.461082 |
| Engineering | 7307 | 6153 | 1154 | 5.331889 |

Table 1 - Fall 2007 enrollment by college ordered by gender ratio

As the graph below shows, the freshman retention rate for female students in the College of Engineering was the lowest on campus in the 2002-2003 academic year, at just 86.6%, but has made marked improvement since the 2004-2005 year, tying for second on campus behind Applied Health Sciences in the 2007-2008 year (at 95.4%). Retention increases were primarily focused in the 2002-2005 period, with 2006-2008 showing only very modest increases. On a campus-wide basis, female freshman retention rates have increased from 92.2% to 94.5% during this period. Retention rates for the College of Communications and the Division of General Studies were unavailable from DMI. The Institute of Aviation reported these values, but had such a low enrollment of women and minority students that the rates were not meaningful. Male freshman retention increased slightly during this period, from 89.4% to 92% in the College of Engineering, but there has been only a slight overall increase in male freshman retention on the campus as a whole, from 90.6% to 91.3%.

¹ The central data reporting warehouse of the Urbana-Champaign campus, <u>http://www.dmi.uiuc.edu/</u>

² The authors would link to thank Carol Livingstone and the Division of Management Information for their assistance in preparing the Campus Profile section of this report, especially for the custom reporting they provided on several measures.



Figure 1 - Freshman retention rate - female



Figure 2 - Freshman retention rate - male

Freshman retention rates represent only a small (though very important) component of the retention process. Students may drop out after their freshman year or transfer to other majors. A better measure of overall success in retaining female engineering students is the 6-Year Graduation Rate, which surveys the percentage of students which enter the University and graduate within 6 years.

In 2001, Engineering had the third-lowest female dropout rate on campus, at 17.5%, compared with a campus average of 26.69%. By 2007, Engineering had the 4th highest female dropout rate, at 14.58%, compared with a campus average of 22.07%. This reflects a campus-wide trend towards increasing female retention during this period. For male students in 2001, Engineering had the third highest dropout rate, at 26.84% compared with a campus average of 20.29%, but

by 2007, that rate had decreased to 18.76% with a campus average of 14.59%, making Engineering the second *lowest* on campus.

During this 6 year period, the female Engineering dropout rate decreased by 2.92% against a campus-wide decrease of 4.62%, while male dropout rates decreased 8.07% against a campus decrease of 5.70%. The decrease in female dropout rates was therefore just half the campus average, while the male drop considerably outpaced the overall campus average.

The dropout rate is computed as the percentage of students who entered a college and then left the University without completing a degree. Students that transfer to other institutions are treated as dropouts, as for the purposes of this study, any student who leaves the University is reflective of a student who did not have all of her needs met at this institution.

| College | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Agricultural, Cons, & Env Sci | 20.45 | 17.01 | 15.03 | 13.75 | 17.68 | 13.47 | 15.36 |
| Applied Health Sciences | 25.20 | 12.82 | 19.83 | 9.17 | 12.84 | 14.00 | 15.04 |
| Business | 14.18 | 14.19 | 13.74 | 14.34 | 7.46 | 7.47 | 6.62 |
| CampusTotal | 26.69 | 25.31 | 23.06 | 21.19 | 21.49 | 21.09 | 22.07 |
| Education | 15.69 | 17.80 | 12.86 | 17.31 | 13.59 | 14.79 | 10.83 |
| Engineering | 17.50 | 19.34 | 16.28 | 12.97 | 17.86 | 14.29 | 14.58 |
| Fine & Applied Arts | 20.51 | 24.68 | 17.67 | 17.36 | 18.49 | 16.33 | 14.35 |
| Liberal Arts & Sciences | 21.91 | 20.23 | 19.08 | 19.32 | 18.42 | 16.81 | 16.22 |

Table 2 - Female dropout rates by college





Graduation rates, computed as the percentage of students who entered the University and graduated within 6 years, are listed below. There are two ways in which a student can graduate from the University: Other College (a student who began in this college, but subsequently transferred to a different college in the University and graduated within 6 years) and Same College (a student who began in this college and graduated from it within 6 years). In both cases, a student can transfer between departments in a college; the only metric evaluated here is whether the student stays in the same college from entrance to degree conferral.

