WINTER 2005

Special Report

Committee on Professional Training

American Chemical Society 1155 Sixteenth Street, N.W. Washington, DC

# Report on the CPT Survey of 2001–2004 Enrollments in Selected Chemistry Courses

## Introduction

The Committee on Professional Training (CPT) surveyed all ACS-approved programs in the fall of 2004 to obtain data on the summer enrollments in selected chemistry courses, the total number of chemistry majors, and the number of majors with biochemistry concentrations for three academic years: 2001–02, 2002–03, and 2003–04. We have made a preliminary report of this snapshot of current college chemistry education.[1, 2] Here we provide a more detailed analysis of the data obtained from this survey. This report, along with additional figures and the original data, is available on the CPT website (www.chemistry.org/education/cpt). CPT plans to conduct similar surveys every three years to evaluate trends in college chemistry education; the next survey will be done in the fall of 2007.

Although CPT routinely collects and reports the number of chemistry majors graduating each year from approved programs, no data are available on the enrollments in specific chemistry courses or the fraction of chemistry majors concentrating in biochemistry.[3] The U.S. Department of Education, National Center for Education Statistics (www.nces.ed.gov) reports statistics on all science graduates, including the number of chemistry majors. Publishers do rely on the commercially available marketing surveys of textbook sales that, in some way, reflect the number of students studying chemistry at various levels.[4] No systematic study has been taken, however, to determine student enrollments in specific chemistry courses. This survey was consequently designed to obtain information on undergraduate chemistry education that is not available from other sources and assess the following: service teaching (ST), the teaching of science literacy (SL), and the number of students preparing for careers as professional chemists (pipeline issues, P). The data collected in the survey included student enrollments in five courses:

- The first course in Introductory Chemistry for science majors (ST, SL, P),
- The first course in Introductory Chemistry for health-allied (non-premed) students (ST, SL),
- The first course in Introductory Chemistry for non-science students (ST, SL),
- The second semester/third quarter Organic Chemistry course (ST, P), and
- The first semester/first quarter Physical Chemistry course (ST, P).

**This survey was designed to obtain information on undergraduate chemistry education that is not available from other sources.**

In addition, the survey asked for the total number of graduating chemistry majors, as well as that of those with a biochemistry concentration, to evaluate the importance of this particular subdiscipline. Comparison of course offerings and student enrollments during the academic year with those in the summer measures the extent of summer school teaching. The percentage of the total undergraduate population enrolling in chemistry courses and majoring in the field assesses the level of interest in this discipline.

The 419 institutions that completed the online survey represent nearly two-thirds (65%) of ACS-approved programs.[5] This response rate did not vary with the type of institution as categorized by highest degree awarded, BA/BS only, MS, or PhD. Because of obvious errors in the reported data, five schools were excluded from the analysis. Consequently, the results summarized here represent 414 separate institutions with undergraduate enrollments totaling 3.9 million students or approximately 50% of students enrolled in four-year baccalaureate programs in the United States. The survey did not include any of the two-year institutions with annual enrollments of approximately 6 million students or non-ACS-approved four-year programs.

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[1] *CPT Newsletter,* Summer 2005, *4*(3).

[2] Merritt, M. V., Mills, N., Thompson, M., Woods, G. ACS-CPT Survey of 2001–2004 Enrollments in Selected Chemistry Courses. Abstract #1354. ACS National Meeting, San Diego, CA, March 2005.

[3] *Chem. Eng. News*. 2005, *83*(39), 52–60, 69.

[4] Monument Information Resource, http://www.mirdata.com/about/about.asp, accessed October 27, 2005.

[5] Thirty-six additional institutions completed the survey after the data analysis was done. Although these responses are not included in the compilations reported here, the additional data were consistent with them and confirm the trends seen over the three-year period of the survey. There were 634 institutions with ACS-approved programs at the time of this survey in fall 2004.

Our preliminary report focused on the average values of the composite data from all 414 institutions. In addition to a more complete analysis on the composite data, we report here on each course/program for three categories of institutions grouped by the size of their undergraduate enrollment: 2,500 (108 schools), 2,500 to 10,000 (171), and >10,000 (135). We will refer to these groups as small, medium, and large institutions, respectively. The majority of the small institutions award only BA/BS degrees. Medium-sized ones typically offer master's degrees, with the large comprehensive universities awarding bachelor's through doctorate degrees.

### Quality of Data and the Analysis

The survey results are based on self-reported data and, consequently, reflect the quality of the information submitted by the individual chemistry departments. We did not make concerted efforts to verify the accuracy of the data supplied. In a few cases in which only one or two entries from an institution were obviously in error (e.g., more biochemistry concentrators than the total number of chemistry majors), we did contact the school to correct such entries. For one institution that did not report its total undergraduate enrollment at all, we used the value reported on its website. We estimated the total undergraduate enrollments for three other schools not reporting these data for 2001–02 on the basis of enrollments for the other two years. Any report of "zero" enrollment in a course was interpreted to mean that this particular course was not taught during the reporting period. Similarly, we concluded that a department offered a course or program (biochemistry) for a given period if the number of students entered for it was not zero. The large number of question marks entered for "total summer school enrollment" indicated that many departments were uncertain about the overall institutional summer school program even though they provided numerical data for summer chemistry course enrollments. Consequently, we think that the greatest uncertainty in our analysis arises from total summer school enrollments. The relatively small percentage of students enrolled in summer courses limits the impact of this uncertainty. The total summer 2004 enrollment in the five courses

FIGURE 1
**Institutions Reporting Enrollments in Three Introductory Chemistry Courses, 2001–04**

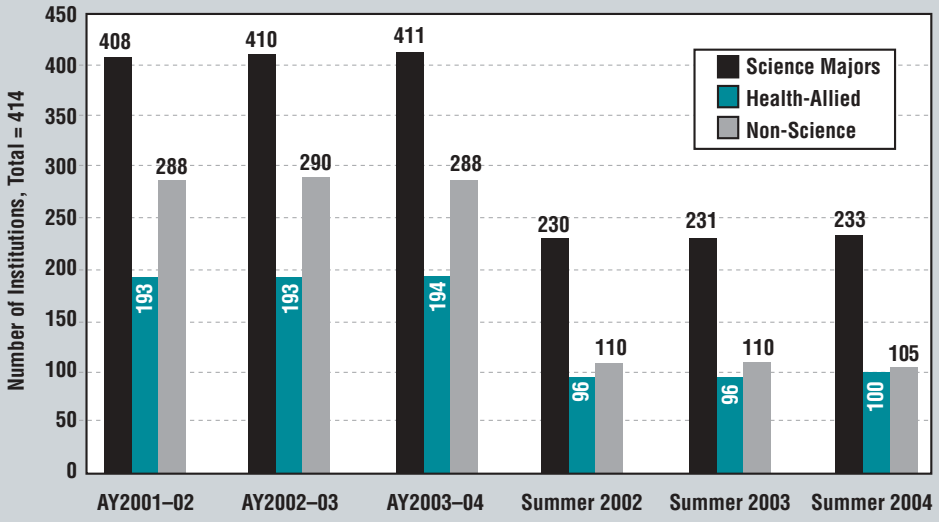



FIGURE 1a
**Institutions with <2,500 Undergraduates Reporting Enrollments in Three Introductory Chemistry Courses, 2001–04**

