

Two-Year College Chemistry Faculty Status Survey Spring 2010

Summary Report
Spring 2011



Background

The apparent increase in non-tenure-track faculty in higher education has been drawing attention from multiple groups both inside and outside of ACS. Within ACS, the Women Chemists Committee (WCC) formed the Non-Tenure-Track Faculty Task Force in 2008. In 2009, the Committee on Professional Training (CPT) conducted the Faculty Status Survey to study current staffing practices in departments that offer a bachelor's degree in chemistry.¹

Since the US Bureau of Labor Statistics estimates that around 20% of post-secondary chemistry faculty work at two-year colleges,² it was deemed valuable to assess the status of chemistry faculty at these institutions. In the spring of 2010, the ACS Office of Two-Year Colleges, in partnership with the Division of Chemical Education's Committee on Chemistry in the Two-Year College (COCTYC) and the Society Committee on Education (SOCED) Task Force on Two-Year College Activities, developed the 2010 Two-Year College Chemistry Faculty Status Survey.

Designed to parallel CPT's Faculty Status Survey, the Two-Year College Chemistry Faculty Status Survey was distributed to 1,101 primary contacts in two-year colleges across the country. ACS received 227 usable responses, for a response rate of 20.6%. The results from the survey provide a snapshot of the landscape for two-year college chemistry faculty. The full report, survey questionnaire, and raw data can be found at www.acs.org/2YFacultyStatus.

Institutional and Program Characteristics

Responses to the Two-Year College Chemistry Faculty Status Survey reflect a highly varied two-year chemistry landscape. Respondents reported institution sizes ranging from fewer than 1,500 students to over 15,000. The number of chemistry students taught per term ranged from fewer than 100 to more than 1,500.

Slightly more than half of the survey respondents reported that their institutions did not award any type of degree in chemistry or chemistry-based technology. Of the 227 reporting institutions, 107 offered a two-year transfer degree in chemistry, 60 offered chemistry transfer programs without a degree, 46 offered a chemistry-based technology or applied chemistry degree program, and 47 had no chem-

istry program (see Table 1).³ Moreover, institutions reported offering a broad variety of chemistry-related programs, including engineering, biomedical science, environmental technology, forensic science, nursing, pharmaceutical manufacturing, fire science, and fuel cell technology.

The degree offerings shown in Table 1 reflect a unique aspect of two-year colleges. Whereas chemistry is a frequent degree program among four-year institutions, its role at two-year colleges often depends on state regulations and the mission of the college. For example, if a two-year college's mission is to prepare students for four-year college, it may offer only transfer programs. If a state has designated a two-year college as a technical college, it may focus only on chemistry-based technology programs. Additionally, chemistry courses may only be offered in support of other programs, with no chemistry program existing at all.

The variability of two-year colleges with respect to chemistry is reflected in the reported chemistry course offerings (see Table 2). Most of the respondents reported offering general chemistry courses; those that did not typically also reported not having a chemistry program. Organic chemistry and specialty chemistry courses that can count toward a two- or four-year chemistry or chemistry-based technology degree were reported less frequently. Reflecting the role of state regulations in chemistry offerings, one respondent reported the state had designated organic chemistry as a 300-level course; because two-year colleges could not offer 300-level courses, this institution could not offer a chemistry degree program.

Respondents reported offering a wide variety of specialty chemistry and chemistry-based courses. Specialty courses that could be applied to a two- or four-year chemistry or chemistry-based technology degree included analytical chemistry, biochemistry, chemical health and safety, chemical calculations, and chemical technology. Chemistry-based courses that were not applicable to a chemistry or chemistry-based technology major included chemistry for educators, material and energy balance, chemistry of food preparation, funeral services chemistry, and chemistry and society.