In 2001, Engineering had the second lowest female other-college graduation rate, at just 19%, compared with a campus average of 19.79% and a high of 39.02% set by Agricultural, Consumer, and Environmental Science. Six years later, Engineering was fourth *highest*, at 27.08%, compared with a campus average of 19.81% and a high of 35% set by Education. In effect, from 2001 to 2007, the College of Engineering saw a nearly 10% increase in female students transferring out of the College to attend other programs on campus.

Male students in Engineering, on the other hand, had the third-lowest Other College Graduation Rate in 2001, at 18.5%, compared with a campus average of 24.33%, dropping to second-lowest in 2007, at 16.8% compared with a campus average of 27.24%. While small, this still represents a 1.6% *drop* in transfers against the 10% *increase* of female transfers.

| 0 | | 0 | 0 | | | | |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| College | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Agricultural, Cons, & Env Sci | 39.02 | 25.00 | 33.01 | 32.65 | 27.83 | 29.04 | 29.52 |
| Applied Health Sciences | 26.83 | 29.06 | 25.00 | 30.00 | 32.11 | 21.00 | 21.24 |
| Business | 15.30 | 11.29 | 9.54 | 9.09 | 11.53 | 9.25 | 9.93 |
| CampusTotal | 19.79 | 19.72 | 19.66 | 21.60 | 19.99 | 20.79 | 19.81 |
| Education | 28.10 | 17.80 | 45.71 | 36.54 | 27.18 | 26.76 | 35.00 |
| Engineering | 19.00 | 23.76 | 28.84 | 29.73 | 25.51 | 29.59 | 27.08 |
| Fine & Applied Arts | 22.65 | 19.57 | 20.26 | 18.60 | 24.91 | 22.45 | 24.66 |
| Liberal Arts & Sciences | 23.37 | 26.00 | 25.90 | 27.38 | 27.39 | 27.98 | 29.91 |

Table 3 - Female graduation rate by college - other college



Figure 4 - Female graduation rate by college - other college

Same-college graduation rates are perhaps the most important, as they reflect those students who stay in the same college their entire tenure here and graduate with a degree from that college. This represents complete retention in that students are provided with the necessary resources and environment to complete their degree program. Engineering ranked second highest on campus for female student same-college 6-year graduation rates in 2001, at 63.50%, compared to a campus average of 53.52%. By 2007, that number had fallen to fourth highest on campus, 5% lower than its previous level and just barely above the campus average, while several other departments experienced increases of 10 and even 20%. Male same-college graduation rates jumped nearly 10% during this period, from 54.63% in 2001 to 64.34% in 2007, an increase of nearly 10% in retention, and maintaining its position as second on campus during this period, as seen in Figure 6. Indeed, as Figure 7 illustrates, male and female same-college graduation rates have essentially switched places over the last 6 years.

| 0 | | 0 | | | | | |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| College | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| Agricultural, Cons, & Env Sci | 40.53 | 57.99 | 51.96 | 53.61 | 54.49 | 57.49 | 55.12 |
| Applied Health Sciences | 47.97 | 58.12 | 55.17 | 60.83 | 55.05 | 65.00 | 63.72 |
| Business | 70.52 | 74.52 | 76.72 | 76.57 | 81.02 | 83.27 | 83.44 |
| CampusTotal | 53.52 | 54.98 | 57.28 | 57.22 | 58.52 | 58.13 | 58.13 |
| Education | 56.21 | 64.41 | 41.43 | 46.15 | 59.22 | 58.45 | 54.17 |
| Engineering | 63.50 | 56.91 | 54.88 | 57.30 | 56.63 | 56.12 | 58.33 |
| Fine & Applied Arts | 56.84 | 55.74 | 62.07 | 64.05 | 56.60 | 61.22 | 60.99 |
| Liberal Arts & Sciences | 54.71 | 53.78 | 55.02 | 53.29 | 54.19 | 55.20 | 53.88 |

