Statement of Criteria, Standards, and Needs of the
Department of Chemistry and Biochemistry to be used in Evaluations
October 2024

The following is a statement of the criteria, standards and needs of the Department of Chemistry and Biochemistry used in departmental evaluations as required by the Faculty Code (Chapter 3, Part 3b).

I. Criteria and standards for evaluations

In accordance with the Faculty Code, the Chemistry and Biochemistry Department will evaluate a faculty member for promotion (P) and tenure (T) on the basis of the faculty member's performance in the following areas:

A) Teaching (P,T)

B) Professional growth (P,T)

C) Advising (P)

D) Service (P,T)

E) Needs of the Department and University (T)

Other evaluations of faculty members will also be based on the faculty member's performance in the relevant areas A-E above. All departmental evaluations will be conducted in accordance with the Faculty Code and the department-specific criteria listed below.

A faculty member's activities may span multiple evaluation areas. For example, supervision of undergraduate research may involve aspects of Teaching, Professional Growth, Service, and/or Advising. In such cases, the evaluee should highlight these distinct aspects in the appropriate sections.

Evaluations for tenure and promotion to the rank of Associate Professor will include evaluation of all of the evaluee's work since their initial appointment at the University. Evaluations for promotion to the rank of Professor will include evaluation of the evaluee's work in the areas of teaching, service, and advising since the last promotion review. Evaluation in the area of professional growth shall include all of the work completed since their initial appointment at the University. Evaluations after promotion to the rank of Professor will include evaluation of the evaluee's work since their last evaluation.

A) Criteria and standards for the evaluation of Teaching

The Department will evaluate excellence in teaching according to the departmental teaching values, as listed below. We believe that emphasizing these values best promotes a student-centered curriculum with authentic learning opportunities that will prepare our students well for their futures. Some of these values may not be applicable for all courses, including courses without labs, courses listed outside of the department. Evaluees are not expected to teach according to values that do not apply for their classes, although the department expects that teaching values three, four, five, seven, and eight are applicable to all courses taught at the university.

Evaluees for tenure must demonstrate excellence in teaching. For cases in which promotion to Associate Professor is *before* tenure, the evaluee may not have achieved excellence

in teaching, but should show significant growth in teaching and offer evidence of working towards excellence in teaching. For promotion after tenure, teaching expectations require excellence with sustained growth.

Department of Chemistry and Biochemistry Teaching Values

***denotes a value that is applicable to all courses at the university, not just chemistry courses**

1. Promoting problem-solving, critical thinking, and written and oral scientific communication skills appropriate for the course level and student abilities.
2. Demonstrating the connection of chemical principles to situations and problems in the world.
3. *Keeping course content and delivery current with evidence-based best practices.
4. *Creating and fostering an inclusive environment in the classroom and/or laboratory that provides all students the opportunity to succeed.
5. *Maintaining an organized course structure.
6. Promoting students' laboratory competency, including safety/behavior, and learning of lab and instrumental techniques, data acquisition and analysis, in lab courses
7. *Engaging with feedback and adapting teaching practices accordingly to address areas for adjustments and growth.
8. *Being appropriately available to students outside of the classroom.
9. Demonstrating a willingness and ability to teach across the levels of the chemistry curriculum, according to departmental needs.

Evaluees should demonstrate teaching excellence by showing an awareness of and documenting competency in the departmental teaching values. The evaluee should describe efforts, actions and activities undertaken during the current review period that demonstrate a pursuit of and achievements toward the departmental teaching values. Departmental colleague letters need to assess how the evaluee is working towards, or has achieved excellence in teaching with respect to the departmental teaching values. Examples of ways to achieve excellence in teaching can be found in the appendix of this document.

As part of their statement, the evaluee should include a critical self-reflection of teaching and design of courses and labs, based on:

- Feedback from conversations with and visits by departmental colleagues;
- Feedback from students;
- Previous professional evaluations;
- Demonstration of awareness of strengths and weaknesses in teaching.