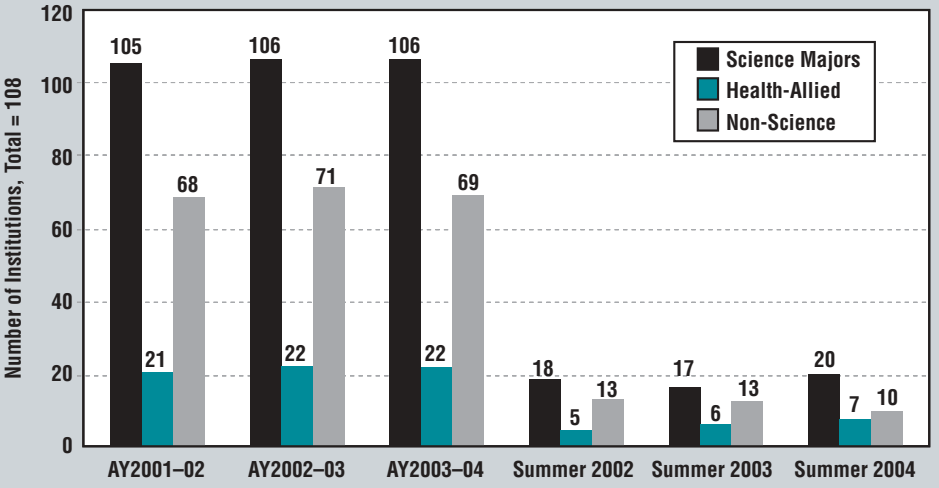



FIGURE 1b
**Institutions with 2,500–10,000 Undergraduates Reporting Enrollments in Three Introductory Chemistry Courses, 2001–04**

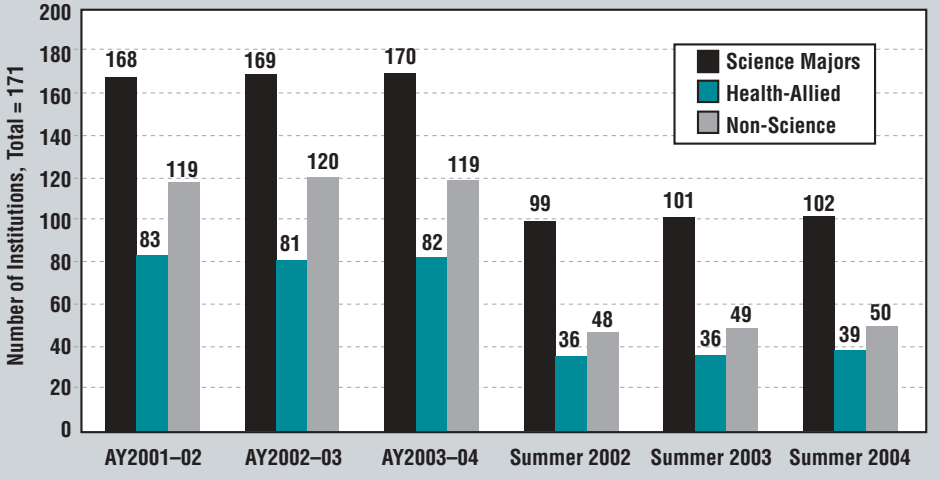


FIGURE 1c
**Institutions with >10,000 Undergraduates Reporting Enrollments in Three Introductory Chemistry Courses, 2001–04**

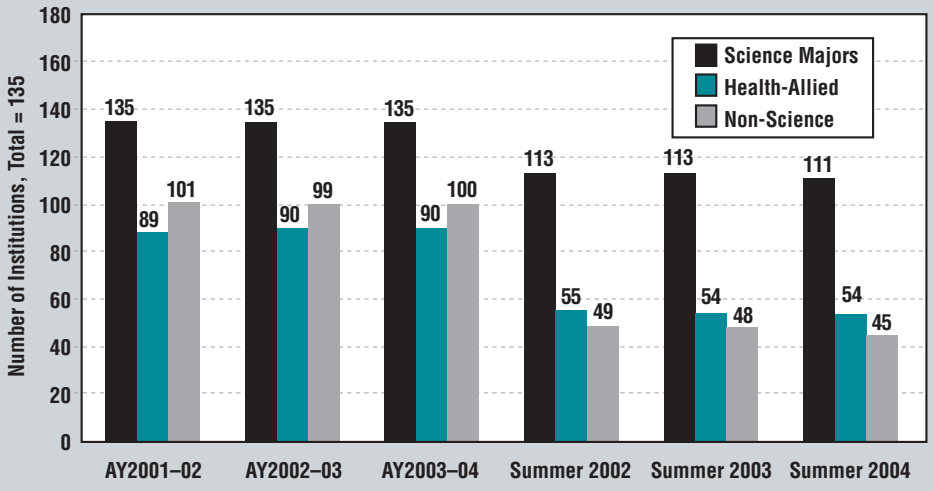



FIGURE 2
**Number of Students Enrolled in Three Introductory Chemistry Courses, 2001–04**
**All 414 Institutions Responding**

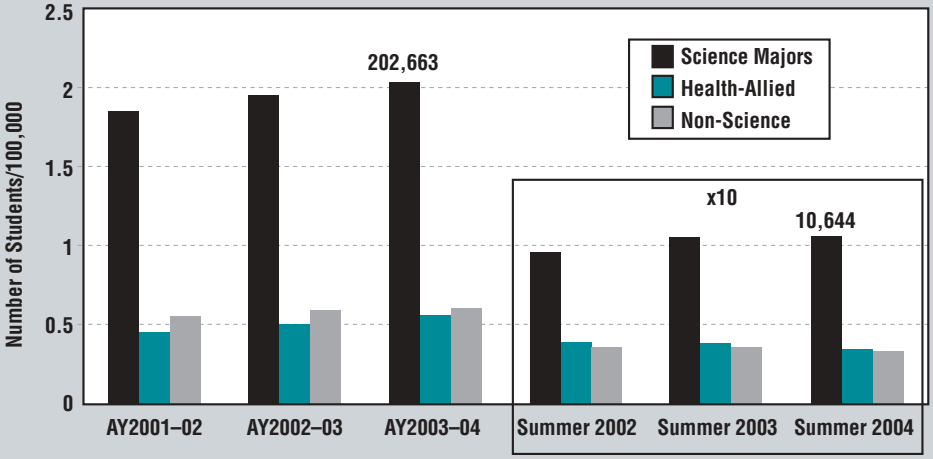
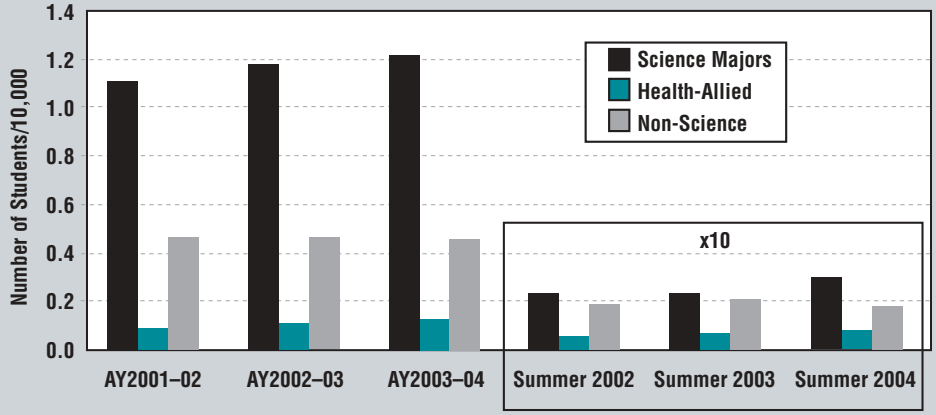



FIGURE 2a
**Number of Students Enrolled in Introductory Chemistry Courses, 2001–04**
**Institutions with <2,500 Undergraduates**




surveyed was 6.7% of their combined 2003–04 enrollments.

