

# ACS Guidelines for Chemistry in Two-Year College Programs

The following is an excerpt from the *ACS Guidelines for Chemistry in Two-Year College Programs*. American Chemical Society: Washington, DC. 2015.

The complete electronic version of the *ACS Guidelines for Chemistry in Two-Year College Programs* and additional information are available at [www.acs.org/2YGuidelines](http://www.acs.org/2YGuidelines).

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## 10. Partnerships

To maximize their impact and success, two-year college programs should partner with organizations that have overlapping interests. Two-year college transfer, support, and especially chemistry-based technology programs can be strengthened by collaborating with relevant partners in curriculum development, faculty and institutional support, and the recruitment and placement of students.

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12 Many institutions rely on the ACS Division of Chemical Education Examinations Institute (<http://chemexams.chem.iastate.edu/>) for assessment because it provides a wide variety of tests to assess student learning while providing national norms and statistics. Other assessment instruments may also be used. (accessed Sept 12, 2015)

To be effective, partnerships must benefit all the participants; likewise, all of the partners need to collaborate to actively maintain the partnership. Establishing clear responsibilities and regular communications should help leverage resources and expertise, positioning two-year college programs to respond to the changes occurring in education and the workforce.

Partnerships are especially important for the maintenance and growth of strong chemistry-based technology programs. These institutional relationships provide knowledge of the skills employers require of graduates, resources to develop the necessary program infrastructure, career opportunities for graduates, and, frequently, students for the program. The program's partners should also be consulted in determining the appropriate faculty, support staff, facilities, and equipment for the program.

**10.1 Advisory boards.** An advisory board whose members have a vested interest in the program's success is a critical component of a strong chemistry-based technology program; advisory boards can also benefit transfer and support programs. The members should represent the employers, institutions, organizations, and campus units, as appropriate, that are partnering with the program. The advisory board is responsible for:

- Developing and maintaining the program and its curriculum
- Ensuring that the program and its curriculum keep pace with the changing needs of the partners, potential employers, and/or transfer programs
- Maintaining a curriculum flexible enough to support a variety of employer or transfer program needs
- Ensuring students have transferable skills that can support a variety of career trajectories
- Providing employer-based mentorships, as appropriate

**10.2 Campus units.** The quality and success of chemistry programs is dependent upon interactions among campus units. Strong coordination and ongoing communication should occur among the chemistry faculty, staff providing support services, and counselors and advisers who help students with course placement, sequencing, transfer options, and career opportunities. By establishing collaborative activities, programs will leverage and increase the effectiveness of their efforts. Such activities may be supported by external funds.

Interactions among departments and disciplines should also be encouraged. The institution should provide opportunities for interdisciplinary discussions and collaborations among faculties, ensuring that students receive a well-rounded collegial perspective on chemistry.

**10.3 Higher education institutions.** Partnerships among two-year and other post-secondary programs take many forms and have many benefits. Collaborative faculty projects and group meetings, articulation conferences and workshops for faculty, and undergraduate research are just a few examples. In addition to enriching students and faculty members, such partnerships foster student transfer, increase student retention, and enhance and expand program offerings.

Successful student transfer requires candid and ongoing conversations between faculties at two-year colleges and receiving institutions. This is particularly important when curricular changes are being made and when students enroll in and transfer to a number of different receiving institutions. The conversations should serve to align curricular content and allow for exchange of ideas in delivering effective instruction and developing new approaches to strengthening student success at both transfer and receiving institutions.

Two-year college chemistry programs choosing to match the first two years of an ACS-approved program in chemistry must be familiar with the current guidelines for bachelor's degree programs and the way in which the ACS-approved program has implemented them. Students wishing to obtain a bachelor's degree from an ACS-approved program, particularly a certified degree, should also consult with a representative from that program and refer to *Undergraduate Professional Education in Chemistry: ACS Guidelines and Evaluation Procedures for Bachelor's Degree Programs* at [www.acs.org/CPT](http://www.acs.org/CPT) (accessed Sept 15, 2015).

Each institution involved should have a mechanism for coordinating and communicating to students, faculty, counselors, and advisers the terms of articulation agreements. Agreements that specifically describe the courses and learning outcomes necessary for efficient transfer are the keys to student-centered advising.

Partnerships with other institutions of higher education can leverage resources, enhancing and expanding the offerings of two-year programs. If two or more institutions in the same geographical area are unable to offer a

complete two-year chemistry program individually, the institutions should consider combining resources and facilities to provide a full two-year chemistry program. Institutions with programs in place can also benefit from cooperative agreements, gaining access to libraries, laboratory facilities, and sophisticated instrumentation on other campuses. Second-year and specialized occupational courses, in particular, can be improved by such partnerships. These agreements can also make participation in research by faculty members and independent study students a reality.

**10.4 K–12 Institutions.** Partnerships with high schools can be a valuable mechanism for identifying and recruiting talented students early in the college-planning process. These relationships also provide an opportunity to align curricula, manage expectations, and enrich both high school and college education. Early admission, dual enrollment, and even advanced standing for certain high school courses also function in valuable ways to recruit students and increase the number of enrollments of first-generation and other students who are not otherwise likely to matriculate directly into college. Any course offered at a secondary school that results in a grade appearing on a college transcript must be taught by an individual qualified to teach the comparable course at the college. Such an arrangement should involve close oversight, review, and assessment by the college chemistry faculty to ensure similar levels of academic rigor and consistent learning outcomes (see also Section 5.5).

Partnerships with K–12 institutions can be very beneficial for programs preparing students for careers in teaching, providing professional development for in-service teachers, and preparing chemists to transition to careers in K–12 education.

**10.5 Employers.** Because most students will seek employment at some point, partnering with industrial and government employers is a key step to ensuring that students have the skills desired in the workplace. As partners, employers can identify and continuously update skills they require, provide employment trends and projections, and ensure that curricula, course content, and programs meet their needs. Since the needs of employers can vary greatly by region and industry, partnering with employers is critical for chemistry-based technology programs.

Cooperative agreements with industrial and government laboratories can provide access to libraries, laboratory facilities, and sophisticated instrumentation, enhancing the curricular offerings and research opportunities of two-year programs. Employers can provide professional development to both faculty and students in the form of research positions, internships, and other experiential opportunities.

Particularly in chemistry-based technology programs, employers can provide valuable mentorships, guest speakers, laboratory tours, and other experiences that support students' career development. Some employers may also be able to provide funding, equipment, or even part-time instructors for specialty courses. Employers can assist with student recruitment, through both participation in career fairs and enrollment of current employees interested in expanding their skills.

By partnering with two-year college programs, employers can gain access to a more qualified workforce pipeline, assistance with the professional development of incumbent employees, and potential tax benefits. Employers and programs should communicate their respective needs frequently, honestly, and with an eye toward creative solutions to potential roadblocks.

**10.6 Other nonacademic institutions.** Other nonacademic institutions can also assist with career development. Laboratories, museums, and workforce development agencies are among those institutions that can host field trips and serve as sources of speakers and potential role models and mentors for students. Interactions among faculty and employees of these institutions can provide valuable insights and information to be shared with students during chemistry courses and conversations about careers.