Faculty Demographics

Another unique characteristic of two-year colleges is that many two-year colleges do not offer tenure to their faculty, although some do offer unlimited contracts or similar

<i>Degree programs offered</i>	<i>No degree program offered</i>	<i>Transfer program only (no degree)</i>	<i>Certificate</i>	<i>AA</i>	<i>AS</i>	<i>AAS</i>	<i>Other type of degree</i>
Chemistry	63	81	2	34	92	8	4
Chemistry-based technology	157	24	19	6	23	16	2
General science	64	51	3	44	105	14	5
Other	184	20	6	2	18	7	3

Table 1. Number of 227 responding two-year colleges offering chemistry-based programs, by type of degree offered.

Type of course	Number of responses	Chemistry lecture sections	Chemistry laboratory sections
General chemistry	217	40.1%	39.5%
Organic chemistry	180	11.8%	11.7%
Specialty chemistry courses	34	1.4%	1.1%
Preparatory chemistry	117	17.2%	9.8%
General education chemistry	87	7.2%	15.8%
Chemistry for allied health and health sciences	148	21.6%	21.2%
Chemistry for other fields	17	0.8%	0.9%

Table 2. Number of the 223 responding institutions that reported offering chemistry courses and percent distribution of lecture and laboratory sections offered, by type of course.

methods of making positions effectively permanent. To ensure consistency, survey respondents were asked to define their chemistry faculty using the following categories:

- **Tenure-track/permanent:** tenured or pre-tenured faculty, as well as faculty with unlimited contracts or other types of effectively permanent employment agreements
- **Long-term, full-time:** non-tenure-track, full-time faculty with contracts of one year or longer
- **Long-term, part-time:** non-tenure-track, part-time faculty with contracts of one year or longer
- **Contingent, full- or part-time:** adjunct or other non-permanent faculty with contracts of less than one year

Of the 208 institutions reporting on their chemistry faculty demographics, 157 reported having tenured, tenure-track, unlimited or rolling contracts, or other type of effectively permanent positions. For long-term faculty, 60 institutions reported having long-term, full-time chemistry faculty and 45 reported having long-term, part-time chemistry faculty.

For contingent faculty, 156 institutions reported having part-time contingent chemistry faculty and 22 reported hiring contingent faculty into full-time positions. Institutions that did not report any permanent faculty positions tended to be small institutions (fewer than 1,500 students); they also tended to have a greater percentage of long-term, part-time positions and a smaller percentage of contingent faculty.

Of the 1579 chemistry faculty positions reported in the survey, 29.7% were permanent, 10.5% were long-term, full-time, 10.8% were long-term, part-time, and 49.0% were contingent (part- or full-time). Only 40 of the reported contingent faculty were in full-time positions.

Gender distribution: Just under 40% of reported chemistry faculty were female, an increase over the 2001 survey of two-year colleges, which found 32% of the faculty were female.⁴ The percentage of female faculty reported in 2010 was found to be fairly consistent across institution size and programs offered. Overall, 39.7% of all reported chemistry faculty were female, with little variation among the types of employment or institutions.

Type of employment	Total number of faculty reported	Caucasian	Asian American	African American	Latino American	Native American	Other
Tenure-track /permanent	469	73.8%	9.2%	3.2%	3.6%	1.9%	6.8%
Long-term, F/T	166	55.4%	7.8%	6.0%	2.4%	0.0%	25.9%
Long-term, P/T	170	57.6%	6.5%	7.1%	2.4%	0.0%	11.8%
Contingent	774	69.2%	9.3%	5.3%	3.5%	0.0%	8.0%
All faculty	1579	67.9%	8.8%	4.9%	3.3%	0.6%	9.9%

Table 3. Number and racial/ethnic percent distribution of chemistry faculty reported by two-year colleges, by type of employment at 208 responding institutions.