In addition, the survey results indicated that the label "Introductory Chemistry Sequence for Health-Allied (Non-Premed) Students" was ambiguous to some respondents. Twenty-three institutions reported identical enrollments in this course and in the introductory course for science majors for all six reporting periods.[6] In our analysis, we assigned these student enrollments to the latter course and assumed that these schools did not offer an introductory course for health-allied students, such as those in a nursing program. No effort was made to correct for possible double-counting of student enrollments in these two introductory courses at other institutions. Since this type of course fills a niche only at a limited number of institutions, we think that the enrollments reported for it may be slightly inflated and reflect a variety of non-major chemistry courses.

The original data set for the 414 institutions included in our analysis, with identifying codes removed, is available in the online version of this report, which is posted on the CPT website at www.chemistry.org/education/cpt.

### Introductory Chemistry: Number of Course Offerings

Essentially all institutions teach introductory courses for science (Intro-Sci) majors, with half offering an introductory course for health-allied students (Intro-Health) and two-thirds offering one for non-science students (Intro-Non) during the academic year (AY), as shown by the composite data for all 414 institutions in Figure 1. Figures 1a, 1b, and 1c contain the same data on these three introductory chemistry courses by the institutions with <2,500 students (small), >2,500–10,000 students (medium), and >10,000 students (large), respectively.

Of the 108 schools with total undergraduate enrollments of <2,500, only 22 (or 20%) offered Intro-Health during the academic years of the survey period (Figure 1a), with only five to seven reporting enrollments in this course during the summer. During the academic

[6]Inspection of the websites of 20 of these institutions provided no evidence that an introductory course for health-allied students was offered; no online information on course offerings was available for the remaining three schools.

year, 47% of the medium-sized schools with 2,500–10,000 students (Figure 1b) and 67% of institutions with >10,000 students (Figure 1c) reported enrollments in Intro-Health course.

On the other hand, the percentage of institutions teaching a course for non-science students (Intro-Non) did not vary as sharply with institutional size, increasing from 64% for the small institutions to 70% of medium-sized schools to 75% for the large ones.

Overall the data in Figures 1 demonstrate a major commitment to teaching introductory chemistry courses during the summer. The largest institutions have the largest number of summer offerings of the three introductory courses analyzed in this survey, and the small schools offer relatively few. Of the three courses, the one aimed at science majors (Intro-Sci) was the one taught most often in the summer: at 15–20% of the small schools; at 30% of the medium-sized ones; and at over 80% of the large ones.

### Introductory Chemistry: Number of Students Enrolled

In the AY2003–2004, slightly more than 200,000 students were enrolled in Intro-Sci, with approximately 60,000 in each of the two other courses, as shown in Figure 2. Although more than half of

FIGURE 2b
**Number of Students Enrolled in Introductory Chemistry Courses, 2001–04**
**Institutions with 2,500-10,000 Undergraduates**

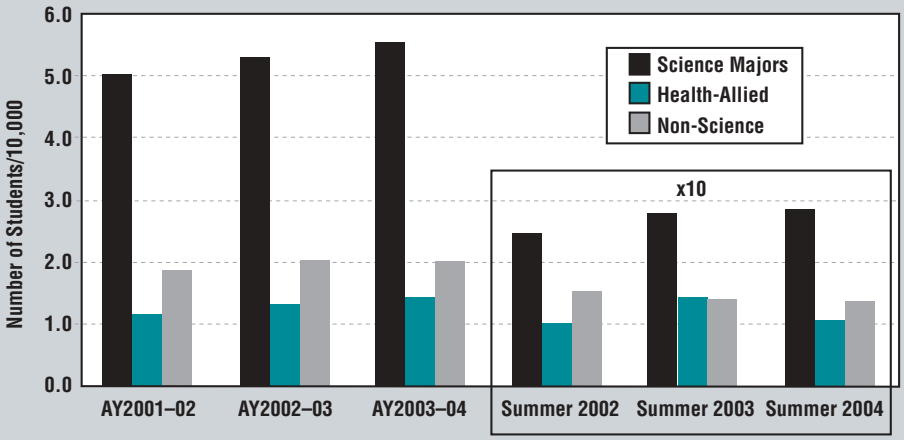



FIGURE 2c
**Number of Students Enrolled in Introductory Chemistry Courses, 2001–04**
**Institutions with >10,000 Undergraduates**

