



(1) Accreditation: Trends at Higher Education Institutions

For more than 60 years, the American Chemical Society (ACS) has run a program that *approves* but does **not** provide *accreditation* of the quality of undergraduate instruction in chemistry departments nationwide. Individual chemistry departments apply to ACS to be considered an approved department. Departments participate in this program voluntarily and are not charged a fee. The ACS Committee on Professional Training (CPT) evaluates each application on the range and depth of the courses offered, including laboratory courses; faculty qualifications; faculty contact with the students; student access to and use of the chemical literature; student access to and use of various instruments; safety considerations; and department control, including financial, over its own program. Departments submit a comprehensive five-year report, as well as annual reports of less complexity. The chair of an approved program certifies the degrees of the students who have met the requirements of ACS. Almost 10,000 students graduated from the 629 approved programs in 2002, and 37% of them received an “ACS-approved degree.” This fraction has remained relatively stable for the past two decades.

In addition to recognizing chemistry programs, CPT has developed guidelines for a number of specialist options in chemistry, including: Biochemistry, Materials, Polymers, Chemical Physics, Environmental Chemistry, and Chemical Education.

No equivalent approval or accreditation program is available for graduate education in chemistry.

Undergraduates majoring in chemical engineering may receive a degree from an **accredited** chemical engineering department. Departments are accredited through an extensive process run by the Accreditation Board for Engineering and Technology (ABET). Gaining a chemical engineering degree from an accredited department is a first stage in the process of professional licensure for chemical (and other) engineers (see below).

(2) Continuing Professional Development

There is no U.S. system of accreditation and licensure to recognize “professional chemists.” ACS offers a range of services to its members that allow them to excel in their profession. Through its employment centers and networking events at national meetings, and job listings in *Chemical and Engineering News*, ACS provides tools and services that connect chemists and chemical engineers with a wide range of potential employers. Programs and services offered by the ACS Department of Career Services, including salary surveys, workshops, and workforce and career management information, help practitioners of chemistry manage their careers effectively. **ACS would be pleased to explore options for C6 organizations to collaborate and help their members when job-hunting.**

ACS offers a continuing education program for working chemists through a series of short courses and e-learning opportunities. The short courses consist of one- to five-day seminars on a broad range of topics, from basic reviews with one instructor to state-of-the-art presentations with multiple instructors. Sessions are offered nationwide at ACS meetings, at meetings of other scientific societies, and at selected universities. In addition, courses are presented in-house to various chemical and pharmaceutical companies. Our most popular courses cover topics in analytical,

polymer, pharmaceutical, medicinal, and biological areas. Most of the participants are industrial scientists and technicians: about 50% have a bachelor's degree; 20% have a master's degree; and 30% have a doctorate. These courses carry no academic credit, but participants may receive so-called "continuing education units," recognizing their participation in a course should they so wish. Between 100 to 180 courses are offered each year, serving the needs of some 2000 to 4000 chemists.

We also offer two forms of Internet instruction: Webcast short courses and Internet courses. The former are live, instructor-led Web conferences of from 6-18 hours in length. Instruction is offered on specific dates according to a defined schedule. The latter are self-paced, with participants completing a given course within, variously, a 30- to 120-day time-frame. Interaction with the course author is available via email.

ACS also offers a *ProSpectives* Conference series to help keep senior-level industry scientists informed about the latest advances in the chemical sciences. These small, topical conferences emphasize practical applications of recent discoveries. Topics covered in 2004 focus on pharmaceuticals and biotechnology.

A system of licensure is in place that recognizes the status of a "professional engineer" (PE). All types of engineer, including chemical engineers, may seek this designation. The PE is awarded through state licensing boards. Licensing typically requires a four-year degree from an accredited institution; four years of qualifying engineering experience; and passing two written examinations prepared by the National Council of Examiners for Engineering.