Type of employment	Total number of faculty reported	Bachelor's	Master's	Doctorate	non-PhD doctorate
Tenure-track / permanent	469	0.2%	33.6%	58.6%	3.0%
Long-term, F/T	166	2.4%	39.2%	53.0%	3.6%
Long-term, P/T	170	4.7%	41.8%	45.3%	1.2%
Contingent	774	4.8%	48.9%	38.2%	1.4%
All faculty	1579	3.2%	42.6%	46.6%	2.1%

Table 4. Number and percent distribution of highest degree obtained by two-year college chemistry faculty at 208 responding institutions, by type of employment.

Race/Ethnicity: Respondents to the Two-Year College Chemistry Faculty Status Survey reported that 67.9% of all chemistry faculty were Caucasian. The reported percent distribution of the faculty is shown in Table 3. Of the defined non-Caucasian ethnicities, Asian American was the most common (the "Other" category was not defined in the survey). Larger institutions reported a greater ethnic diversity, as did institutions offering degree programs in chemistry or chemistry-based technology.

The ethnic distribution of the faculty only partially matches the ethnic diversity of the students. NCES reports that 14% of students enrolled in public two-year colleges are African American, 7% are Asian American, 17% are Latino American, and 1% are Native American.⁵

Degree distribution: Respondents reported that 89.2% of the faculty held a master's degree or doctorate in chemistry (see Table 4). The lowest proportion of PhD-holding faculty (42.6%) were reported by institutions that did not offer any type of degree in chemistry or chemistry-based technology; these same institutions also reported a higher percentage of faculty with EDs, DAs, or other types of non-PhD doctorates (3.2%). The highest percentage of PhD-holding faculty (51.8%) was reported by institutions offering transfer chemistry degree programs.

Student Contact

While contingent faculty comprised almost half of the chemistry faculty and instructional staff at the reporting two-year colleges, they taught just 33.5% of all chemistry

Type of employment	Lecture sections	Laboratory sections
Tenure-track / permanent	44.3%	41.3%
Long-term, F/T	15.3%	13.9%
Long-term, P/T	6.8%	7.2%
Contingent	33.5%	37.7%

Table 5. Percent distribution of lecture and laboratory sections reported to be taught by two-year college chemistry faculty at 161 responding institutions, by type of employment.

lecture sections and 37.7% of all chemistry laboratory sections (Table 5).

Contingent faculty were reported to teach a significant portion of all types of chemistry courses; however, they were more concentrated in the courses developed for non-chemistry majors (Figures 1 and 3), as well as in laboratory sections (Figures 2 and 4).

The complementary trend was reported for permanent faculty. In the lecture sections of courses applicable to chemistry majors, a slight majority of sections (51.0%) were taught by permanent faculty; about 24% were taught by contingent faculty. The percentage of chemistry sections taught by contingent faculty rose to over 40% in those courses that could not be applied to chemistry majors.

With two exceptions, the Two-Year College Chemistry Faculty Status Survey yielded little significant variation with regard to institution size, types of programs offered, or specific categories of courses (e.g., general, organic, specialty, preparatory, and general chemistry for non-chemistry majors). The first exception was that respondents from small institutions reported less than 20% of chemistry courses were taught by contingent faculty; this finding aligns with the earlier observation that small institutions reported having fewer contingent faculty.

The second exception to the homogeneity of student contact was found in the responses regarding general chemistry courses applicable to chemistry majors. The 48 responding institutions offering transfer chemistry programs (without degrees) reported that 58% of their general chemistry sections were taught by permanent faculty and 27% were taught by contingent faculty. Among the 82 responding institutions offering transfer degree programs in chemistry, 49% of general chemistry sections were taught by permanent faculty and 29% were taught by contingent faculty. Among the 24 responding institutions without a dedicated chemistry program, 32% of general chemistry sections were taught by permanent faculty, and 22% were taught by contingent faculty.