Teaching will be evaluated by the Department according to the University and Department Guidelines (see University Evaluation User Guide), as follows:

1. The evaluee will submit a reflection of their teaching, including lectures and labs, in their evaluation file. This statement should include, in no particular order:
    a. A statement of teaching philosophy.
    b. A narrative summary of each course being evaluated as required by the Faculty Code. This may include:
        i. Assessments of how student learning objectives were met.

ii. A reflection that addresses the strengths and weaknesses of the evaluee's teaching and course design, in relation to the departmental teaching values.
iii. Discussion of points raised in previous evaluations.

2. The evaluee will provide:
    a. Relevant examples of course material (syllabi, assessments, assignments, access to learning management system (LMS), lab handouts and procedures, etc.).
    b. Student feedback, as required by the Faculty Code and any other additional student feedback that the evaluee may wish to provide.
3. During evaluations that require class visitations, when possible, observations should include labs when they comprise a significant portion of the evaluee's teaching load. During these observations, faculty members will make notes and refer to the department values. In the case of virtual or hybrid courses, this evaluation may be live or via viewing of recorded sessions.
4. Pre-tenure evaluees will be assigned a faculty mentor in the department. The role of the mentor will be to aid the evaluee in developing as a teacher. Mentors should meet with the evaluee before, during, and after each semester of evaluation to discuss course goals and course design, assess how the implementation of the course is proceeding, and aid in reflecting on strengths and weaknesses of the course. The mentor will be able to more holistically address evidence that the evaluee has or has not met the expectations for teaching excellence outlined above. The mentor will keep records of the meetings and can discuss the mentoring in their evaluation letter. The mentor may or may not be the evaluee's head officer in evaluations leading up to and including the tenure evaluation.

Guidelines for evaluation of teaching laboratories.
In addition to discussing their performance teaching lectures, evaluees are expected to specifically address their participation in teaching labs, when applicable. Teaching labs can be an important part of an evaluee's teaching load that involves close interactions with students. Teaching a lab is distinct in many key ways from teaching a lecture course. In addition, efforts in the teaching laboratory may also contribute to the evaluee's service to the department, and potentially to professional growth.

- In their statement, evaluees should describe their role in any lab courses taught during the evaluation period, examples of the work they conducted related to labs, and their contributions to teaching and promoting lab safety. Examples are described in the appendix.
- The evaluation of labs is different from lectures. Formal student evaluations are not typically collected for labs, although they may be requested by an evaluee if they so desire. The evaluee should include in their file a description of any mechanism that they use to assess student achievement of course objectives.
- When possible, observations from tenure track members of the Department should include labs when they comprise a significant portion of the evaluee's teaching load.

B) Criteria and standards for the evaluation of Professional Growth
The Department will evaluate professional growth according to the following criteria. The expectations for professional growth vary depending on the type of evaluation (e.g., tenure, promotion to Associate Professor/Professor, etc.), as described below.

Professional growth for promotion to Associate Professor and tenure: For evaluations for tenure and promotion, the Department will assess excellence of an evaluee based on two major criteria, as described below. In the event that promotion to Associate Professor comes before tenure, parts 1 and 2 are needed for promotion, with continued growth in part 1 being required for the subsequent tenure evaluation:

1. Developing an active research program with undergraduates.
We value and insist on a research program that involves undergraduates and thus *a large part of the evaluee's initial professional development includes developing an active research program that can be successful at Puget Sound.* This is a challenge for new faculty, who often come from large, research-oriented institutions and have most likely not had a model for how to create an undergraduate research program. In creating an active research program, there is an expectation that faculty will supervise research students during most summers and/or academic years.

The evaluee must document their work to achieve an active research program with undergraduates. An active research program includes the evaluee devising appropriately sized projects for undergraduate research and the necessary guidance through these projects (e.g., assisting students with summer research proposals, writing senior theses, creating posters, giving research presentations). The evaluee should also include any relevant information indicating their success. (e.g., number of students mentored, summer students, thesis students (CHEM 490), directed research (CHEM 390), and/or student presentations at conferences). Student authorship in an evaluee's published work may not be possible but is seen by the Department as especially meritorious.

