

Academic Professional Guidelines

Introduction

The American Chemical Society (ACS), the world's largest association of professional scientists, should take the lead in articulating standards for scientists in academia. The ACS has established the Academic Professional Guidelines as a fair and just balance among the legitimate interests of all facets of the higher education community and recommends that these guidelines be accepted and implemented.

These Guidelines apply to those members of the academic community whose job function impacts directly or indirectly on students and scientists involved in the chemical sciences and represent recommended practices to foster productive working relationships among all chemical scientists in academe. For brevity, the term "chemical scientist" is used broadly in these Guidelines to refer to undergraduate and graduate students, post-doctoral and research associates, technicians, staff members, and all part-time and full-time faculty members involved in chemical sciences and engineering.

The Academic Professional Guidelines complement the broader ACS Professional Employment Guidelines to provide guidance on special issues of concern to chemical scientists in the academic environment. The ACS Professional Employment Guidelines are to be consulted for those issues dealing strictly with workplace issues.

General Guidelines

What chemical scientists should expect

Chemical scientists in an academic community have the right to equal treatment and opportunity regardless of gender, race, national origin, religion, age, sexual orientation, gender expression and gender identity, physical disability, or any other factor not related to the position. This includes a workplace free of intimidation, coercion, exploitation, discrimination, and all forms of harassment. Employment of chemical scientists in academe should be based on professional capabilities alone. Compensation and benefits should be commensurate with the position in the professional community. Standards for performance should be explicit and measurable. Timely, accurate, and constructive feedback should be provided concerning job performance. Professional development for all chemical scientists, including developing and maintaining technical competence via courses, scientific meetings, and other means, should be supported.

Responsibilities of all chemical scientists

Chemical scientists have a professional responsibility to serve the public interest and welfare and to further public understanding of science. A safe working environment must always be maintained. This includes not only establishing, following, and enforcing safe laboratory practices, but also inculcating a culture of safety throughout the working environment. Facilities, equipment, and formal instruction adequate for the anticipated operations within the laboratory

must be provided. Compliance with federal, state, and local regulations must be rigorously enforced. Attention should be focused on the highest standards of laboratory practice as well as the personal responsibility of the individual laboratory worker, and the academic unit should have a proactive safety committee. Widespread and in-depth attention should be given to the report *Creating Safety Cultures in Academic Institutions: A Report of the Safety Culture Task Force of the ACS Committee on Chemical Safety* which can be found at: <http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report-final-v2.pdf>

Chemical scientists should take personal responsibility for:

- Treating co-workers with the respect expected by all professionals.
- Maintaining high standards of honesty, integrity, ethics, and diligence in the conduct of teaching, research, and all other professional responsibilities.
- Be concerned with personal health and safety and that of co-workers, consumers, and the community.
- Utilizing expertise for the good of co-workers, the community, and the world by providing considered comment to the public at large on issues involving the chemical sciences.
- Establishing and maintaining lines of communication throughout the academic and professional communities.
- Communicating with scientists and non-scientists accurately, using good oral and written skills. All chemical scientists working in an academic environment in the United States should develop spoken and written English language skills to effectively communicate novel research/educational materials in the language most relevant to a majority of the society and country.
- Honoring commitments made in the context of fulfilling professional duties, whether to students, colleagues or employer.
- Understanding all facets of intellectual property that may be generated from original work
- Generating opportunities for appropriate educational and research collaborations.
- Participating in life-long learning. Chemical scientists should continue their education and professional development, actively participate in appropriate professional societies, and interact with other professionals in the field so as to enhance their capabilities.
- Seeking professional development opportunities to increase mentoring skills.

Faculty Members

Faculty members have a primary responsibility toward the education of students. This education comes in the form of teaching, research, and service to the institution and community. The faculty member should contribute to building an open and collegial environment among all full-time and part-time faculty members, students, postdoctoral associates, and staff. The faculty member should promote a productive working environment that fosters productivity, collegiality, collaboration, concern for safety, and respect among all members of the institution. The faculty member should be a role model for students, colleagues, and staff by continuing his or her own

professional development and scholarship. Broad self-education within the discipline of chemistry and chemical education as well as outside of chemistry is appropriate.

A. Responsibilities to Students

The faculty member acts as a teacher, advisor, and mentor to students. In this role the faculty member should stimulate students' interest, broaden their outlook, and encourage inquiry. The faculty member should encourage the development of initiative and independent thinking by students.