The 33 responding institutions that offered applied chemistry-based technology degree programs reported that 44%

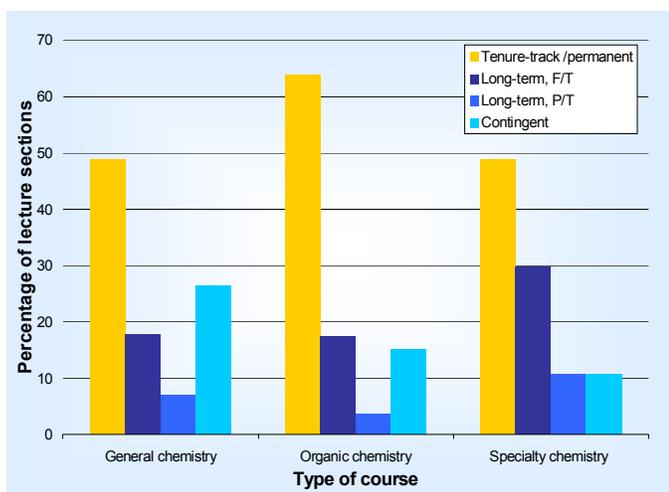


Figure 1. Percent distribution of lecture sections taught by two-year college chemistry faculty for courses applicable to a chemistry or chemistry-based technology major at 161 responding institutions.

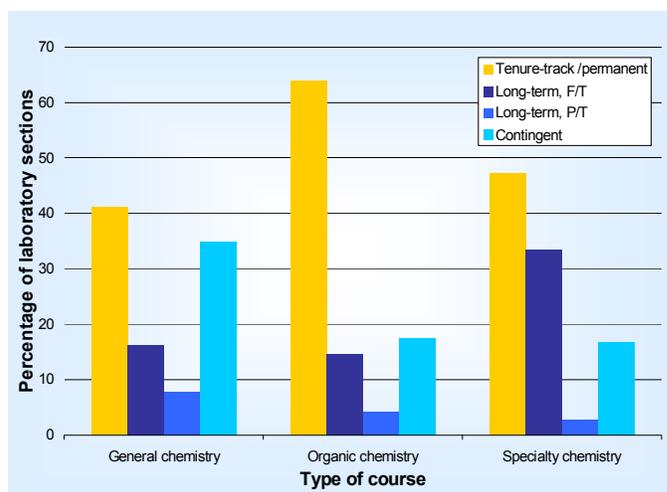


Figure 2. Percent distribution of laboratory sections taught by two-year college chemistry faculty for courses applicable to a chemistry or chemistry-based technology major at 161 responding institutions.

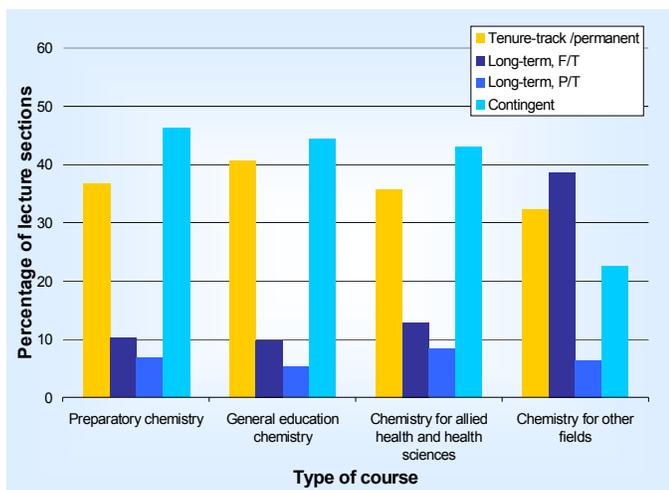


Figure 3. Percent distribution of lecture sections taught by two-year college chemistry faculty for courses not applicable to a chemistry or chemistry-based technology major at 161 responding institutions.