2. Engaging with the scientific community.

The evaluee must engage in the wider scientific community. Engagement can come in many forms, and specific examples are listed in the appendix. The evaluee must demonstrate achievements in two or more of the following categories in some form (these are not ranked in order of preference):

a. Two presentations by the evaluee (oral or poster) at external (regional, national, or international) conferences.

b. A published paper (or paper accepted for publication) in a peer-reviewed journal based on the professional growth of the faculty member while at Puget Sound. Note: A second published paper can substitute for achievement in subsection a or c. The evaluee should include a copy of the published paper, a preprint of the paper, or a copy of the accepted manuscript and notification that the paper has been accepted.

The department acknowledges the challenge of requiring meaningful student involvement in research and fulfilling evaluation requirements for publication. In order to do research, students must be taught entirely new scientific concepts and learn how to perform new lab techniques with independence and proficiency. This requires a significant amount of time and effort from the chemistry faculty. Moreover, because undergraduates only work on a given project for a short amount of time and have less technical expertise, research progress can be slow. However, as described above we value undergraduate research and

have taken care to make flexible and reasonable publishing expectations, which take these challenges into account.

c. A submitted, peer-reviewed proposal to an external funding agency. The grants may be used to fund research directly or instrumentation that benefits one's research as well as the Department as a whole. Some typical sources include the National Science Foundation, the National Institutes of Health, Research Corporation, The MJ Murdock Charitable Trust, and the American Chemical Society. These types of grants typically receive peer-reviewed feedback.

Publications and presentations in the chemical sciences often include many co-authors. It is the responsibility of the evaluee to explain their role in each documented example of scientific engagement.

Professional growth for promotion to the rank of Professor: For promotion to the rank of Professor, the Department will assess an evaluee based on the following three criteria:

1. Evaluees must maintain an active and evolving research program with undergraduates.
2. Evaluees must present their research (oral or poster) at external (regional, national, or international) conferences.
3. Evaluee must have obtained a funded significant grant proposal or an accepted, peer-reviewed publication based on the professional growth of the faculty member while at Puget Sound (note that this means that in promotion to professor, awarded proposals or accepted papers during the periods before tenure and/or may fulfill this requirement). To fulfill this requirement with a grant proposal, the evaluee should include the notification of the award in their file. To fulfill this requirement with a publication, the evaluee should include a copy of the published paper, a preprint of the paper, or a copy of the accepted manuscript and notification that the paper has been accepted.

   The department acknowledges the challenge of requiring meaningful student involvement in research and fulfilling evaluation requirements for publication. In order to do research, students often must be taught entirely new scientific concepts and learn how to perform new lab techniques with independence and proficiency. This requires a significant amount of time and effort from the chemistry faculty. Moreover, because undergraduates only work on a given project for a short amount of time and have less technical expertise, research progress can be slow. However, as described above we value undergraduate research and have taken care to make flexible and reasonable publishing expectations, which take these challenges into account.

Professional growth at the rank of Professor: After promotion to Professor, the Department will assess an evaluee based on the following two criteria:

1. Evaluees must maintain a research program involving undergraduates. To demonstrate the vitality of their research program, the evaluee should include information such as number of students mentored, summer students, thesis students (CHEM 490), directed research (CHEM 390), and student presentations at conferences.
2. The evaluee or their students must present their research (oral or poster) at external (regional, national, or international) conferences. The evaluee should reflect on their

research since the last evaluation, discuss their progress during the current evaluation, and present a plan for maintaining currency in the field going forward.

C) Criteria and standards for the evaluation of Service

The Department will evaluate service according to the following criteria. The expectations for service vary depending on the type of evaluation (e.g., tenure, promotion to Associate Professor/Professor, etc.), as described below. Faculty are expected to engage in service that benefits the Department and the University. Forms of departmental and university service are listed below and specific examples may be found in the appendix:

- Service to the department
    - Being an active and regular participant in the operation of the department.
    - Regularly supervising undergraduate research.
    - Being the department chair or taking on chair-related roles.
- Service to the university
    - Actively and regularly participating in ongoing university service via standing committees or assigned governance or service role(s).
    - Participating and/or leadership in special committees/initiatives/ programs, including academic, co-curricular, and extracurricular activities.
    - Being department chair.
- Service to the students, beyond the class or lab setting.
- Service beyond the university that reflects back to the University and Department.

