

Part-time and Temporary Faculty

With increasing frequency university and college chemistry departments have part-time and temporary persons teaching, especially in the lower division chemistry courses of a program. Several questionable assumptions accompany such appointments. Persons not in tenure-track positions may be given excessive teaching loads with the justification that research supervision is not part of their jobs. Another justification given for excessive loads is that the responsibilities involve the teaching of multisection classes or laboratories that require only one preparation. Persons in part-time positions who teach at more than one institution have little time for informal interaction with faculty colleagues or with students outside of scheduled class and laboratory sessions at any one institution. CPT regards these practices as unacceptable. They compromise the quality of education provided for the students and often exploit the appointees.

ACS guidelines stipulate 15 hours per week of contact in formal classes and laboratories as the maximum permissible load for persons teaching in an approved department. The reason for this guideline is to give all faculty members good opportunities for professional growth and for working with students and colleagues in informal ways. CPT expects to see skilled faculty members involved in instruction at all levels of the undergraduate curriculum. Professional growth is essential if the levels of instruction and of morale are to be kept high. Professional growth may involve writing instructional materials, developing new laboratory experiments and demonstrations, doing research in education, and attending off-campus meetings of professional societies as well as involvement in scientific research. Persons in continuing nontenured positions should have opportunities for sabbatical leaves comparable to those of tenured faculty members. In addition to having good opportunities for professional growth, part-time, temporary, and continuing nontenured appointees should be integrated into the full range of activities of the department. Such linkages are a part of professional development and help assure that teaching by all appointees is integrated into the department's overall program.

In reviewing some schools, CPT encounters two other forms of excessive teaching that interfere with the professional development of the faculty and thus weaken the quality of the program. One is regular summer school teaching. The other is faculty members accepting teaching overloads for extra compensation during the regular academic year. Institutions are expected to maintain salaries at a sufficient level so that faculty do not need to assume teaching overloads to align their total compensation with the salaries offered by other institutions of similar size and mission.

Models for Integrating Biochemistry into Core Chemistry Courses - Announcement of a Symposium at the San Francisco ACS Meeting

Past issues of this newsletter have described the forthcoming biochemistry requirement for certification of undergraduate majors in approved programs. CPT expects that a new edition of its guidelines will be published late in 1999, and approved programs will then have two years, or until 2001, to satisfy the requirement. Knowing full well that the requirements for approved programs have reached a maximum, CPT has provided flexibility in meeting the biochemistry requirement. It can be met by a three-credit biochemistry course as one of the advanced courses or by integrating the equivalent of three credits of biochemistry into the required core.

Integrating biochemistry into the chemistry core is an attractive option, but it requires reworking the syllabi for a number of courses. Some programs are already doing it, but for others it may be a new way of teaching. In order to assist departments that are considering the integration approach for biochemistry, CPT will sponsor a full-day symposium at the spring 2000 National ACS Meeting in San Francisco. CPT member C. Dale Poulter of the Department of Chemistry at the University of Utah is the organizer, and the symposium will be co-sponsored by the

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Institutions with ACS-Approved Options

BIOCHEMISTRY - 94

Agnes Scott College
 University of Alabama (Tuscaloosa)
 University of Alabama at Birmingham
 University of Alabama in Huntsville
 University of Alaska Fairbanks
 Albright College
 Alma College
 Auburn University
 Baylor University
 Beloit College
 Benedictine University
 Bloomsburg University
 Bridgewater State College
 Bucknell University
 California State University, Fullerton
 Calvin College
 Centre College
 College of Charleston
 University of Chicago
 CUNY, City College
 CUNY, Lehman College
 The Colorado College
 Connecticut College
 DePaul University
 Drake University
 Drew University
 Eckerd College
 Fisk University
 Furman University
 Georgia Institute of Technology
 Gettysburg College
 Gonzaga University
 Hampden-Sydney College
 Hartwick College
 Hofstra University
 Hope College
 Humboldt State University
 University of Illinois at Chicago
 James Madison University
 Kansas State University
 Loras College
 Massachusetts Institute of Technology
 Michigan Technological University
 University of Michigan-Flint
 Middlebury College
 Millersville University
 Mississippi College
 Muhlenberg College
 Nazareth College of Rochester
 New Mexico Institute of Mining and Technology
 University of North Carolina at Charlotte
 University of Northern Colorado
 Northern Illinois University
 University of Northern Iowa
 Oberlin College