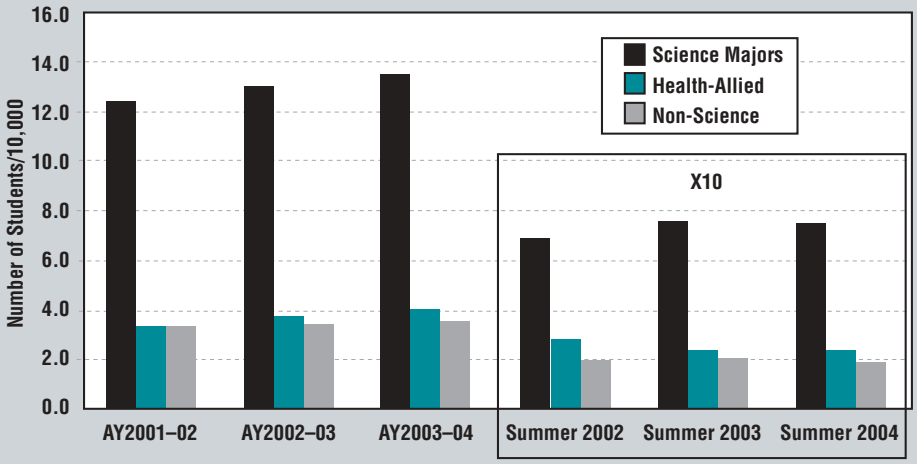



**Table 1**
**Percentage of Undergraduates Enrolled in Three Introductory Chemistry Courses, 2001–04 Academic Years**

| | Number of Students Enrolled in One of Three Introductory Chemistry Courses | | | Number | Total UG Enrollment Number | % Intro Chem of Total UG Enrollment |
|---|---|---|---|---|---|---|
| **Period** | **Science Majors** | **Health-Allied** | **Non-Science** | **Total** | | |
| **All 414 institutions** | | | | | | |
| AY2001–02 total | 185,020 | 45,969 | 56,771 | $2.88 \times 10^5$ | $3.85 \times 10^6$ | 7.48 |
| AY2002–03 total | 195,312 | 51,927 | 60,026 | $3.07 \times 10^5$ | $3.94 \times 10^6$ | 7.81 |
| AY2003–04 total | 202,663 | 56,333 | 60,985 | $3.20 \times 10^5$ | $3.96 \times 10^6$ | 8.07 |
| **<2,500 total = 108** | | | | | | |
| AY2001–02 | 10,975 | 949 | 4,682 | 16,606 | 180,118 | 9.22 |
| AY2002–03 | 11,781 | 1,126 | 4,704 | 17,611 | 181,813 | 9.69 |
| AY 2003–04 | 12,138 | 1,276 | 4,575 | 17,989 | 184,852 | 9.73 |
| **2,500–10,000, total = 171** | | | | | | |
| AY2001–02 | 50,233 | 11,562 | 18,748 | 80,543 | 982,255 | 8.20 |
| AY2002–03 | 53,107 | 13,310 | 20,311 | 86,728 | 1,001,877 | 8.66 |
| AY2003–04 | 55,385 | 14,410 | 20,083 | 89,878 | 1,014,861 | 8.86 |
| **>10,000, total = 135** | | | | | | |
| AY2001–02 | 123,812 | 33,458 | 33,341 | 190,611 | 2,684,159 | 7.10 |
| AY2002–03 | 130,424 | 37,491 | 35,011 | 202,926 | 2,751,432 | 7.38 |
| AY2003–04 | 135,140 | 40,647 | 36,327 | 212,114 | 2,764,534 | 7.67 |

institutions offered Intro-Sci in the summer (Figure 1), the maximum number of students enrolled (10,644 in 2004) was 5.3% of the AY enrollment for all institutions (Figure 2). The summer enrollments, as a percentage of the AY one, was 3% for small schools (Figure 2a), 10% for medium-sized schools (Figure 2b), and 6% for the largest ones (Figure 2c). Overall summer enrollments in the other two introductory courses were less than 10% of the AY enrollments at all institutions, regardless of size.

FIGURE 3
**Percentage of Students Enrolled in Introductory Chemistry for Science Majors, 2001–04, All 414 Institutions Responding**

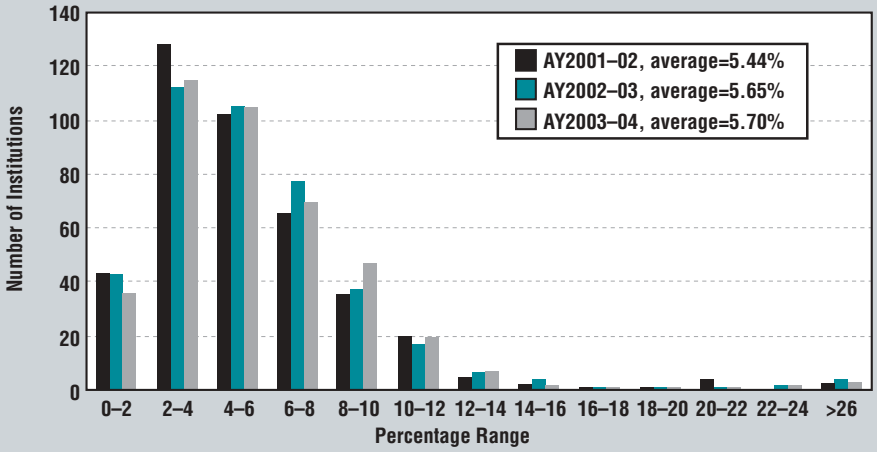



FIGURE 4
**Students Enrolled in Introductory Chemistry for Science Majors, 2001–04, by Institution Size**

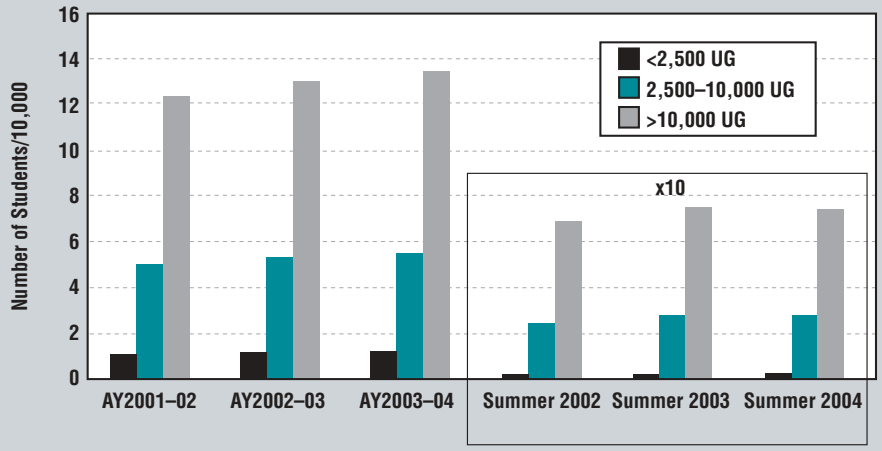
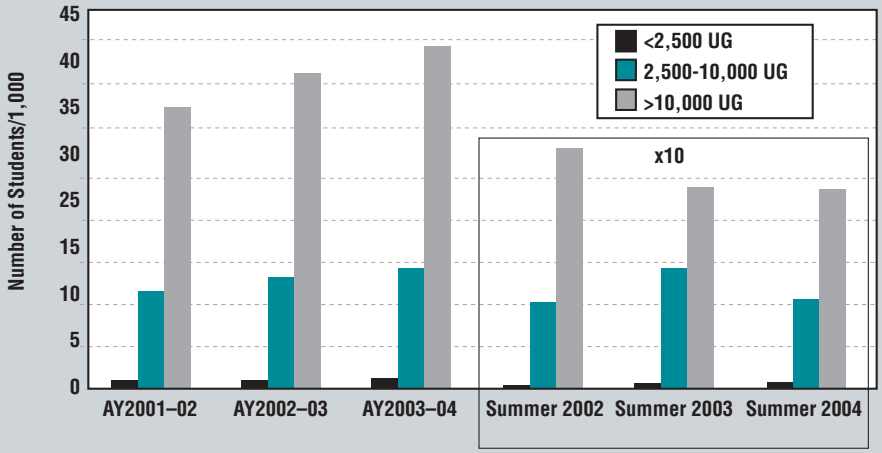



FIGURE 4a
**Students Enrolled in Introductory Chemistry for Health-Allied Majors (non-Premed), 2001–04, by Institution Size**




## Percentage of Undergraduates Studying Introductory Chemistry

Table 1 shows that the percentage of the total undergraduate (UG) population enrolled in any one of these three introductory courses increased from 7.48% in AY2001–02 to 8.07% in AY2003–04. The group of small schools (<2,500 students) reported the highest percentage of students studying chemistry at this level during the three academic years: 9.22%, 9.60%, and 9.73%, respectively. The percentage of undergraduates enrolling in introductory chemistry increased at all size institutions over the three years for which the survey was conducted.