Table 4 - Female graduation rate - same college



Figure 5 - Female graduation rate - same college



Figure 6 - Male graduation rate - same college



Figure 7 - Female vs male graduation rates - same college

'FEMALE EXPERIENCES IN ENGINEERING' DIVERSITY SURVEY

Of course, numbers alone never reflect the entire story: students can still find success in an unwelcoming and discriminatory environment. While encouraging more women to become engineers is something that must addressed at a national level, it falls to us as an institution to ensure that those women who do decide to embark upon a career in engineering are able to learn and grow in a welcoming and non-discriminatory environment. In collaboration with the Education Subcommittee of the College of Engineering and Women in Engineering, the Society of Women Engineers created a survey titled *Female Experiences in the College of Engineering* that was distributed in November 2007 to all female undergraduate and graduate students currently enrolled in the College. Submissions were anonymous to encourage students to be as open as possible with their responses.

In all, 175 responses were received, representing 15% of the College's 1,154 female students. Responses were coded into closed-response form for analysis. Two-thirds of respondents reported being treated differently at some point in their tenure here, while 43% reported that they face such issues *sometimes* to *often*. Most disturbing, however, were the severity of issues involving professors and teaching assistants. Several of these involved inappropriate sexual comments or advances, which can be particularly traumatic given the power faculty and instructional staff hold over grades. The survey results would further seem to suggest a broad trend of varying discrimination against female students by their peers, in several cases coupled with inaction by authority figures to discourage that behavior.



Figure 8 - Responses by severity level



Figure 9 - Responses by issue type (multiple issues could be selected per response)



Figure 10 - Issue densities by department

To convert the Often/Sometimes/Rarely/Never scores into a single value that could be easily graphed, the following formula was used:

SCORE = (Always*3)+(Sometimes*2)+(Rarely*1)

A response with Never will have a 0, Rarely will have 1, Sometimes 2, and Always 3, yielding a response range of 0-3, with higher averages in the graphs below indicating more responses in the affirmative range.



Figure 11 - Mean severity level by student level

There was a significantly smaller number of identified graduate responses compared with those of undergraduate students (32 to 143 – the remainder did not specify their class level). However, the responses from graduate students tended overall to be significantly more positive than those of undergraduates, suggesting that the majority of diversity issues may be localized to the undergraduate population. Given the high reporting of peer issues, this would suggest that incidents of peer discrimination may be more predominate at the undergraduate level.

Figure 12 ranks all departments by their average severity score. Chemical Engineering ranks as the most welcoming department to female students, while Aerospace Engineering appears the least friendly. Students in the Chemical Engineering curriculum are required to take a series of general chemistry courses that are mixed 50/50 male/female enrollment, placing these students in an environment in which peer issues are likely to be significantly less prevalent.



Figure 12 - Mean severity score by department



Figure 13 - Response breakdown by department

COMPARED WITH PEER INSTITUTIONS

The Female Experiences survey has been distributed to several peer institutions to gather crossinstitutional comparative data. Results are very preliminary at this time, but early data from Purdue University shows that out of 32 responses, nearly two thirds report that they have *never* experienced being treated differently, which is almost exactly opposite that of UIUC (where only one third report this).

DEPARTMENTAL CONTRIBUTIONS

The Department of Computer Science stands out among its College of Engineering peers as a model of how diversity appreciation can be furthered within an academic environment. Among the many changes enacted by the department is the creation of an Advancement Team that brings together the complementary roles of Development, Communications, Engagement, and Outreach. The role of outreach in this department is particularly important, as it focuses inwardly as well as outwardly, ensuring that students meet with continued success while enrolled in the department. At-risk students (of all genders) are proactively identified by faculty and scheduled for intervention *before* they fall behind and become discouraged. This is especially important for female students, who often face continual negative reinforcement from peers that they do not belong and so may not be as likely to reach out for help when they need it. The department has worked extensively to bring female students into the fold with social events, such as a freshman picnic that provides an opportunity for female students to meet one another and network. Women in Computer Science (WCS), a student organization in the department for the advancement of women in the discipline, receives considerable active support from the department, and numerous faculty make themselves available to it. The department also has a

webpage where issues, including those relating to discrimination, may be reported anonymously and "town hall" meetings where students can voice concerns about issues confronting them.

