Evolution of the ACS Guidelines for Program Approval and Student Certification: 2022 Preview

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ACS Committee on Professional Training (CPT)

• Established as a standing committee of ACS in 1936
• Assigned responsibility for properly accrediting institutions
• Committee duties include
  • Periodic reviews of ~ 670 approved chemistry programs
  • Developing surveys to understand current trends in chemistry education and map longitudinal developments
  • Working to keep the Guidelines for Bachelor Degree Programs in Chemistry (last revised in 2015) current and continuing to challenge programs towards self-improvement
Challenges in Guidelines Development

- **Large diversity in size, scope and mission of institutions** that offer Baccalaureate degrees in Chemistry and related fields
  - Range of institutions from R1 to PUI, with diverse missions
  - Faculty sizes from ~4-60
  - Degrees awarded from ca. 2/year to 250+/year
- **Desire to be inclusive** rather than exclusive in equitably administered process
- **Dynamic nature of chemistry** as a discipline, need to respond to emerging trends
Goals of Current Revision

- Baseline **critical program requirements** and **increase transparency in expectations and evaluation**
  - “Musts”/”shoulds” language recast into new categories:
    - Critical Requirements/Normal Expectations/Markers of Excellence
- Expand emphasis on **student skill development in the classroom and laboratory**
  - Initially emphasized in 2008 guidelines
- Introduce formal requirement around **Diversity, Inclusion, Equity, and Respect (DEIR)**
- Increase focus on **Safety** with new stand-alone **Safety section**
New Guidelines Structure

Critical requirements
All approved programs must meet

Normal Expectations
Programs meet some to all in cycle of continuous improvement

Markers of Excellence
Acknowledges extraordinary work by programs
Example of New Structure: Undergraduate Research (DRAFT)

• Critical requirements for approval
  – Research should be well-defined, apply and develop understanding of in-depth concepts, promote awareness of safety, be grounded in literature, and contribute new knowledge to the discipline.
  – In programs where research is required for certification, students must prepare a well-written, comprehensive, and well-documented research report that follows the institution's rubric
  – Student must prepare a written report in order for summer/off-campus work to count towards student certification

• Normal Expectations
  – Research is envisioned as a component of a publication in a peer-reviewed journal or technical report
  – Research progress would be presented at an institutional or local meeting.

• Markers of Excellence
  – Research contributions would result in a co-authorship of a peer-reviewed publication
  – Research would be presented at a regional or national chemistry meeting
  – A research project involving multiple semesters or years with students gaining increasing independence and scientific sophistication.
Revisions: Student Skill Development

• Revised by subcommittee within CPT
• Separated into two sections: technical vs. professional
• Technical Skills and Competencies include:
  – Data Analysis; Computational Skills; Laboratory Safe Practices; Green Chemistry and Sustainability; and Systems Thinking
• Professional Skills and Competencies include:
  – Communication Skills; Information Retrieval, Evaluation, and Management; Teamwork and Collaboration; Professional Conduct of Scientists
Student Skill Development in Laboratory

- Includes **practical skills** and **practice of science skills**, in addition to technical and professional skills and competencies

- **Practical skills** include practical hands-on and critical thinking skills

- **Practice of science skills** focus on use of the scientific method in the laboratory
Guidelines for Advancing DEIR

- Developed by subcommittee within CPT, guidelines published in *J. Chem. Educ.* 2022, 99, 1, 393–401

- **DEIR section** addresses:
  - DEIR experience and training
  - Recruitment and Retention of Faculty, Staff, Students
  - Retention of Chemistry Majors
  - Policies and Procedures
  - Reviewing, Revising, and Communicating Policies
Example: DEIR Policies and Procedures (DRAFT)

• **Critical Requirements**
  – Have institutional, or departmental policies to investigate and address issues of: Discrimination, Bias, (Micro)aggressions, Prejudice, Harassment

• **Normal Expectations**
  – Have procedures and tools for observing & documenting inclusive classroom practices.
  – Communicate and clearly articulate criteria for personnel whose evaluation include DEIR criteria
  – Track department demographics (faculty, staff, students)
  – Conduct or participate in departmental/institutional climate surveys.
Example: DEIR Policies and Procedures

• Markers of Excellence
  – Make curricular goals related to DEIR available on a public forum. Include both
    • Evaluation of curriculum
    • Revision of curriculum
  • Establish metrics for evaluating policies used to address issues of discrimination bias, (micro)aggressions, prejudice, and harassment in the working and learning environments.
  • Communicate effective practices in faculty, staff, and student recruitment and retention
  • Have a strategic plan to communicate about and advance access to learning environments, including laboratories, for students with different abilities.
Guidelines Revision and YOU: Your feedback is crucial to this process!

- There are many ways to provide feedback to the committee
  - Watch for surveys from the OPT
  - Attend symposia and “Birds of a Feather” events at BCCE, where CPT is represented
  - CPT Open meetings are held on Sunday at every national ACS meeting, and CPT representatives are often present at regional meetings
  - CPT holds a luncheon for department chairs on Sunday at each national meeting
  - Contact us directly!
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Questions???

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