1. *Academic progress*: The faculty member should guide students so all degree requirements can be satisfactorily completed in a reasonable amount of time. Regular and periodic evaluation should be provided to students. If satisfactory progress is not being made, the faculty member should inform the student that a problem exists and offer the student opportunities to correct the situation.

2. *Research progress*: An appropriate advisory committee should be formed for each graduate student. The committee should be constituted following the guidelines of the institution and include faculty whose research interests and technical expertise will guide the student to success. The committee should meet periodically with the student and faculty member to evaluate progress and to provide further guidance to the student and promote the timely achievement of the degree. Similarly, for undergraduate and post-doctoral researchers, regular meetings to discuss research progress should be established and the results of experiments discussed.

3. *Publications and Presentations*: The faculty member should recognize the research contributions of students, postdoctoral associates, or staff by co-authorship or appropriate acknowledgment in publications and presentations and encourage students to actively participate in the submission of publication and presentations. The faculty member should know the institution's policy and accepted professional expectations regarding intellectual property, such as authorship, patents, and copyrights. The faculty member should educate students about these policies and ensure compliance with the policies.

4. *Mentoring*: The faculty member should willingly serve as a mentor to students and postdoctoral associates. Mentoring should include assistance in identifying and developing a successful career, and should encourage the development of a sense of inquiry, a habit of broad-based learning, networking skills, and skills related to working with others, both formally and informally. The faculty member should also encourage and provide opportunities for students to develop writing, speaking, listening, and technical and non-technical communication skills necessary to achieve success and to seek appropriate opportunities to broaden their education and professional development as appropriate for their students' career path.

5. *Research Funding*: A faculty member should actively seek appropriate internal and external funding to support teaching, scholarship, and research as well as the efforts of students associated with these endeavors. Faculty should support the efforts of their students to obtain their own funding by providing students with the necessary training and experience in order to be successful.

The faculty member should inform each student in writing of the financial support and benefits to be provided. Students should be notified in advance of any changes to financial support that will affect the program of study. Faculty should not accept research students if adequate research support cannot be provided. Fair and consistent practices in hiring and compensating students should be observed.

6. *Teaching*: Faculty members are responsible for delivering course material using appropriate pedagogy, administering fair assessments of student progress in a course, timely reporting grades to students and the institution, and remaining accessible to students through e-mail and office hours.

B. Responsibilities in Research and Education in the Laboratory

The faculty members involved in research must take responsibility for establishing a laboratory environment consistent with the current best practices in chemical safety, including the Workplace Right to Know laws and OSHA Hazard Communication Standard governing employees and students. Faculty members involved in research should consider environmental impacts, sustainability and human health in managing laboratories, administration and instruction. The American Chemical Society Green Chemistry Institute has numerous resources available for institutions looking to manage their laboratories in a green and sustainable way.

Students and Postdoctoral Associates

This section applies to any student or scholar involved in studying the chemical sciences including graduate students, postdoctoral scholars and undergraduates participating in scholastic activities such as teaching, learning, research, or collaboration. By nature, many students are learning the chemical sciences for the first time and they should be familiar with the basic guidelines for conduct in the field such as those outlined in *The Chemical Professional's Code of Conduct* and *Creating Safety Cultures in Academic Institutions: A Report of the Safety Culture Task Force of the ACS Committee on Chemical Safety*.

A. Responsibilities towards Studies

Students are responsible for understanding all requirements necessary to complete their specific degree and they should actively strive to complete each requirement on schedule as expected by the institution and/or the faculty advisor. Students are responsible for monitoring their own progress throughout their degree program. As scholars, all students should take responsibility for their own learning and intellectual development. This includes reading primary literature, attending seminars and conferences, and asking questions of other scholars. Students in the chemical sciences must also be responsible for their own professional development, exploring possible career opportunities in the field of chemistry and working towards achieving them.

B. Responsibilities towards Research

Students are responsible for educating themselves on safety and health hazards, ethical, and legal implications associated with their research in collaboration with faculty or mentor. If an issue

arises during the course of a student's tenure in the laboratory, the student has the responsibility to seek the appropriate guidance from the advisor, department or administration by following institutional protocols.

Students must take responsibility and ownership of their projects and contribute intellectually to the research team. All experiments should be promptly, accurately, and properly documented. Laboratory notebooks should be complete, and all data should be properly recorded and analyzed. Results should be effectively communicated through proper writing and presentation skills. All results should be discussed with the primary investigator and manuscripts should be submitted in a timely manner.