For all evaluations, the evaluee's personal statement should describe the evaluee's significant contributions and provide evidence or outcomes of the service work, where appropriate. Evaluees are also welcome to include letters of support from others who are familiar with the evaluee's service work, although this is not required. Since external reviewers may not be familiar with the departmental norms, it is incumbent upon the Department to clearly evaluate the level of departmental service and assess whether it meets the standards described below.

Service for awarding of tenure: Evaluees are expected to participate in service to the Department and University. Specifically, candidates are expected to be an active and regular participant in shared responsibilities necessary for operation of the department. Evaluees are expected to supervise research students during the academic year and/or the summer. For service to the University, evaluees are expected to participate in assigned service roles for university governance.

Service for promotion to the rank of Associate Professor: Evaluees are expected to be active and regular participants in shared responsibilities necessary for operation of the Department. Candidates are expected to supervise research students during the academic year and/or the summer. For service to the University, evaluees are expected to participate in assigned service roles for university governance.

Service for promotion to the rank of Professor: Evaluees are expected to meet the service requirements outlined for tenure or promotion to Associate Professor. Additionally, evaluees for promotion to the rank of Professor are expected to demonstrate particularly impactful service to the University. Evaluees should show an ongoing commitment to faculty governance and participate in an impactful role to the University. Some examples of such roles could include

serving as a committee chair, organizing co-curricular programs (e.g., the Thompson Hall Seminar Series or the Summer Science Research Program), serving in elected positions, or working on ad hoc committees. Simply participating in these roles is not sufficient; the evaluee must describe how these roles are significant to the University.

Service at the rank of Professor: After promotion to Professor, Chemistry and Biochemistry faculty are expected to meet the service requirements outlined for tenure or promotion to Associate Professor. Professors are expected to serve on university committees or in faculty governance, to supervise research students, and to participate in department meetings, events, and departmental chores.

D) Criteria and standards for the evaluation of Advising

All tenure-line faculty in the Chemistry and Biochemistry Department are expected to serve as a first-year or transfer advisor on a regular basis, as needed by the Department, typically once every four years. In addition, tenure-line faculty are expected to serve as advisors for students majoring in chemistry or biochemistry, as needed. Faculty members should be reasonably available to advisees. These activities will be judged by observations of, and personal discussion with, the candidate. The evaluee should describe advising activities.

Advising may not be limited to the formal academic advisor-advisee relationship, but may also include interactions with non-advisee students in which the faculty member provides advice related to academic, career, or life issues. Additionally, meaningful advising may occur naturally in a faculty mentor's role as a research advisor. This role entails conversations separate from academic advising, about topics such as post graduate goals and career paths. Research advisors may have close, long-term interactions with their research students which could give unique insight into their students' abilities, interests, and needs that do not always appear in academic advising.

II. Departmental needs

The Department of Chemistry and Biochemistry strives to provide an excellent educational experience to all students enrolled in its courses. These students fall into several categories:

1. Students intending to major in chemistry, biochemistry, or natural science chemistry, or minor in chemistry.
2. Students intending to major in other fields that require a background in chemistry, including all biology and exercise science majors.
3. Students interested in health sciences or 3-2 engineering programs.
4. Students interested in studying chemistry as part of a liberal arts education.

In order to fulfill the needs of all its students, the Department must provide courses at the following four levels:

1. Introductory Courses (100 level). These courses provide a foundation for further study in chemistry or provide a background in chemistry as part of a liberal arts education.
2. Core Disciplinary Courses (200-400 level). These courses will normally have prerequisites and are required of students majoring in chemistry. Some of these courses, especially organic chemistry and biochemistry, may be required for students majoring in

other fields. As per the American Chemical Society (ACS), a department providing a quality undergraduate curriculum must include instruction in the five core areas of chemistry listed below:

- Chemical Analysis and Instrumental Methods of Analysis
- Organic Chemistry
- Physical Chemistry
- Inorganic Chemistry
- Biochemistry

Thus, the Department needs to have at least one, and preferably two, faculty members with expertise in each of the areas listed above.