Ohio Northern University
 University of Oregon
 Pace University (Pleasantville campus)
 University of Pennsylvania
 Philadelphia College of Textiles and Science
 Purdue University
 University of Richmond
 Russell Sage College
 St. John Fisher College
 St. Mary's College
 University of St. Thomas
 University of San Diego
 University of San Francisco
 Santa Clara University
 Simmons College
 University of Southern Mississippi
 Southern Oregon University
 SUNY, College at Geneseo
 SUNY, College at Oswego
 Stevens Institute of Technology
 Swarthmore College
 Towson University
 Trinity College
 Trinity University
 University of Tulsa
 United States Air Force Academy
 Utah State University
 Valparaiso University
 Villanova University
 Virginia Polytechnic Institute
 Wayne State University
 West Chester University
 University of West Florida
 Western Connecticut State University
 Western Illinois University
 Wheaton College (Illinois)
 College of William and Mary
 University of Wisconsin-River Falls
 The College of Wooster

CHEMICAL PHYSICS - 3

Michigan Technological University
 College of William and Mary
 The College of Wooster

CHEMISTRY EDUCATION - 5

University of California, San Diego
 James Madison University
 Michigan Technological University
 University of Northern Colorado
 Utah State University

ENVIRONMENTAL CHEMISTRY - 17

University of Alaska Fairbanks

Curricular Flexibility in ACS-Approved Options

Nearly one quarter of ACS-approved chemistry programs now offer one or more interdisciplinary options. These include biochemistry, chemical physics, chemistry education, environmental chemistry, materials, and polymers. However, requirements for these options can be very heavy, which may reduce their viability for students and schools. Having an option without excessive requirements sometimes depends on creative reworking of the chemistry core. For some time CPT has also accepted a measure of flexibility in the core chemistry requirements of options programs. Now the Committee has voted to make this flexibility a formal part of the new guidelines for ACS-approved programs, which will be issued later this year. The statement in the new guidelines is expected to read as follows:

Departments have the flexibility in association with a degree option of reducing the core by up to four semester hours. The essential expectation for the core is that it include comparable emphasis on analytical, inorganic, organic, and physical chemistry along with the new requirement in biochemistry.

The chemistry core curriculum includes a minimum of 28 semester credit-hours of basic instruction with comparable emphasis on the four fields of chemistry, and the requirement for the equivalent of 7 semester credit-hours of laboratory instruction as part of the 28 credit-hours. As described in a number of recent CPT Newsletter articles, the biochemistry requirement may be met by integrating biochemical topics within the chemistry core or by having a course in biochemistry replace one of the advanced courses in the ACS-approved option.

Ashland University
 California State University, Fullerton
 College of Charleston
 University of Delaware
 Furman University
 University of Illinois at Urbana-Champaign
 Michigan Technological University
 University of Michigan-Flint
 Montana Tech of the University of Montana
 University of Nevada at Las Vegas
 University of Nevada at Reno
 Northern Arizona University
 Rochester Institute of Technology
 SUNY, College at Oswego
 Tennessee Technological University
 University of Wisconsin-Green Bay

MATERIALS - 1

United States Air Force Academy

POLYMERS - 13

The University of Akron
 University of Alabama at Birmingham
 California Polytechnic State University
 Carnegie Mellon University
 Georgia Institute of Technology
 Michigan Technological University
 University of Missouri-Rolla
 University of North Carolina at Chapel Hill - Applied Science Curriculum
 Rochester Institute of Technology
 Virginia Polytechnic Institute
 College of William and Mary
 University of Wisconsin-River Falls
 University of Wisconsin-Stevens Point

CPT Mission Statement

The mission of the American Chemical Society is to encourage in the broadest and most liberal manner the advancement of the chemical enterprise and its practitioners. Fostering excellence in professional education has been seen as a critical part of these activities for many years and the Committee on Professional Training (CPT) plays an important role as part of this mission.