At the campus level, the LINC program ³ provided a rich interdisciplinary environment for engineering students to interact with students from other backgrounds in mentored project teams engaged in solving real-world problems. The applied nature of LINC's projects and its emphasis on structured collaboration was loosely modeled on Purdue University's EPICS program, ⁴ which was instrumental in that institution's highly successful diversity initiative.

DEGREE CONFERRAL DATA

Inwardly-facing measures reflect only the local environment of UIUC without the broader context of how this compares with peer institutions. Short-term patterns, even those spanning 6-10 years, reflect only the most recent state of events, without providing the longitudinal context in which to interpret them. The remainder of this report draws from the Profile of a Campus Project, http://knowledge.ncsa.uiuc.edu/profileofacampus/, the early doctoral work of one of the authors focusing on strategic planning indicators for postsecondary institutions. In particular, it draws upon that project's work with the HEGIS and IPEDS degree conferral surveys, produced by the National Center for Educational Statistics (NCES), part of the United States Department of Education. The NCES surveys constitute the only nationally-scoped postsecondary dataset for the exploration of longitudinal trends in US education, spanning from 1966 to present day. The Profile of a Campus Project uses a unique compilation of the HEGIS and IPEDS material, produced as part of a special project to merge the two surveys into a unified 40-year database. In particular, this dataset operates at the line level, adjusted for survey events (such as the 1999 online conversion), and crosswalked across all 6 taxonomies, and represents the only such line-level dataset in existence.

Degree conferral measures one aspect of retention: the overall trends of students entering and graduating with degrees in engineering from an institution. The primary purpose of the remainder of this report will therefore be to use this information to study longitudinal degree conferral patterns with respect to gender. Graphs trace the percentage of female awards compared to peer institutions, as well as illustrating local trends in award volume between male and female students. Some degree programs show marked upwards or downwards trends over the last 40 years in female awards, while others show periods of strong growth in male graduations, with no matching increase in female graduations. This data should be treated not as a ground truth of total volume within a particular program, but rather as a comparative indicator on how female and male graduation rates compare within each program and to our peer institutions.

The table below ranks all Engineering-related 2004 degree conferral lines at UIUC (IPEDS CIP2000 codes / all award levels) by the percent of each that were awarded to female students. There were 109 ranking positions, from 100% to 0%, with lines listed together in case of same rank. The original table may be found on Profile of a Campus project site. ⁵ There is some difference between undergraduate and graduate degree breakdowns, and those tables are available individually at ⁶ and ⁷, respectively.

³ http://www.linc.uiuc.edu/

⁴ http://epics.ecn.purdue.edu/

⁵http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/TOPLATESTYEAR/uiuc_rankallpercen female.html

⁶http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/TOPLATESTYEAR/uiuc_ugrankallperc enfemale.html

| Rank | Percent | Line |
|------|---------|--|
| 55 | 54.76 | Environmental Science. (30104) |
| 65 | 45.95 | Biochemistry. (260202) |
| 72 | 41.46 | Chemistry, General. (400501) |
| 78 | 38.18 | Biomedical/Medical Engineering. (140501) |
| | | East Asian Studies. (50104) |
| 86 | 30 | Biophysics. (260203) |
| | | Engineering, General. (140101) |
| 88 | 26.09 | Agricultural Business and Management, Other. (10199) |
| 90 | 22.22 | Materials Science. (143101) |
| 91 | 21.84 | Civil Engineering, General. (140801) |
| 92 | 21.62 | Mathematics and Computer Science. (300801) |
| 93 | 20.83 | Industrial Engineering. (143501) |
| 94 | 20.51 | Physics, General. (400801) |
| 96 | 18.75 | Engineering Physics. (141201) |
| 98 | 16.67 | Aerospace, Aeronautical and Astronautical Engineering. (140201) |
| 99 | 15.62 | Chemical Engineering. (140701) |
| 100 | 14.84 | Electrical, Electronics and Communications Engineering. (141001) |
| 101 | 14.29 | Nuclear Engineering. (142301) |
| 102 | 14.25 | Computer Science. (110701) |
| 103 | 12.9 | Agricultural/Biological Engineering and Bioengineering. (140301) |
| 104 | 11.11 | Engineering Mechanics. (141101) |
| 105 | 10.13 | Computer Engineering, General. (140901) |
| 106 | 7.45 | Mechanical Engineering. (141901) |
| 107 | 5 | Agricultural Mechanization, General. (10201) |
| | | Cell/Cellular and Molecular Biology. (260406) |
| | | Neuroscience. (302401) |
| | | Systems Engineering. (142701) |
| 109 | 0 | Latin Teacher Education. (131333) |