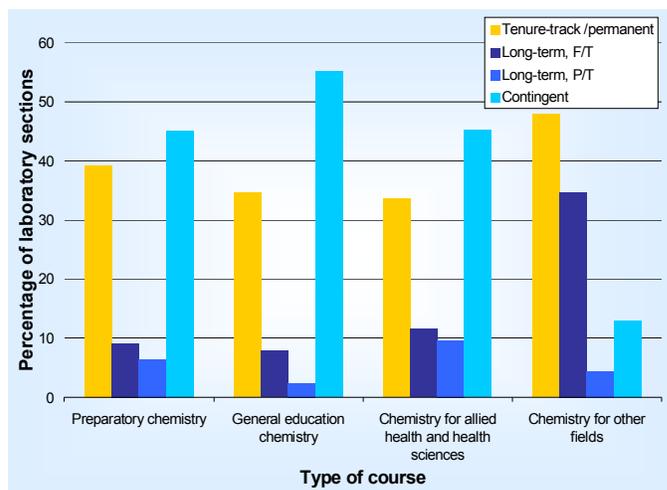


Figure 4. Percent distribution of laboratory sections taught by two-year college chemistry faculty for courses not applicable to a chemistry or chemistry-based technology major at 161 responding institutions.

of the general chemistry sections were taught by permanent faculty and 45% were taught by contingent faculty. Because chemistry-based technology programs are committed to preparing students for the workplace, they often work closely with potential employers of the program graduates. Consequently, it is not uncommon for current employees of the partnering organizations to teach courses in the program. Having such contingent faculty helps provide a workplace perspective in chemistry-based technology courses.

Employment Trends

When asked if the number of chemistry courses taught by permanent faculty had increased, decreased, or stayed

the same over the past five years, 59 respondents to the Two-Year College Chemistry Faculty Status Survey reported an increase, 27 reported a decrease, and 22 reported no change. These responses do not account for situations in which the number of courses taught by permanent faculty stays the same, while the total number of courses increases.

Table 6 shows the percentages of chemistry faculty reported to be teaching at more than one institution. The percentages did not vary greatly by institution size or program offered. Over 50% of contingent and long-term, part-time chemistry faculty were reported to be employed at more than one institution, as were 12.6% of permanent and 9.3% of long-term, full-time chemistry faculty.

Type of employment	Teaching at another college or university	Teaching at a high school	Undergoing graduate studies	Employed in a non-academic setting
<i>Tenure-track / permanent</i>	3.8%	0.2%	6.6%	2.0%
<i>Long-term, F/T</i>	6.0%	0.0%	1.5%	1.8%
<i>Long-term, P/T</i>	32.4%	5.3%	1.2%	15.3%
<i>Contingent</i>	25.0%	9.3%	3.1%	18.2%
<i>All Faculty</i>	17.5%	5.2%	3.8%	11.4%

Table 6. Percentage of two-year college chemistry faculty from the 198 responding institutions who were reported to be working at another institution, in addition to the current teaching situation, by type of employment.

Of the 198 respondents reporting on sabbatical-type arrangements at their two-year colleges, 148 (75%) reported that their institution had some type of formal or informal mechanism to obtain sabbatical leave, release time, re-assigned time, or a reduced teaching load. In the spring of 2010, 52 chemistry instructors (15% of the faculty at the eligible institutions) were reported to be on some type of sabbatical or reduced teaching load, and 30 instructors were reported to be serving as temporary replacements for them.

Faculty Benefits

Table 7 shows the percentage of responding institutions offering benefits to faculty; a complete list of benefits surveyed is in the full report. Across the board, most institutions offered long-term, full-time faculty the same benefits as permanent faculty, while long-term, part-time, and con-

tingent faculty were far less likely to have access to these benefits.

It is worth noting that the availability of a certain benefit is not an indicator of the extent of its effectiveness. For example, one institution reported that professional development funding was capped at \$150 per year per instructor, with no mechanism for pooling funding within the department. Additionally, some respondents reported that while they supposedly had access to professional development funding, their department or division chair did not see the value in applying those funds to chemistry-related activities.