CPT was established in 1936 by the ACS Council and is now a joint Board-Council Committee. The primary objective of CPT is to facilitate the maintenance and improvement of the quality of chemical education at the postsecondary level. It strives to do this in a number of ways, one of the more important being the development and administration of guidelines that define high quality undergraduate programs. CPT approves programs designed to meet the guidelines. Students who successfully complete ACS-approved programs are, in turn, certified by the institution.

CPT collects and reports information on trends and developments in chemical education, maintains extensive records on undergraduate programs, and provides assistance to colleges and universities wishing to improve their programs in chemistry. The Committee also cooperates with other ACS committees and industrial, professional, and educational organizations concerned with maintaining high quality postsecondary education.

Another significant function of CPT is the biennial publication of the *ACS Directory of Graduate Research*. The *Directory* has extensive coverage of the universities and colleges offering curricula leading to doctoral and master's degrees in chemistry, chemical engineering, biochemistry, medical/pharmaceutical chemistry, clinical chemistry, polymer science, food science, forensic science, marine science, toxicology, materials science, and environmental science in the United States and Canada. In addition, the Committee periodically reviews graduate education in the chemical sciences and reports its findings.

CPT's annual report, which includes data on the number of graduates from ACS approved schools, is published in *Chemical & Engineering News*. Twice a year the Committee publishes the CPT Newsletter. The newsletter tells about innovations in chemistry curricula, gives information on the ACS guidelines, and reports on studies done by the Committee. *Planning for a Career in Industry* and *Planning for Graduate Work in Chemistry* are two booklets published as guides for students.

The Committee on Professional Training has 17 members, including a nonvoting staff secretary, and usually one or more consultants. Appointments to the Committee are made jointly by the chair of the ACS Board of Directors and the president of the Society. The members of CPT are experienced educators and scientists. They are chosen to represent all fields of chemistry, various points of view, and the different types of academic and nonacademic institutions concerned with the chemical sciences and chemical education. Through the collective efforts of its members, CPT endeavors to support the mission of the American Chemical Society in chemical education.

The Value of ACS Certification

Have students ever asked you about the value of the ACS-certified degree? Or have colleagues or administrators questioned the importance of gaining or maintaining approval of your chemistry program? Members of CPT often hear these questions as do staff members in the Washington office. For this reason, we have prepared the following short statement. We hope you find it interesting and useful and that you will share it with your students. As always, your comments are welcomed.

Why Should I Seek an ACS-Certified Degree in Chemistry?

What is it? The Committee on Professional Training (CPT) of the American Chemical Society evaluates and approves undergraduate programs in chemistry at colleges and universities in the United States. Currently, there are over 600 approved programs. Graduates of these institutions who have completed the ACS-approved curricula qualify for an ACS-certified degree. In addition to the approved degree program in chemistry itself, CPT also approves chemistry degrees with options in biochemistry, chemistry education, chemical physics, environmental chemistry, materials, and polymers. These are equally high-quality degrees in chemistry that encourage a more focused degree of specialization in any of these six "option" areas.

Each year your school will report to CPT the names and type of degree received by all of its certified graduates. ACS-certified graduates are eligible for immediate membership in the ACS and thus are able to secure the benefits of membership, which include helpful services such as assistance in finding employment. A certified degree in chemistry is a valuable personal credential that serves as national recognition for successfully completing a rigorous and high quality academic chemistry curriculum.