Table 5 - 2004 conferred degree codes (CIP2000) ranked by % female (UG+GR) (out of 109 positions)

In order to provide comparative data on the University's peers, two cohorts were constructed. The University's size cohort for 2004 was comprised of all those institutions awarding more than 9,895 degrees, 15 institutions in all. ⁸ The University's Carnegie cohort for 2004 was comprised of all institutions with the same research extensive classification as the UI, 151 in all. ⁹ Of the 146 institutions awarding degrees in 2004, the University ranked 118th in terms of the percentage of its total degrees (graduate + undergraduate) going to women, at 48.26%. When compared against other institutions of comparable size, it ranked last for total percent of all degrees going

⁷http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/TOPLATESTYEAR/uiuc_grankallperce nfemale.html

⁸http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/GENERALREPORTS/COHORTBYYE AR.html

 $http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/GENERALREPORTS/carnegiecohort.ht\ ml$

to females. When limited only to undergraduate degrees, the University still ranked last, but for graduate degrees it was actually 12th at 47.79%, with the lowest being Texas A&M at 40.76%. ¹⁰

| Rank | Percent | Institution |
|------|---------|---|
| 1 | 57.93 | NEW YORK UNIVERSITY (NEW YORK, NY) |
| 2 | 56.26 | UNIVERSITY OF PHOENIX-ONLINE CAMPUS (SAN FRANCISCO, CA) |
| 3 | 54.79 | MICHIGAN STATE UNIVERSITY (EAST LANSING, MI) |
| 4 | 54.02 | UNIVERSITY OF CALIFORNIA-LOS ANGELES (LOS ANGELES, CA) |
| 5 | 53.59 | UNIVERSITY OF MINNESOTA-TWIN CITIES (MINNEAPOLIS, MN) |
| 6 | 53.56 | ARIZONA STATE UNIVERSITY-MAIN CAMPUS (TEMPE, AZ) |
| 7 | 53.54 | UNIVERSITY OF WASHINGTON (SEATTLE, WA) |
| 8 | 53.39 | UNIVERSITY OF CALIFORNIA-BERKELEY (BERKELEY, CA) |
| 9 | 52.44 | OHIO STATE UNIVERSITY-MAIN CAMPUS (COLUMBUS, OH) |
| 10 | 51.66 | UNIVERSITY OF FLORIDA (GAINESVILLE, FL) |
| 11 | 51.61 | THE UNIVERSITY OF TEXAS AT AUSTIN (AUSTIN, TX) |
| 12 | 49.21 | PENNSYLVANIA STATE UNIVERSITY-MAIN CAMPUS (UNIVERSITY PARK, PA) |
| 13 | 49.17 | UNIVERSITY OF MICHIGAN-ANN ARBOR (ANN ARBOR, MI) |
| 14 | 49.14 | TEXAS A & M UNIVERSITY (COLLEGE STATION, TX) |
| 15 | 48.26 | UNIVERSITY OF ILLINOIS AT URBANA (CHAMPAIGN, IL) |