When research results merit publication, student authors are expected to read and follow the ACS Ethical Guidelines to Publication of Research (<http://pubs.acs.org/userimages/ContentEditor/1218054468605/ethics.pdf>). Authorship is not a privilege and requires significant contribution to the research design, execution, and analysis of a series of experiments.

The Department

The department has the most direct responsibility to create a safe, high-quality environment in which a combined teaching, learning, and research experience fosters the professional development of students, staff members, and faculty. Departments must establish and nurture a *culture of safety* among faculty, staff, and students. Students should be instructed in the aspects of modern chemical safety appropriate to their educational level and scientific needs. They should be made aware that virtually all laboratory incidents are preventable when hazards and risks are minimized and proper procedures are followed.

A. Responsibilities to Faculty and Staff

1. *Courses and Course load*: The department should be clear, consistent, and equitable in course load and specific course assignments for faculty. In the event a faculty member is eligible for an institutionally approved course load reduction, the department should advocate to the administration for necessary replacement support prior to assigning additional duties to remaining other faculty member(s).

2. *Undergraduate Student Advising*: The department should provide all necessary training and support for faculty serving as undergraduate academic advisors. If an official, institutional advisor training program exists, then the department should actively support participation by any faculty member serving as an academic advisor, especially junior faculty.

3. *Graduate Student Advising*: The department should maintain a clear and equitable policy for appointing faculty to serve on progress committees. Departments should ensure that these committees meet regularly to review all graduate students and that these committees provide clear, written feedback to students. Additionally, best practices protocols for handling confidential information should be developed, and updated as necessary, and faculty should receive thorough training in these protocols.

4. *Professional Development*: For faculty members and staff employees, the department should work closely with appropriate institutional administrators to develop and maintain programs and resources that support ongoing professional development. The department should maintain a mentoring and professional development policy such that new/junior faculty can more efficiently and effectively deliver the departmental course curriculum and execute research.

B. Responsibilities to Students

1. *Courses*: Programs training undergraduate students in the chemical sciences are strongly encouraged to develop and implement curricula that meet the ACS Committee on Professional Training guidelines (<http://www.acs.org/content/acs/en/about/governance/committees/training.html>). The department should contribute to the maintenance of the institutional course catalog that informs students of the requirements for each degree offered. All instructional technology (websites, lecture notes, ancillary materials) should meet universal web design standards for website accessibility ensuring students with disabilities have a level educational playing field in the chemical sciences.

2. *Seminars*: To enhance students' professional networking opportunities, the department should maintain a regular program of seminars presented by external visitors from academia, industry, and government labs.

3. *Guidance through the Departmental Program*: Each undergraduate major should be assigned an advisor that is a full-time, tenured or tenure-track faculty member. As department resources permit, faculty advisors could be supported by staff professional academic advisors who serve as additional resources for undergraduate curricular planning and guidance. To complement direct guidance received from a thesis or dissertation advisor, graduate students should be appointed a progress committee consisting of at least two full-time tenured or tenure-track faculty in the chemical sciences.

4. *Career Development*: Depending upon departmental resources and/or institutional structuring, the department should either maintain a formal career development program or actively support the career development program(s) housed elsewhere on campus. Career development support should include assistance in applying for on and off campus summer research opportunities, fellowships, scholarships, and travel support to participate in regional and national meetings. Students should have access to up-to-date listings of job postings and application deadlines.

5. *Library Resources, Journal Holdings, and Scientific Data Bases*: The department should work closely with institutional library professionals to ensure that books, monographs and technical journals provide broad coverage of the discipline and are readily accessible in hardback and/or electronic format. Appointing a full-time tenured or tenure-track faculty member to serve as library liaison is advisable. Students should be able to receive training on and reasonable access to databases containing information relevant to course work, laboratory work, and independent research work.

6. *Physical Facilities*: The department should work with the administration to ensure maintenance of its building(s) and equipment holdings in the highest quality condition possible. Building use policies and equipment contained therein should be updated regularly.

The Institution

Responsibilities

The AAUP "Statement of Principles on Academic Freedom and Tenure" (1940), "Statement on Procedural Standards in Faculty Dismissal Proceedings" (1958), "Statement on Procedural Standards in the Renewal or Nonrenewal of Faculty Appointments" (1971), and "Statement on Professional Ethics" (1987) should provide a framework for the institution in its relationship with faculty.

