



Why ACS Approval Matters for a Chemistry Program

The American Chemical Society released its first list of approved bachelor degree programs in 1940. The primary objective of the ACS approval process is to improve the quality of undergraduate chemistry education. The guidelines for approval provide standards for the institutional environment, faculty and staff, infrastructure, curriculum, undergraduate research, development of student skills and program self-evaluation that define excellent and rigorous programs of undergraduate chemistry education. With over 680 approved programs, it is apparent that a large segment of the community values the ACS approval process.

The approval program for domestic undergraduate chemistry departments is administered by the Committee on Professional Training (CPT). CPT members represent the range of chemistry sub-disciplines, the diversity of academic institutions, and chemical industry. The ACS Guidelines and Evaluation Procedures for Bachelor's Degree Programs have been revised and updated by the committee on several occasions in an attempt to keep them current, increase curricular flexibility while maintaining the rigor and breadth of chemical coverage, and to promote inclusion of student professional skills and modern teaching practices. The Guidelines were most recently revised in 2015.

ACS approval ensures that students are prepared for life after college. Students graduating with a chemistry degree may pursue graduate study or a wide array of careers, many of which require the chemistry knowledge and skills they learned as an undergraduate; but others may enter careers peripherally related or unrelated to chemistry. The curricular framework described in the Guidelines is designed to prepare undergraduates for the variety of career paths they will choose. The breadth and depth of courses and laboratories that departments must offer to gain approval allows their students to enter the full variety of careers that require knowledge of chemistry. The student skills that an approved program must develop in problem solving, written and oral communication, the use of primary literature, information management, laboratory safety, teamwork, and ethics are necessary for their success in a wide array of careers, whether or not they involve chemistry. Some programs openly use ACS approval to assist in recruiting top students. The ACS approval program provides a level of uniformity in programs and standards of excellence that benefit all students, as well as the profession as a whole.

The approval process stresses program self-evaluation and provides external evaluation by CPT. Self-evaluation combined with external evaluation enables a program to reflect upon and define a direction for, and vision of the future, thereby improving its ability to provide an excellent undergraduate education. The Guidelines speak to the importance of excellence and rigor in chemistry programs. Regular consultations with educators, professional chemists and scientists allows CPT to comprehend the broad landscape of chemistry education, examine changing trends in chemistry education, and provide departments with meaningful feedback to help improve the excellence and rigor of their curriculum. The approval process actuates the departmental self-evaluation, identifies areas of strengths and opportunities for change, and leverages support from their institutions and external agencies to implement change. Chemistry programs often use the standards in the ACS Guidelines and feedback from CPT to justify the need to update or expand their course offerings, diversify their faculty, improve the rigor of courses, laboratories and research experiences, and energize their program by incorporating emerging areas into the curriculum.

Chemistry is an expensive discipline. Chemistry programs often use standards in the ACS Guidelines to bolster arguments for needed resources. ACS approval has enabled departments to increase their budget to appropriate levels, hire more faculty members, reduce their reliance on part-time and temporary instructors, expand professional development opportunities, reduce teaching contact hours, and hire more support staff for the undergraduate program. Departments improve their physical plant and safety infrastructure, expand instrument



holdings and computational facilities and software used by undergraduates, guarantee faculty and student access to journals and chemical information databases, and keep the size of laboratory sections to a manageable number of students as a result of the standards established by the ACS Guidelines. Courses required for the certified degree allow some departments to offer essential classes that might otherwise be canceled on the basis of small enrollments. The Guidelines stress the importance of chemistry as a discipline that requires hands-on laboratory experiences undertaken in the presence of a supervisor. Departments have used the need for hands-on activities to counter efforts aimed at reducing instructional laboratory costs through the use of virtual laboratory experiences. The emphasis on research participation as an excellent educational opportunity for undergraduates has allowed departments to expand this resource-intensive activity, which particularly benefits students who will pursue graduate study.

The ACS approval program promotes a set of common goals, standards and aspirations for excellence among educators of undergraduate chemistry majors. The Guidelines provide an educational framework while providing programs flexibility in designing their curriculum. ACS approval establishes prestige and recognition by affiliating an undergraduate chemistry program with national norms and standards established by the largest chemistry professional society in the world. The effectiveness and value of the approval program is validated by the wide range and diversity of institutions that seek to achieve and maintain ACS approval.