Table 6 - Size cohort by % all degrees awarded to females ¹¹

While it is important to be able to consult engineering majors as a single discipline, there is no single CIP line group that covers all engineering degrees. As a surrogate, however, the Engineering line group (CIP2000 code 14.XXXX) covers all major Engineering disciplines with the exception of Physics (40.0801) and Computer Science (11.0101). The tables and charts below must therefore be interpreted in the absence of these two disciplines. However, at the end of this section, graphs are provided for each individual discipline at the line level, including Physics and Computer Science. Lines included under the 14.XXXX line group are General Engineering (14.0101), Aerospace, Aeronautical and Astronautical Engineering (14.0201), Agricultural/Biological Engineering and Bioengineering (14.0301), Biomedical/Medical Engineering. (14.0501), Chemical Engineering (14.0701), General Civil Engineering (14.0801), Electrical, Electronics and Communications Engineering (14.1001), Engineering Mechanics (14.1101), Industrial Engineering (14.1701), Materials Engineering (14.1801), Mechanical Engineering (14.1901), and Nuclear Engineering (14.2301).

In 2004, there were 478 postsecondary institutions in the United States that reported awarding BS degrees under the Engineering line group, for a total of 64,384 degrees. Of these, 13,248 were awarded to women, roughly 20.5% of the national total. Nearly a quarter of CAS (Certificate of Advanced Study: post-MS / pre-doctoral) degrees were awarded to women in that year, along with 21.2% of MS and 17.8% of PhD degrees. The University of Illinois awarded 17.9% of its BS degrees in that year to female students, 17.4% of its MS degrees, and 13.17% of its PhDs. The 978 BS degrees it awarded in 2004 comprised 1.52% of all BS degrees in this line group awarded by institutions nationally.

¹⁰http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/TOPLATESTYEAR/sizecohort_granka llpercenfemale.html

¹¹http://knowledge.ncsa.uiuc.edu/profileofacampus/EDUCATION/TOPLATESTYEAR/sizecohort_rankall percenfemale.html

| | | 0 | 0 \ | , | | |
|------|-------|-------|--------------|-------|-------|--------|
| Year | Level | Total | NumReporting | Men | Women | %Women |
| 2004 | PhD | 5785 | 191 | 4755 | 1030 | 17.80 |
| 2004 | CAS | 276 | 16 | 208 | 68 | 24.63 |
| 2004 | MS | 32248 | 302 | 25384 | 6864 | 21.28 |
| 2004 | BS | 64384 | 478 | 51136 | 13248 | 20.57 |
| 1994 | PhD | 5856 | 173 | 5197 | 659 | 11.25 |
| 1994 | CAS | 187 | 18 | 164 | 23 | 12.29 |
| 1994 | MS | 28774 | 283 | 24280 | 4494 | 15.61 |
| 1994 | BS | 62305 | 412 | 51989 | 10316 | 16.55 |

Table 7 - Total National Engineering (CIP2000 14.XXXX) awards

| Table 8 - | UIUC | Engine | ering (O | CIP2000 | 14.XXXX) | awards |
|-----------|------|--------|----------|---------|----------|--------|
|-----------|------|--------|----------|---------|----------|--------|

| Year | Level | Total | %National | Men | Women | %Women |
|------|-------|-------|-----------|-----|-------|--------|
| 2004 | PhD | 129 | 2.23 | 112 | 17 | 13.18 |
| 2004 | MS | 453 | 1.4 | 374 | 79 | 17.44 |
| 2004 | BS | 978 | 1.52 | 802 | 176 | 18.00 |
| 1994 | PhD | 152 | 2.6 | 138 | 14 | 9.21 |
| 1994 | MS | 401 | 1.39 | 350 | 51 | 12.72 |
| 1994 | BS | 1014 | 1.63 | 845 | 169 | 16.67 |

The following graphs trace UIUC degree conferrals in the 14.XXXX line group from 1966 to 2004, representing nearly 40 years of awards. Figure 14 compares total UIUC awards (undergraduate + graduate) against its size and Carnegie cohorts, while the remaining graphs explore UG/GRAD and gender breakdowns of those degrees.