1. *Recruitment and Hiring*: The institution should seek a diverse workforce and make special efforts to identify and attract all qualified candidates to their faculty and staff. Faculty search committees should be constituted to represent diverse points of view and perspectives.

The institution should also seek a diverse student body and make special efforts to identify and attract all qualified candidates to their graduate and postgraduate programs. The 2000 National Academies report entitled "Enhancing the Postdoctoral Experience for Scientists and Engineers: A Guide for Postdoctoral Scholars, Advisers, Institutions, Funding Organizations, and Disciplinary Societies" should provide a framework for the institution in its relationship with postgraduates.

Institutions have a responsibility throughout the hiring and recruitment process to advertise all faculty and postgraduate employment opportunities and graduate assistantships widely, follow the institution's published ethical, equal employment and legal policies, make fair and equitable salary and start-up offers, and ensure that all candidates have the information needed to make informed and responsible decisions regarding their employment or course of study.

All new faculty, staff, and students should be oriented with respect to the opportunities and resources available to them at their institution. Training and orientation should include meetings with administration and other new faculty that will foster collaborations and collegiality. Students serving as instructors in the classroom and/or the laboratory should be provided with proper training and supervision to enable them to competently carry out their responsibilities as student instructors.

2. *Governance*: The institution is responsible for ensuring that a governance framework is in place that facilitates the input and participation of its faculty in developing and implementing policy related to personnel including faculty and administrators, budget, and educational policies.

3. *Evaluation*: The institution has a responsibility to provide an evaluation process, an appeal process, and clearly defined standards for all faculty and staff. As faculty are traditionally evaluated in the areas of teaching, research and service, the definitions and criteria in each

category should be explicitly defined and be sufficiently broad to reflect the diverse nature of scholarship in the chemical discipline. The administration should recognize that the evaluation of a faculty member's performance is best done by invoking a variety of techniques and approaches. Criteria for graduate student evaluation should be developed and implemented. Non-tenured faculty, staff, graduate students and post-doctoral scholars should be reviewed annually and provided with timely, written feedback concerning their performance. The institution has a responsibility to provide a mechanism to grieve decisions about their academic performance, employment, salary or teaching assignment without fear of reprisal.

4. *Compensation*: The institution has a responsibility to ensure that all faculty, staff and students are compensated for their performance and that the compensation is fair and equitably distributed. Where inequities are found to exist, the institution has a responsibility to address these inequities in a timely manner and should provide a grievance procedure to ensure due process. In the case of collaborative work, means should be developed to assess and compensate individual contributions appropriately.

5. *Safe and Adequate Facilities*: The institution has a responsibility to ensure its faculty and students have been informed and educated concerning all laboratory hazards in the institution's teaching and research laboratories through the development and implementation of an active Chemical Hygiene Plan (CHP). The institution has a responsibility to administer an active, ongoing laboratory safety program that oversees all its teaching and research laboratories. The CHP should include establishment of university-wide standard operating protocols, training programs for use of chemicals and handling and disposal of wastes, monitoring programs, provision of medical consultations and examinations, if needed, and identification and provision of the appropriate engineering controls and safety equipment such as chemical fume hoods, glove boxes, ventilated flammable chemical storage cabinets, fire extinguishers, fire alarms, eye wash stations, showers, fire blankets, personal protective equipment, etc. Classroom and laboratory facilities should meet universal design standards and be accessible to students with disabilities.

6. *Faculty Development and Mentoring*: The institution should provide a mechanism and support for faculty development in teaching and research at all levels. Such support could include institutional grants, workshops, colloquia, and faculty learning communities. The institution should foster a climate of faculty mentoring over the course of their academic careers. As each academic institution has its own unique "culture," the institution has a responsibility to educate new members concerning its particular requirements for sustained membership in the community.

7. *Interdisciplinary and Collaborative Scholarship*: The institution should develop a formal definition of scholarship that is both broad and adaptable. This should be used to recognize and reward faculty members. Chemical education research and other innovations should be part of the definition. Institutions should encourage and support interdisciplinary and collaborative scholarship so that the role of chemistry as the fundamental science can be effectively leveraged to foster innovation and competitiveness. Institutions hiring faculty involved in interdisciplinary and collaborative efforts should develop appropriate means to assess and reward individual as well as corporate contributions and those that cross traditional academic disciplines.

History

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