3. Advanced Elective Courses (300-400 level). These courses will have a prerequisite and will normally be taken as an elective by chemistry or biochemistry majors to provide them with an in-depth look at specialized topics in chemistry. These courses are also often taken by upper-level Molecular and Cellular Biology majors as out-of-major electives.
4. Senior Research Thesis (Chem 490). This course serves as a capstone experience for B.S. chemistry majors, and serves several important functions as described in the ACS curricular guidelines that state:

   "Undergraduate research allows students to integrate and reinforce chemistry knowledge from their formal course work, to further develop their scientific and professional skills, and to create new scientific knowledge. Conducting undergraduate research in close collaboration with a faculty mentor allows a student to draw on faculty expertise. Such research should be well-defined, stand a reasonable chance of completion in the allotted time, apply and develop an understanding of in-depth concepts, use a variety of instrumentation and methods, promote awareness of advanced scientific practice, and be thoroughly grounded in the chemical literature. Overall, the research project should be viewed as a component of a publication in a peer-reviewed journal."

Faculty members must be willing and able to teach courses at each of these four levels. This includes being willing and able to provide laboratory instruction in the safe handling of chemicals, the practical techniques used in chemical analysis and synthesis, and the proper use of modern chemical instrumentation and methods. In their letters, Department members should describe how the evaluee contributes to the overall strength and breadth of the department.

Appendix

Below we include additional details regarding the evaluation of teaching, professional development, and service. Specifically, we list additional, specific examples of activities that may be classified in each of these categories. Some examples are specific to the Chemistry and Biochemistry Department. The information below is not meant to be exhaustive or prescriptive, but it is included to aid evaluees in developing their narrative and evaluators in appreciating the variety of work valued by the Department.

Teaching

The following are examples demonstrating commitment to the departmental teaching values of teaching:

- Participating in curriculum development, including, for example:

    - Submitting grant proposals for curricular development.
    - Developing chemistry lecture and laboratory courses at any level.
    - Designing and teaching courses outside of the Department (including team-taught and interdisciplinary courses).
    - Participating in teaching-related faculty development activities (workshops, conferences, webinars, online programs).
    - Using course materials that are current, accurate, scientifically sound, and appropriate to meet the course objectives. This includes, for example: textbooks, online resources, worksheets, handouts, exams, lecture notes, lecture slides, videos, lab procedures and handouts, etc.
    - Bringing real-world relevance and examples into courses.
    - Introducing or modifying laboratory experiments and materials to update the laboratory program.
    - Coordination of or participation in lab planning meetings.
- Establishing well-defined learning objectives that are appropriate for the level of the course and the curricular requirements of the Department.
- Developing and demonstrating awareness of the student learning experience(s), including, for example:
    - Soliciting student feedback, directly or indirectly.
    - Identifying issues with the student learning experiences.
    - Proposing and implementing strategies to address these issues.
- Giving students clear and structured learning materials, including, for example: syllabi, learning objectives, LMS page, exams, exam guides, access to previous exams, weekly guides, handouts, worksheets, practice problems and solutions, lecture slides, lecture notes, tutorials, videos.
- Structuring the courses to include, for example:
    - Outreach to struggling students.
    - Opportunities to catch up and/or flexible deadlines.
    - Adoption of variable grading strategies, retakes or dropping exams.
    - Awareness of financial and time burdens on students.
- Helping students learn how to navigate the courses and associated learning resources.
- Providing feedback that is timely, detailed, personalized.
- Holding regular office hours, being available to students outside of classes.
- Utilizing alternative types of assessments, assignments or activities, including, for example:
    - Project-based learning.
    - Literature-based activities.
    - Writing assignments.
    - Oral presentations.
    - Group assessments/activities.
    - (Computer-)Guided Inquiry learning.
- Providing evidence of efforts and actions dedicated to the teaching of lab specific priorities:
    - Safety training for students.
    - Preparation of solutions and chemicals.
    - Maintenance and preparation of instruments.