What is the significance of ACS certification? First, let's look at the meaning of the fact that your college or university offers an ACS-approved program in chemistry. The availability of an ACS-approved program in chemistry means that your institution is committed to providing you with a broadly based and intellectually challenging experience in chemistry. CPT's role is to carefully evaluate the chemistry department's program with respect to its breadth and depth, the qualifications of the chemistry faculty, the adequacy of the physical plant, condition of instrumentation, access to the current chemical literature, and opportunities for a meaningful research experience. An academic institution whose chemistry department meets the guidelines for ACS approval is placed on a nationally recognized list of approved chemistry programs. Clearly, the objective of the ACS approval/certification process is to encourage institutions to develop and maintain a high quality program of instruction in chemistry. Furthermore, identifying and participating in an approved program will afford you some measure of assurance that you are being given high quality instruction.

In many schools with approved programs, more than one chemistry major exists. For example, a noncertified degree might be available in addition to the certified degree. In such a case, why should you seek the certified degree? The best response to this question is largely philosophical, but internally very meaningful. Personal achievement rides the same waves as personal challenges. Without question, your own sense of self-

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CPT Participates in Invitational Conference on Graduate Chemical Education

The Society Committee on Chemical Education (SOCED) held a special conference February 27-28, 1999, to discuss the state of graduate education in chemistry. Organized by SOCED member, Stanley Pine of California State University, Los Angeles, the group met at American Chemical Society headquarters for a day and a half of discussion about the effectiveness of graduate education and what might be done to improve it further. Attendees included approximately 25 individuals representing a broad spectrum of graduate schools ranging from institutions offering terminal master's degree programs to the largest major research universities as well as a variety of chemical industries. CPT was represented by Royce Engstrom (University of South Dakota), Billy Evans (formerly of the University of Michigan, currently at Morehouse College), and Cathy Nelson (ACS Office of Professional Training).

Among issues discussed were the content of graduate degree programs (research focus, course work, breadth), the structure of graduate degree programs (research groups, interdisciplinary programs, funding, experiential opportunities), and other topics such as the role of the master's degree, student mentoring, and the effectiveness of programs in preparing students for a variety of career paths. While attendees agreed that graduate chemistry education in the United States is still the best in the world, the group identified several areas of concern and agreed that the ACS can play a role in making graduate education even stronger.

The participants formulated a recommendation that the ACS should establish an office that would give graduate education a greater level of attention within the Society. A special task force consisting of four members each from SOCED and CPT will be meeting to discuss governance issues related to this proposed new program. Anyone with an interest in this topic can provide input to CPT by contacting the ACS Office of Professional Training.

Biology in the ACS-Approved Biochemistry Option

At a Project Kaleidoscope Workshop on biochemistry last fall a question was raised as to why there is no specific requirement for biology course work associated with the ACS-approved biochemistry option. It was a useful question. The biochemistry option requirements state that some exposure to cell biology and molecular genetics is necessary, but this could be interpreted to be as limited as the treatment of these topics in many biochemistry textbooks. While many programs with approved biochemistry options do require students to complete separate courses in biology, the Committee believes it is appropriate to strengthen the biochemistry option by adding an explicit statement that some formal study of biology is required for program approval and student certification. This is already the case with the chemical physics option, where physics beyond the introductory level is required, and the environmental chemistry option, where study of biology, geology, or another environmentally related science is required. We are proposing that the forthcoming 1999 edition of the ACS guidelines will include a revised statement for the biochemistry option, which like all degree options will build onto the chemistry core. The new statement that has been proposed would read:

BIOCHEMISTRY: Three semester hours of biology beyond the introductory level, which contains cell biology, microbiology, or genetics; six semester hours of biochemistry, which has organic chemistry as a prerequisite; and one semester of a laboratory in biochemical methods. In addition, research in biochemistry culminating in a comprehensive written report is highly recommended.

The proposed new statement omits any specific mention of an advanced course requirement to allow time for the biology requirement to be satisfied. Also, as part of its review of the entire options program, the Committee has voted to allow more flexibility in the requirements of the ACS-approved options; a fuller statement appears elsewhere in this newsletter.

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satisfaction and worth will be stimulated by the challenges of trying to learn and understand as much as possible about a particular discipline. The certified chemistry degree program is typically more rigorous than the noncertified chemistry degree program, and it may often require a larger commitment of time to complete. Nevertheless, the more one knows about various facets of chemistry, the more one is able to understand and appreciate the broad significance and impact chemistry has in our daily lives.