	<i>Tenure-track / permanent</i>	<i>Long-term, F/T</i>	<i>Long-term, P/T</i>	<i>Contingent</i>	<i>This benefit is not offered to any teaching staff</i>
<i>Private office space</i>	92.7%	81.5%	18.9%	9.3%	6.6%
<i>Private computer access</i>	97.2%	91.1%	41.5%	44.5%	2.1%
<i>Advance notice of course assignments</i>	96.6%	83.9%	68.3%	67.2%	1.6%
<i>Participation in departmental faculty meetings</i>	98.6%	87.5%	53.7%	53.9%	1.6%
<i>Travel support to professional meetings</i>	84.4%	80.0%	34.2%	23.2%	13.5%
<i>Other professional development</i>	87.7%	85.2%	41.7%	48.6%	9.2%
<i>Access to research space</i>	30.6%	28.6%	6.3%	8.1%	68.3%
<i>Medical benefits</i>	98.6%	91.1%	30.0%	25.9%	0.5%

Table 7. Percentage of 193 responding institutions that reported chemistry faculty eligible for the listed benefits, by type of employment and benefit offered.

Concluding Remarks

The results of the Two-Year College Chemistry Faculty Status Survey provide insight into the unique landscape of two-year colleges. A great deal of variety was reported in terms of institution size and chemistry-based courses, programs, and degrees offered. However, the information reported on faculty was largely homogeneous.

Responses to the Two-Year College Chemistry Faculty Status Survey suggest a lack of permanence in two-year college chemistry faculty positions. Almost 30% of the two-year college respondents reported their institution offered no permanent teaching positions; additionally, about half of all teaching positions were held by contingent faculty. Approximately one-third of course sections were reported to be taught by contingent faculty, with a greater percentage teaching laboratory sections or chemistry courses designed for non-chemistry majors.

Approximately 40% of faculty reported in the Two-Year College Chemistry Faculty Status Survey were female, about 70% were Caucasian, and most had either a master's or doctoral degree in chemistry. These demographics did not vary significantly by type of employment, size of institution, or type of program offered.

Over a third of two-year college chemistry faculty were reported to hold more than one position. Most, but not all, such faculty were contingent or long-term, part-time faculty working at more than one post-secondary institution or employed in a non-academic setting.

Almost three-quarters of respondents reported having sabbatical or reduced teaching-load options. Approximately 15% of faculty at institutions with these options were reported to be taking advantage of them.

Benefits were reported to be offered to permanent and long-term, full-time faculty on a nearly equal basis. Such benefits were extended to long-term, part-time and contingent faculty less frequently. Moreover, a number of respondents reported that budget cuts had limited access to their benefits.

The Two-Year College Chemistry Faculty Status Survey full report, survey questionnaire, and raw data can be found at www.acs.org/2YFacultyStatus.

References and Notes

1. "Who Is Teaching Whom? Complete Report on the Fall 2009 CPT Survey of Chemistry Faculty Status." ACS Committee on Professional Training; ACS: Washington, DC. 2010. Available online at www.acs.org/cptfacultystatusreport (accessed December 2010).
2. US Bureau of Labor Statistics. *Occupational Employment Handbook, May 2009*. www.bls.org (accessed January 2011).
3. Participants were allowed to select more than one program. For example, while 60 respondents reported offering transfer programs without degrees, another 21 reported offering degree programs in addition to the (non-degree) transfer programs.
4. A Snapshot of Chemistry Programs and Faculty at Two-Year Colleges. Michael Neuschatz, Mary Ann Ryan, Jodi Wesemann, Janet M. Boese. *Journal of Chemical Education*. **2003**, 80(2), 129.
5. National Center for Education Statistics. *Digest of Education Statistics 2009*, <http://nces.ed.gov/programs/digest/d09/index.asp> (accessed 16 Jul 10).

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