## Beginning of the Pipeline: Introductory Chemistry for Science Majors (Intro-Sci)

If one assumes that chemistry majors begin their studies in Intro-Sci, enrollments in this course measure the number of potential chemists. The histograms of Figure 3 (containing data for all institutions) show the enormous institutional variation in the percentage of students taking this course. (Figures 3a, 3b, and 3c, available in the online version of this report at www.chemistry.org/education/cpt, show the same data for different size institutions.) The average percentage enrolled increased during the three years of this survey, from 5.44% in 2001–02 to 5.70% in 2003–04. The largest percentage of the total student body enrolled in this introductory chemistry course was found in the group of small institutions (<2,500) with an average of nearly 7% in 2003–04 (shown in Figure 3a of the online edition).

Figure 4 presents the actual numbers of students enrolled in the course for science majors (Intro-Sci), grouped according to institutional size. Not surprisingly, the largest number of students comes from the group of schools with more than 10,000 undergraduates. The numbers of students enrolled in the other two introductory courses show the same pattern; the enrollments increase during the three years of this survey. (Data are shown in Figures 4a and 4b, respectively.) The 9.5% increase in Intro-Sci enrollments outpaced the increase in the total undergraduate population of 2.9% from AY2001–02 to AY2003–04.

## Further Along the Pipeline

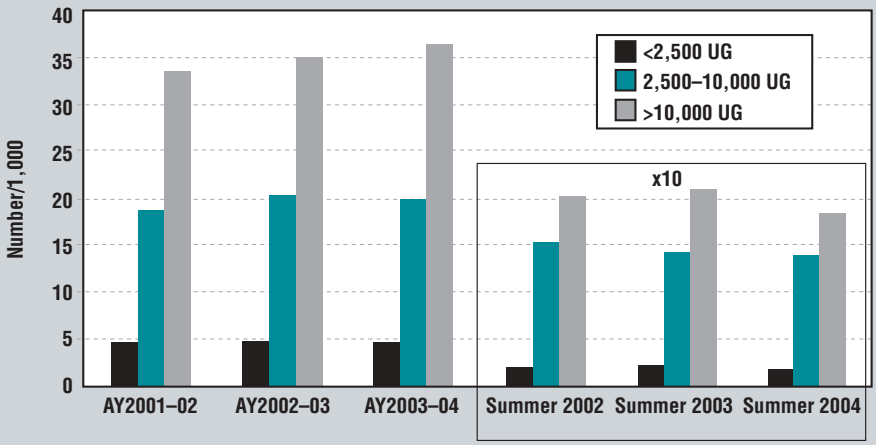
Table 2 contains the total annual (AY plus summer) enrollments in Intro-Sci,

**Table 2. Number of Institutions Offering and Number of Students in Intro-Sci, Organic (Org) Chemistry 2, and Physical (P) Chemistry 1; Graduating Chemistry Majors and Majors with a Biochemistry Concentration, 2001–2004**

| | Number of Institutions Offering | | | | | Number of Students | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Period** | **Intro-Sci** | **Org Chem 2** | **P Chem 1** | **Chem Major** | **Biochem Conc** | **Intro-Sci** | **Org Chem 2** | **P Chem 1** | **Chem Major** | **Biochem Conc** |
| **All 414 Institutions** | | | | | | | | | | |
| AY2001–02 | 408 | 410 | 407 | 411 | 273 | 185,020 | 54,916 | 11,315 | 6,535 | 1,810 |
| AY2002–03 | 410 | 413 | 402 | 411 | 280 | 195,312 | 57,066 | 11,245 | 6,611 | 2,024 |
| AY2003–04 | 411 | 413 | 403 | 412 | 285 | 202,663 | 61,200 | 11,751 | 6,934 | 2,145 |
| Summer 2002 | 230 | 202 | 21 | 221 | 160 | 9,630 | 8,946 | 392 | 411 | 109 |
| Summer 2003 | 231 | 203 | 16 | 220 | 158 | 10,589 | 9,552 | 327 | 456 | 122 |
| Summer 2004 | 233 | 207 | 17 | 217 | 163 | 10,644 | 10,136 | 357 | 483 | 127 |
| **<2,500, total = 108** | | | | | | | | | | |
| AY2001–02 | 105 | 107 | 106 | 106 | 77 | 10,975 | 4,510 | 1,307 | 1,016 | 305 |
| AY2002–03 | 106 | 108 | 104 | 107 | 80 | 11,781 | 4,595 | 1,277 | 1,096 | 379 |
| AY2003–04 | 106 | 108 | 103 | 107 | 81 | 12,138 | 4,901 | 1,300 | 1,050 | 388 |
| Summer 2002 | 18 | 13 | 1 | 26 | 23 | 232 | 201 | 4 | 0 | 0 |
| Summer 2003 | 17 | 15 | 1 | 26 | 23 | 233 | 203 | 6 | 0 | 0 |
| Summer 2004 | 9 | 17 | 1 | 26 | 23 | 295 | 282 | 7 | 1 | 0 |
| **2,500–10,000, total = 171** | | | | | | | | | | |
| AY2001–02 | 168 | 169 | 168 | 171 | 107 | 50,233 | 15,356 | 3,148 | 2,241 | 574 |
| AY2002–03 | 169 | 171 | 166 | 171 | 111 | 53,107 | 16,343 | 3,161 | 2,310 | 627 |
| AY2003–04 | 170 | 171 | 166 | 171 | 113 | 55,385 | 17,355 | 3,278 | 2,377 | 710 |
| Summer 2002 | 99 | 88 | 3 | 92 | 66 | 2,478 | 2,640 | 24 | 69 | 9 |
| Summer 2003 | 101 | 88 | 1 | 92 | 65 | 2,782 | 2,702 | 20 | 102 | 13 |
| Summer 2004 | 102 | 88 | 2 | 92 | 68 | 2,868 | 2,914 | 31 | 111 | 9 |
| **>10,000, total = 135** | | | | | | | | | | |
| AY2001–02 | 135 | 134 | 134 | 134 | 89 | 123,812 | 35,050 | 6,860 | 3,278 | 931 |
| AY2002–03 | 135 | 134 | 132 | 133 | 89 | 130,424 | 36,128 | 6,807 | 3,205 | 1,018 |
| AY2003–04 | 135 | 134 | 134 | 134 | 91 | 135,140 | 38,944 | 7,173 | 3,507 | 1,047 |
| Summer 2002 | 113 | 101 | 17 | 103 | 71 | 6,920 | 6,105 | 364 | 342 | 100 |
| Summer 2003 | 113 | 100 | 14 | 102 | 70 | 7,574 | 6,647 | 301 | 354 | 109 |
| Summer 2004 | 124 | 102 | 14 | 99 | 71 | 7,481 | 6,940 | 319 | 371 | 118 |

Organic Chemistry 2, and Physical Chemistry 1 courses, as well as the number of graduating chemistry majors and the number of those majors with a biochemistry concentration (Biochem Conc). The composite data for all 414 institutions are presented graphically in Figure 5, while those for the three groups of different sized institutions are in Figures 5a–c. The histograms of Figure 5 show that the number of students in chemistry at all levels, as well as the number of chemistry majors, has increased during a period of this three-year survey, from a total of 6,946 in 2001–02 to 7,417 in 2003–04. Approximately one-third of chemistry majors have a concentration in

FIGURE 4b
**Number of Students Enrolled in Introductory Chemistry for Non-Science Majors, 2001–04, by Institution Size**



biochemistry, and 70% of the 414 institutions in the survey offer this focus for majors.