But the benefits extend well beyond the personal challenge. The extra rigor and additional requirements of the certified degree are valued by potential employers and graduate schools alike. Employers realize that a certified graduate may have better preparation for technical employment. Some companies offer higher starting salaries to certified degree holders as compared to their noncertified classmates. It is not likely that a

graduate school will overtly consider whether an applicant holds a certified degree or not, but it is clear that, all other things being equal, the additional course work and other requirements of your certified degree program will give you a boost as you enter the typical graduate program.

So, what's the bottom line? As outlined above, the ACS approval program and the student certification process encourage institutions to offer high-quality curricula. Such an effort directly benefits the chemistry graduates of those institutions. The certified degree is also valuable to the graduate because of the personal satisfaction of completing a rigorous program and the assurance of better preparation for a career in chemistry.

Publications Available from CPT

In addition to the ACS guidelines booklet, the ACS Committee on Professional Training (CPT) has several free publications that are available to assist faculty and undergraduates in the chemical or related sciences. This list includes the supplements to the ACS guidelines that include suggestions on topics that might be taught in most of the major subdisciplines of chemistry.

The CPT Annual Report gives a summary of the activities carried out by CPT each year. It also lists each ACS-approved institution with the numbers of bachelor's, master's, and Ph.D. degrees granted in chemistry and chemical engineering. This report is published in *Chemical & Engineering News* and is available on the web.

Additional copies of the current CPT Newsletter are available. Past issues of the newsletter also may be requested.

There are two brochures that are available for undergraduates. One is *Planning for a Career in Industry*. Prepared by CPT with the ACS Committee on Corporation Associates, this brochure is designed to provide advice for undergraduate chemistry students who plan to enter the work force upon graduation. It includes suggestions about curriculum planning as well as a broader discussion about career options and opportunities. The brochure concludes with a bibliography of resources on career planning available to undergraduates and their advisors.

The other brochure is the sixth edition of *Planning for Graduate Work in Chemistry* written for anyone considering graduate work in chemistry or chemically related disciplines. It offers suggestions on the preparation for and selection of graduate programs, as well as the application process for graduate school.

Requests for copies (free of charge) of any of the publications listed above may be made by letter to the Office of Professional Training, 1155 Sixteenth St., NW, Washington, DC 20036, by e-mail to cpt@acs.org, or by phone to (202) 872-4589. The ACS guidelines, brochures, recent newsletters, and the most recent annual report are also accessible via the World Wide Web at <http://www.acs.org/cpt/hp.htm>.

CPT Open Meeting

Mark your calendar to attend the CPT Open Meeting at the ACS National Meeting in New Orleans. It will be held from Noon to 1PM on Sunday, August 22, 1999. Check in the June 21, 1999, issue of C&EN which will contain the preliminary ACS National Meeting Program for the name and the location of the meeting room for the CPT Open Meeting. CPT holds open meetings to gather input from the chemistry community on topics discussed in this newsletter and on other matters of interest in professional chemical education. We invite you to attend and express your views on the following subjects or other issues that you would like to bring to the Committee's attention:

1. New Guidelines for ACS Approval.
2. Flexibility in ACS-approved Options.
3. Biochemistry Symposium.
4. Ph.D. Survey Results

Changes in CPT Membership

Beginning with this issue of the newsletter, we will include a regular item on changes in membership on the Committee on Professional Training. Many of you are understandably interested in who serves on the Committee that evaluates your undergraduate programs and how they are appointed. The Committee is a joint Board-Council committee of the Society. As such, the ACS Committee on Committees makes recommendations to the ACS President and Chair of the Board, who then jointly make the final appointments to CPT.