    - Teaching of lab techniques and use of instruments.
    - Data acquisition and analysis.
    - Use of computers to perform computational experiments and/or analyze results.
    - Written or oral scientific communication.

The following are examples of roles in a lab course and the specific work related to lab courses:

- Lab coordinator: Faculty in charge of lab documents and LMS.
- Lab designer: Writing/creating new experiments and procedures (either independently or in committee), updating experiments and documents.
- Technical support: Setting up/taking down labs, checking equipment and inventory, preparing solutions, preparing and/or maintaining instruments.
- Lab instructor: Teaches lab sections, with minimal input on the lab curriculum.
- Managing course assistants (CA): Training and managing CAs.
- Special contributions to teaching and promoting lab safety (e.g., serving on safety committees, giving safety orientations).

Professional development

The following are additional examples of ways to engage with the wider community that are also viewed positively by the department:

- Serving as a reviewer for journals, books, or funding agencies.
- Serving as doctoral thesis committee member or outside reviewer.
- Serving as an external reviewer for tenure reviews at other institutions.
- Serving on a scientific panel.
- Scientific consulting work.
- Serving as a journal editor.
- Attending scientific conferences without presentation.
- Chairing a conference session.
- Leading a workshop related to one's research or teaching.
- Organizing conferences or symposia.
- Public scientific speaking.

Service

The following are examples of service activities:

Service to the Department

- Being an active and regular participant with the operation of the Department.
- Participating in department meetings and events, including:
    - Department events.
    - Events organized by the ACS Student Affiliate Group, SAACS.
    - Meeting with prospective students.
    - Alumni functions and outreach.
    - Hosting visits and speakers.
    - Managing or updating the department website, including the internal, student and faculty-facing google drives.
    - Managing department social media and other forms of communication with students, alumni, and the public.

- Performing department chores, including:
    - Maintenance of equipment/facilities.
    - Personnel searches - both staff and faculty.
    - Working on department subcommittees, as needed.
    - Participating in reviews/evaluations of department members (faculty and staff), including being head officer.
- Regularly supervising undergraduate research
    - During the summer and/or
    - During the academic year (CHEM 390, CHEM 490) (*may also appear under Professional Growth, Teaching, and Advising)*.
- Participating in additional activities that benefit the department:
    - Coordinating labs with multiple sections (*may also appear under Teaching*).
    - Writing grants for departmental equipment or events (*may also appear under Professional Growth*).
    - Developing shared curriculum for the lecture and/or laboratory (*may also appear under Teaching*).
    - Training students and faculty in instrumentation and equipment use; managing instrument and equipment use and maintenance.
    - Coordinating student participation in and travel to conferences (*may also appear under Advising*).
    - Training and/or overseeing Course Assistants.
- Being the Department Chair or taking on chair-related roles
    - The role of department chair is shared, on a rotational basis, by all tenured members of the department. After tenure, each faculty member is expected to serve at least once as chair of the Chemistry and Biochemistry Department.
    - The role of Chemistry and Biochemistry department chair is considered an especially valuable form of service since it uniquely involves a number of critical and challenging tasks, including: complex scheduling of multiple, linked lecture and lab sections; managing a large operating budget; overseeing safety compliance, chemical handling and waste disposal; and supervising 4 staff members.
    - If the department confirms, an evaluee's service as Chair *may* satisfy the service requirement for promotion to Professor.

Service to the University

- Actively and regularly participating in ongoing university service via standing committees or assigned governance or service role(s).
- Being department Chair.
- Participating in special committees/initiatives/programs, including co-curricular and extracurricular activities.
- Leadership in special committees/initiatives (e.g., coordinator of summer research or the Thompson Hall seminar series)
- Participating in safety committees.

Service to the students (beyond the class or lab setting)

- Writing letters of recommendation.
- Advising or assisting with the ACS Student Affiliate Group, SAACS.

Service beyond the University that reflects back to the University and Department

- Performing acts of professional service.
    - Reviewing papers and grants and book chapters.
    - Participating in Professional committees.
    - Participating in External tenure and promotion reviews.
- Participating in community service, including service to educational, civic, and charitable groups.

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