The National Center of Education Statistics (NCES) reports a total of 9,006 bachelor chemistry degrees earned for 2002–03, the most recent data from this agency.[7] Our survey, including half of students enrolled in U.S. institutions granting bachelor degrees, found a total of 7,067 (AY plus summer) chemistry graduates for this period. In contrast to the NCES data, which show decreasing numbers of chemistry degrees earned during the three-year period from 2001 to 2003 (a 5% decrease), our data indicate a modest increase (6.7%) in chemistry graduates from the 414 ACS-approved programs responding to our 2001–04 survey.

The fraction of undergraduates graduating as chemistry majors was found to decrease with the increasing size of the institution. The group of 108 schools with <2,500 students produced 14% (100% x 1,051/7,417) of the chemistry majors in 2004 (Figures 5 and 5a), although their total undergraduate enrollment constituted only of 4.7% of the total AY enrollment during this period (= 100% x 1.85 x $10^5$ /3.96 x $10^6$). The 171 medium-sized institutions (2,500–10,000 students) enrolling 25% of undergraduates accounted for 34% (100% x 2,488/7,417) of 2004 chemistry majors (Figures 5 and 5b). The 135 large schools (>10,000 students), with 70% of the total undergraduates, graduated 52% of the chemistry majors (Figure 5 and 5c).

Comparison of the enrollments of students in these "pipeline" courses with the number of chemistry majors provides insight into the extent of service teaching as well as the yield of future chemists from each course in the educational pipeline. Figure 6 contains average ratios of the course enrollments in Intro-Science, Organic Chemistry 2 (Org Chem), and Physical Chemistry 1 (P Chem) to the number of graduating chemistry majors for all 414 institutions. These data demonstrate the central role of chemistry in the overall college curriculum and the extent of service teaching done by chemistry departments. Figure 6 shows that only one student in

FIGURE 5
**Annual (AY & Summer) Course Enrollments and Chemistry Majors, 2001-2004**
**All 414 Institutions**

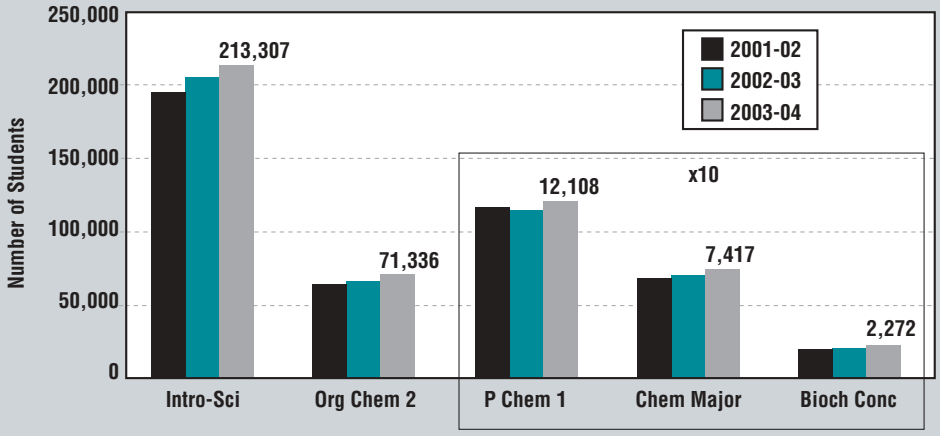



FIGURE 5a
**Annual (AY & Summer) Course Enrollments and Chemistry Majors 2001–2004**
**Institutions with <2500 Undergraduates**

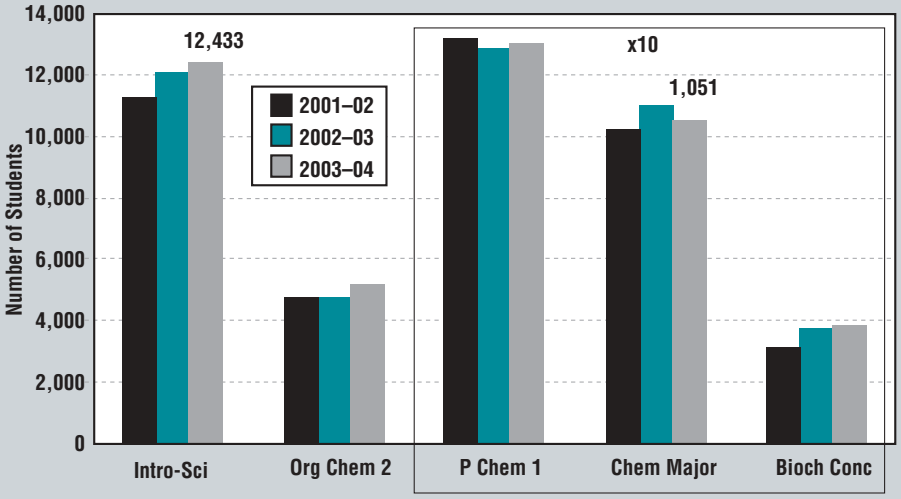
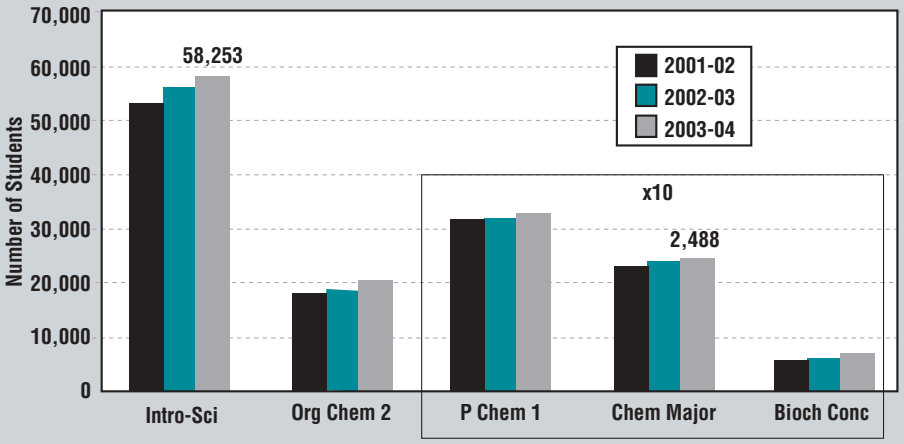



FIGURE 5b
**Annual (AY & Summer) Course Enrollments and Chemistry Majors, 2001–2004**
**Institutions with 2500-10000 Undergraduates**




[7]http://nces.ed.gov/programs/digest/d04/tables/dt04_290.asp. (accessed November 16, 2005)

nearly 30 (213,330/7,417 = 28.8) enrolled in Intro-Sci, one student in about nine enrolled in Organic Chemistry 2, and one in nearly two in Physical Chemistry 1 becomes a chemistry major. (These ratios for all 414 institutions, as well as those for the three groups of different sized institutions for these three "pipeline" courses, are presented in Figures 6, 7, and 9, respectively.)