For 1999, the new members are Dr. F. Fleming Crim, Dr. Billy Joe Evans, and Dr. John W. Kozarich. Dr. Crim is a physical chemist, who is a Professor in the Department of Chemistry at the University of Wisconsin-Madison. Dr. Evans, an inorganic chemist, has recently moved from the Department of Chemistry at the University of Michigan at Ann Arbor and is now the Bruce Rauner Professor of Chemistry in the Department of Chemistry at Morehouse College. Dr. Kozarich is currently Vice President for Biochemistry at Merck Research Labs. Before moving to Merck, he was a Professor in the Department of Chemistry and Biochemistry at the University of Maryland.

The Committee would like to express its appreciation for the many contributions of the following members who concluded their terms of service on CPT at the beginning of this year: Dr. Cornelia Gillyard, Dr. Gordon A. Hamilton, Dr. C. Bradley Moore, and Dr. Walter S. Trahanovsky.

Certificates for Graduates

Those chemistry majors receiving a baccalaureate degree and having completed a curriculum described in the ACS guidelines may be certified to the Society for membership purposes by the head or chair of the chemistry department at the approved institution. We will be happy to send certificates to certified graduates. When you submit a request for certificates, please include the student's current mailing address. If you would like to have certificates available for presentation to your certified graduates, please let us know the number of certificates you would like and the date you need them. Send all requests to the Office of Professional Training, American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, or by e-mail to cpt@acs.org

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Division of Chemical Education and the Division of Biological Chemistry.

The symposium will feature some of the different models that are being used to treat biochemical topics in core chemistry courses. Ways in which biochemistry can be integrated into introductory, analytical, inorganic, organic, and physical chemistry courses will be discussed. The morning session will be devoted to invited papers and the afternoon session to contributed papers, followed by a panel discussion on how the various approaches might fit together to meet the new biochemistry requirement.

ACS Committee on Professional Training 1999

Dr. Jerry R. Mohrig
(Committee Chair)
CARLETON COLLEGE

Dr. Charles E. Carraher, Jr.
FLORIDA ATLANTIC UNIVERSITY

Dr. Sally Chapman
BARNARD COLLEGE

Dr. F. Fleming Crim
UNIVERSITY OF WISCONSIN-MADISON

Dr. Royce C. Engstrom
UNIVERSITY OF SOUTH DAKOTA

Dr. Billy Joe Evans
MOREHOUSE COLLEGE

Dr. Slayton A. Evans, Jr.
**UNIVERSITY OF NORTH CAROLINA AT
CHAPEL HILL**

Dr. Carlos G. Gutierrez
**CALIFORNIA STATE UNIVERSITY,
LOS ANGELES**

Dr. Michael Jaffe
RUTGERS UNIVERSITY

Dr. John W. Kozarich
MERCK RESEARCH LABS

Dr. Edward N. Kresge
EXXON CHEMICAL COMPANY

Dr. Mitsuru Kubota
HARVEY MUDD COLLEGE

Dr. Dale W. Margerum
PURDUE UNIVERSITY

Dr. Jeanne E. Pemberton
UNIVERSITY OF ARIZONA

Dr. C. Dale Poulter
UNIVERSITY OF UTAH

Dr. Elizabeth C. Theil
**CHILDREN'S HOSPITAL OAKLAND
RESEARCH INSTITUTE**

CONSULTANTS

Dr. Norman C. Craig
OBERLIN COLLEGE

Dr. Dennis H. Evans
UNIVERSITY OF DELAWARE

* Ms. Cathy A. Nelson
(Committee Secretary)

Ms. Stacie D. Marshall
(Staff Associate)

Mr. Darrell A. Alexander
(Staff Assistant)

Ms. Dolphine S. Hite
(Program Assistant)

AMERICAN CHEMICAL SOCIETY
1155-16th Street, N.W.
Washington, DC 20036

(202) 872-4589 (Phone)

(202) 872-6066 (Fax)

cpt@acs.org (E-mail)

<http://www.acs.org/cpt/hp.htm> (WWW address)

*Contact the Secretary of the Committee for all inquiries concerning CPT, ACS approval, and the content of the newsletter.

American Chemical Society
Committee on Professional Training
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

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