Figure 14 - Engineering (CIP2000 14.XXXX) awards - total UIUC against size and Carnegie cohorts









Figure 17 - Engineering (CIP2000 14.XXXX) awards - total UIUC graduate by gender

The following three figures explore the percent of Engineering degrees that were awarded to female students, comparing UIUC, the national average, and the averages of its size and Carnegie cohorts. In this case, the national average is computed as the mean of all schools reporting to NCES one or more graduations in this line group.



Figure 18 - Engineering (CIP2000 14.XXXX) awards - % all women



Figure 19 - Engineering (CIP2000 14.XXXX) awards - % undergraduate women



DEPARTMENAL / DISCIPLINE DEGREE CONFERRAL BREAKDOWN

Finally, the graphs below illustrate trends within each degree field, including Computer Science and Physics. Three graphs are shown for each line group, the first comparing % of degrees awarded to women in this line at the UI vs the national and cohort averages. The second graph compares total undergraduate degree counts between male and female students, while the third does the same for graduate degrees. No graduate awards were made by UIUC in the Biomedical/Medical Engineering (14.0501) line, and no degrees were awarded by UIUC at any level in Materials Engineering (14.1801).



Aerospace, Aeronautical and Astronautical Engineering





Figure 22 - Aerospace, Aeronautical and Astronautical Engineering (14.0201) - UIUC undergraduate total



Figure 23 - Aerospace, Aeronautical and Astronautical Engineering (14.0201) - UIUC graduate total



Agricultural/Biological Engineering and Bioengineering

Figure 24 - Agricultural/Biological Engineering and Bioengineering (14.0301) - % women



Figure 25 - Agricultural/Biological Engineering and Bioengineering (14.0301) - UIUC undergraduate total



Figure 26 - Agricultural/Biological Engineering and Bioengineering (14.0301) - UIUC graduate total







Figure 28 - Biomedical/Medical Engineering (14.0501) - UIUC undergraduate total







Figure 30 - Chemical Engineering (14.0701) - UIUC undergraduate total



Figure 31 - Chemical Engineering (14.0701) - UIUC graduate total



Civil Engineering

Figure 32 - Civil Engineering, General (14.0801) - % women





Society of Women Engineers



Computer Science

Figure 35 - Computer and Information Sciences, General (11.0101) - % women



Figure 36 - Computer and Information Sciences, General (11.0101) - UIUC undergraduate total



Figure 37 - Computer and Information Sciences, General (11.0101) - UIUC graduate total





Figure 38 - Electrical, Electronics and Communications Engineering (14.1001) - % women



Figure 39 - Electrical, Electronics and Communications Engineering (14.1001) - UIUC undergraduate total



Figure 40 - Electrical, Electronics and Communications Engineering (14.1001) - UIUC graduate total



General Engineering

Figure 41 - Engineering, General (14.0101) - % women



Figure 42 - Engineering, General (14.0101) - UIUC undergraduate total



Figure 43 - Engineering, General (14.0101) - UIUC graduate total



Figure 44 - Engineering Mechanics (14.1101) - % women

2005



Figure 45 - Engineering Mechanics (14.1101) - UIUC undergraduate total



Figure 46 - Engineering Mechanics (14.1101) - UIUC graduate total

Industrial Engineering



Figure 47 - Industrial Engineering (14.1701) - % women



Figure 48 - Industrial Engineering (14.1701) - UIUC undergraduate total



Figure 49 - Industrial Engineering (14.1701) - UIUC graduate total



Mechanical Engineering

Figure 50 - Mechanical Engineering (14.1901) - % women

Society of Women Engineers



Figure 51 - Mechanical Engineering (14.1901) - UIUC undergraduate total



Figure 52 - Mechanical Engineering (14.1901) - UIUC graduate total





Figure 53 - Nuclear Engineering (14.2301) - % women



Figure 54 - Nuclear Engineering (14.2301) - UIUC undergraduate total

Society of Women Engineers







Society of Women Engineers



Figure 57 - Physics, General (40.0801) - UIUC undergraduate total



Figure 58 - Physics, General (40.0801) - UIUC graduate total