The 10-fold larger enrollments in second semester/quarter of Organic Chemistry (Org Chem 2) relative to the number of majors (71,336/7,417 = 9.6) reflect the high student interest in biology and pre-medical studies as well as in chemistry (Figure 8). The number of students enrolled in Org Chem 2 during 2003–04 (71,336) was nearly double the individuals (35,735) applying to medical school.[8] During the summer, over 50% of the institutions surveyed offered Org Chem, but only 15% of the students took advantage of the offering (Table 2).

The ratio of P Chem 1 enrollments to chemistry majors was greater than 1 for all periods of the survey (12,108/7,417 = 1.6 in 2004, Figure 9), which indicates the importance of physical chemistry to students in fields other than chemistry. Although the overall enrollments in P Chem 1 increased slightly (Table 2), a small decline in this ratio (P Chem 1 enrollments/chemistry majors) was noted over the survey period in all three groups of different sized institutions. Summer school enrollments in P Chem 1 were only 3% of those during the academic year, with only 17 schools offering this course in the summer of 2004 (data not shown).

The yield of majors from each of the three "pipeline" courses varies with institutional size, with the largest yield coming from the small schools (<2,500). Of particular note is the high Org Chem 2 and P Chem 1 "service teaching" done in the large institutions (Figures 8 and 9, respectively.) Slightly less than half of the students enrolled in P Chem I in schools with >10,000 students were chemistry majors, reflecting the importance of this course to non-chemistry students, particularly those enrolled in engineering programs.

[8]http://www.aamc.org/data/facts/2004/2004summary.htm. (accessed November 16, 2005)

FIGURE 5c
**Annual (AY & Summer) Course Enrollments and Chemistry Majors, 2001-2004**
**Institutions with >10,000 Undergraduates**

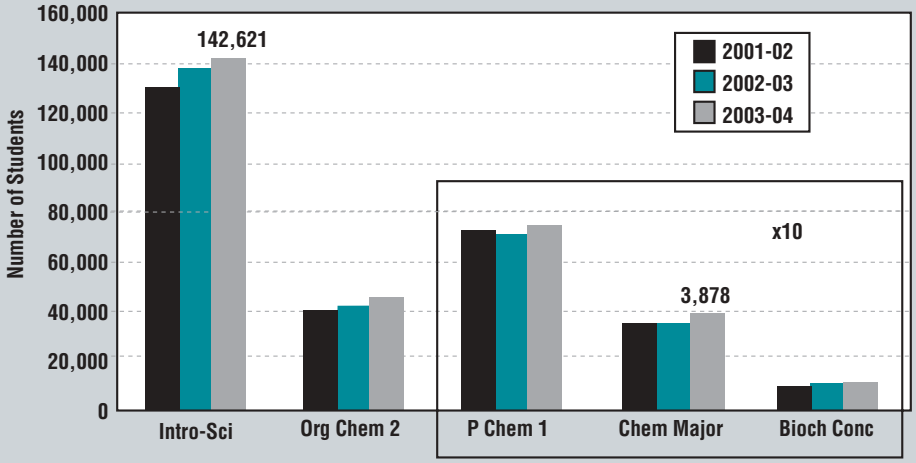



FIGURE 6
**Pipeline: Ratio of Course Enrollments to Chemistry Majors**
**All 414 Institutions Responding**

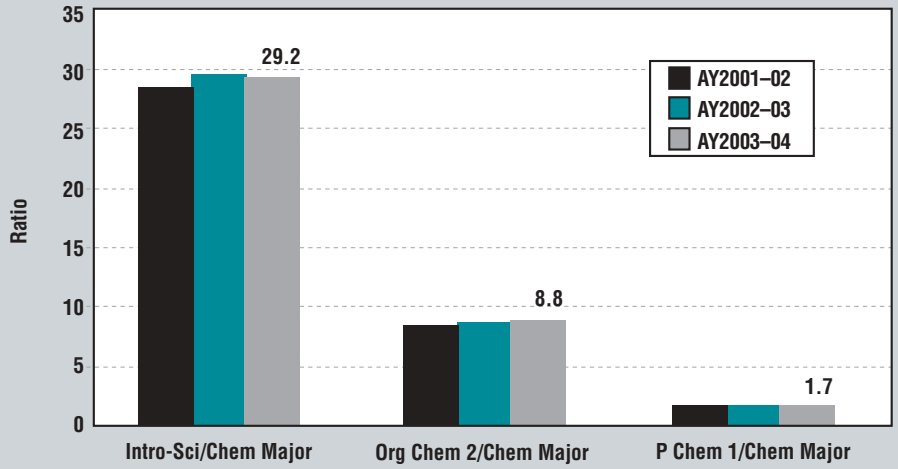



FIGURE 7
**Ratio of Enrollments in Introductory Chemistry for Science Majors to Number of Chemistry Majors, AY2001–04**

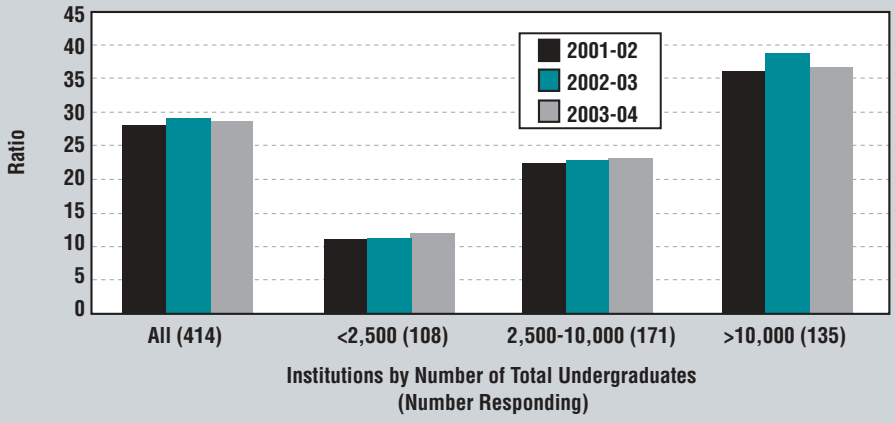


FIGURE 8
**Ratio of Enrollments in Second Course in Organic Chemistry to Number of Chemistry Majors, 2001–04**

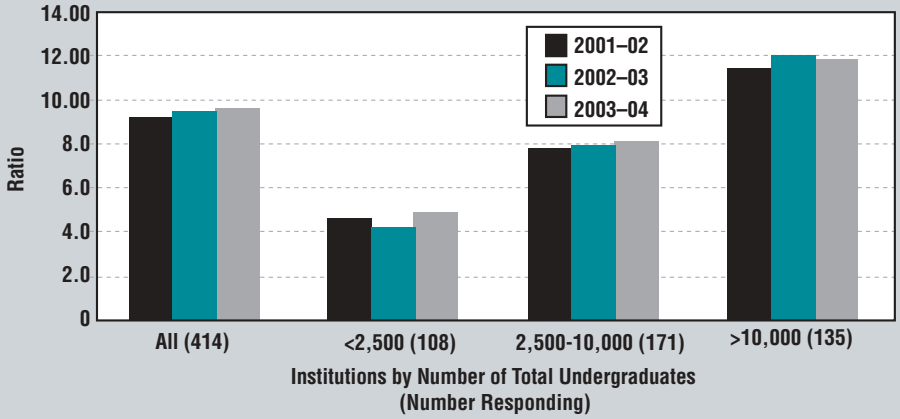



FIGURE 9
**Ratio of Enrollments in First Course in Physical Chemistry to Number of Chemistry Majors**

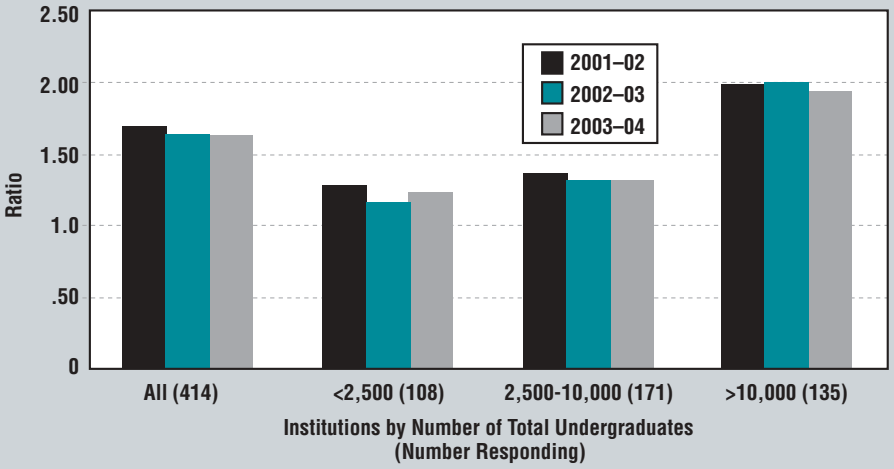
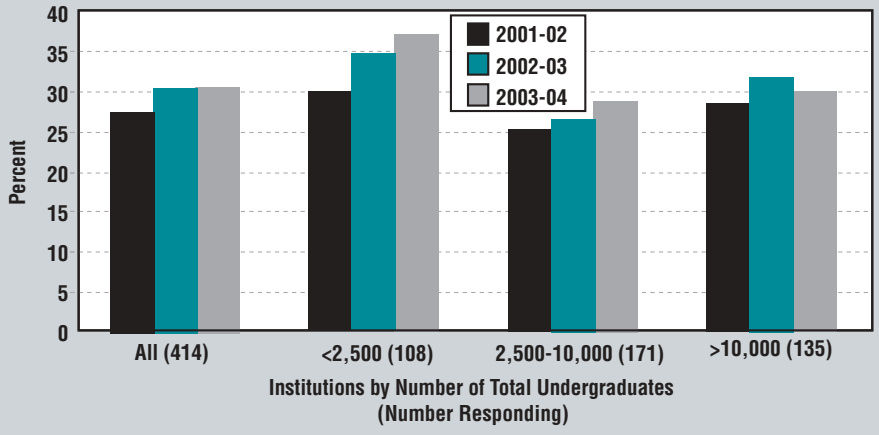



FIGURE 10
**Percent Biochemistry Concentration of Total Chemistry Majors, 2001-04 (Academic Year + Summer)**




## Biochemistry Concentration

Figure 10 shows that the percentage of chemistry majors with a biochemistry concentration increased overall during the three-year survey period, particularly at smaller institutions. Slightly more than 30% of the 2004 chemistry majors had this concentration (Figure 10). The percentage of chemistry departments offering this concentration increased from 66% in the 2001–02 AY to 69% in the 2003–04 AY. It should be noted that currently (fall 2005), 136 of the 634 approved programs, or 21%, currently have an approved biochemistry option.[9] Clearly, a large percentage of chemistry departments have a program for students interested in biochemistry.

## Concluding Remarks

This survey was undertaken to fulfill one of the missions of CPT: to collect and make available information concerning trends and developments in modern chemical education. Planning for the future requires an understanding of the present. The lack of information about current student interest in chemistry has limited the quality of discussions about the future of this discipline. We expect the results of this survey to inform and enrich such ongoing discussions.

We have purposely not provided a detailed interpretation of our results, as we hope that readers will study the data carefully and draw their own conclusions. To facilitate such studies, the original data tables are available on the CPT website (www.chemistry.org/education/cpt). We encourage readers to explore analyses that we have not covered in this report. We plan to complete similar surveys on a regular three-year schedule and continue to make the data available for widespread usage. CPT thanks those members of the chemical education community who took the time to complete the survey and welcomes comments and suggestions for future enrollment surveys, the next of which is scheduled for the fall of 2007.

*The Committee on Professional Training wishes to thank Dr. Margaret V. Merritt for writing this report and tackling the daunting task of compiling and analyzing the data received from the Enrollment Survey.*

[9]There were 634 institutions with ACS-approved programs at the time of this survey in fall 2004.

# ACS Committee on Professional Training Survey of 2001–2004 Enrollments

Enter the number of students enrolled in each course as indicated. Use the data most readily available at your institution (e.g., enrollment at end of add/drop period), but be consistent for the three year period. AY = Academic Year. Please provide a response in every box (enter N/A if a category does not apply to your department/institution).

| | Total Undergraduates in Institution | First Course of Intro Chem Sequence for Science/ Eng./Pre-Med Students | First Course of Intro Chem Sequence for Health-Allied (Non Pre-Med) Students | First Course of Intro Chem Sequence for Non-Science Students |
|---|---|---|---|---|
| 2001-2002 AY | | | | |
| Summer 2002 | | | | |
| 2002-2003 AY | | | | |
| Summer 2003 | | | | |
| 2003-2004 AY | | | | |
| Summer 2004 | | | | |

| | Second Semester/ Second Quarter Course in Organic Chem. Sequence | First Semester/First Quarter Course in Physical Chem. Sequence | Total Graduating Senior Majors (All Areas of Emphasis) in Department | Total Graduating Senior Majors (Biochemistry Emphasis Only) in Department |
|---|---|---|---|---|
| 2001-2002 AY | | | | |
| Summer 2002 | | | | |
| 2002-2003 AY | | | | |
| Summer 2003 | | | | |
| 2003-2004 AY | | | | |
| Summer 2004 | | | | |

Thank you for completing this survey. If you have any questions or comments, please contact cpt@acs.org or visit the CPT website.

# Looking for more data that are not available in the published reports?

**Check out the updated CPT website at**
**www.chemistry.org/education/cpt**
**where you will find**

- Spreadsheets with all of the cleaned data collected from the enrollment survey, described in this report.

- An expanded form of Table 1 from this report, containing summer enrollments, in addition to those for the regular academic year.

- The CPT Annual Reports of the number of degrees granted in chemistry and chemical engineering, updated in response to a recent request to include gender breakdown.