

MECHANICAL ENGINEERING AMPLIFICATION OF CODE CRITERIA FOR PROMOTION

It has been said "the scientist seeks to understand what is; the engineer seeks to create that which never was." *Applied to Mechanical Engineering, this may be restated as "the engineering scientist seeks to understand what is; the design engineer seeks to create that which never was."* Because of the importance of both the science and practice of Mechanical Engineering, it is necessary that our faculty be composed of persons having varying degrees of interest and achievement in both of these endeavors. The UW Faculty Code allows for a very wide diversity of interests and accomplishments throughout the University as a whole. The ME faculty believes that similarly wide diversity is appropriate and desirable within departments as large and diverse as ME, and is essential within departments whose mission includes significant commitment to both graduate and ABET-accredited undergraduate instruction.

ME is arguably the largest and most diverse of all the organized fields of engineering. *Because ME is not a specialty field of engineering, the skills, standards and practices of each sub-field of its subfields vary as widely as do the organized major fields of engineering within the engineering profession as a whole.* Consequently, it is impossible to write down a single list of specific measures which should be used in assessing merit for purposes of tenure and promotion for all candidates put forward from the ME Department. At issue are such questions as: are the candidate's strengths greatest in engineering science or in engineering design/practice? Is the candidate's field of specialty in thermal ME (fluid mechanics, HVAC, combustion, heat transfer, solar energy, thermal systems design), mechanical ME (applied mechanics, automatic controls, strength of materials, acoustics and vibrations, kinematics and mechanisms, mechanical design, CAD), or manufacturing ME (robotics, material removal, casting and welding, metal forming, *plastics and composites processing*, metrology and CAM)? While the preceding list of sub-fields is not exhaustive, each of the listed sub-fields of ME independently conducts its own conferences, journals, and professional affiliations.

All Promotions in the Department must meet the test of excellence, but the diversity of the Department means that there will be some differences between promotion cases for a given rank. Accordingly, in the Department of Mechanical Engineering, "Excellence in scholarship" is defined with respect to the criteria used and standards applied by the best departments in the candidate's sub discipline of mechanical engineering. Thus, a candidate's career accomplishments are compared to those of his or her peers.

A detailed interpretation of the University Faculty Code for mechanical engineering faculty members follows.

UW FACULTY CODE

**Department of Mechanical Engineering
AMPLIFICATION OF FACULTY CODE**

Section 24-34.

**Qualifications for Appointment at Specific
Ranks and Titles**

A.3. Appointment to the rank of Associate Professor requires a record of substantial success in both teaching and research, except that in unusual cases an outstanding record in one of these activities may be considered sufficient.

A.4. Appointment to the rank of Professor requires outstanding, mature scholarship as evidenced by accomplishments in teaching and in research as evaluated in terms of national or international recognition.

The Department of Mechanical Engineering considers the diverse interests and accomplishments of its faculty to be an asset. There are many different ways for a candidate for promotion to Professor to establish a record of outstanding, mature scholarship and national recognition, and for a candidate for promotion to Associate Professor to establish a record of substantial success. While a candidate for promotion is not expected to meet the promotion criteria in every activity described in this document, he/she must demonstrate the appropriate level of accomplishment in some of the activities described in Section 24-32.B. and in some of the activities described in Section 24-32.C.

Section 24-32.

**Scholarly and Professional Qualifications of
Faculty Members**

A. Scholarship, the essence of effective teaching and research, is the obligation of all members of the faculty. The scholarship of faculty members may be judged by the character of their advanced degrees and by their contribution to knowledge in the form of publication and instruction; it is reflected not only in their reputation among other scholars and professionals but in the performance of their students.

The Department of Mechanical Engineering affirms that excellence in teaching and research is expected of all faculty members.

B. The creative function of a university requires faculty devoted to inquiry and research, whose attainment may be in the realm of scholarly investigation, in constructive contributions in professional fields, or in the creative arts, such as musical composition, creative writing, or original design in engineering or architecture. While numbers (publications, grant dollars, students) provide some measure of such accomplishment, more important is the quality of the faculty member's published or other creative work.

Department of Mechanical Engineering faculty are expected to engage in scholarly endeavors. In addition, they are members of a learned profession. Professional accomplishments and stature are particularly important since the majority of our students are planning for careers in *professional practice*. Faculty whose efforts and contributions are oriented towards professional practice are encouraged to maintain and enhance their professional practice skills.

Part of a candidate's strong record of accomplishment required for promotion to Associate Professor can be based on activities such as consulting, and industrial experience, if the influence of these activities on his/her scholarly and instructional endeavors is documented.

Part of a candidate's record of outstanding and mature scholarship and national reputation required for promotion to Professor can be based on activities such as consulting and *conducting professional development courses* if the influence of these activities on his/her scholarly and instructional activities is documented.

Important elements in evaluating the scholarly ability and attainments of faculty members include the range and variety of their intellectual interests;

Some faculty focus their intellectual energies in very narrow fields of specialty. Other faculty may base their accomplishments on synthesizing information from a variety of disciplines. A candidate for promotion may follow either of these paths. The quality of his/her work, as judged by the qualified technical community, is the important factor.

the receipt of grants, awards, and fellowships;

Individual honors and awards from scholarly organizations and professional engineering societies are an important indicator of the candidate's accomplishments.

Extramural funding or grants-in-kind to support research or curriculum development activities is another important indicator of scholarly attainment, but the overriding consideration should be the scholarly output of the individual.

the professional and/or public impact of their work;

Quality of publications or other forms of scholarly attainment is more important than quantity. For promotion to Associate Professor, the candidate's record must show a good rate of current productivity and grounds for expecting the continuation thereof at the University of Washington. For promotion to Professor, the key is the degree of national recognition received.

At both levels, the candidate's contributions must include peer-reviewed articles in archival journals, conference proceedings, or symposium volumes. In addition, accomplishments may include authorship of books and book chapters if evaluated by published reviews or confidential solicited peer reviews. Other forms of scholarly attainment may be in the form of patent awards, lead responsibility for major design projects, or evidence of adoption of research results or design principles by private industry or government.

their success in directing productive work by advanced students and in training graduate and professional students in scholarly methods;

Mechanical Engineering faculty are expected to direct research efforts of masters and doctoral students.

For promotion to Associate Professor, the record of accomplishments and prospects for the future should indicate the candidate's ability to work with graduate students, as evidenced by supervision of *thesis/dissertation and non-thesis* student research or design projects.

For promotion to Professor, the candidate should have clear success in supervision of graduate students, resulting in high quality thesis/dissertation work. The professional accomplishments of former students may also be considered, if supported by confidentially supplied testimonials.

Involvement in and contributions to interdisciplinary research and teaching;

participation and leadership in professional associations and in the editing of professional journals; the judgment of professional colleagues; and membership on boards and committees.

Faculty are encouraged to participate in regular external activities at the local, regional, or national level.

The record of accomplishment for a candidate for promotion to Associate Professor may include professional society elective office and committee memberships, organizing conferences, chairing sessions, reviewing journal and book manuscripts, or reviewing proposals for grant/contract agencies.

For promotion to Professor, part of the case for national recognition can be based on holding high elective or appointive office in one or more professional societies, appointed national advisory boards and committees, or editorships of journals or textbook series.

C. The scope of faculty teaching is broader than conventional classroom construction; it comprises a variety of teaching formats and media, including undergraduate and graduate instruction for matriculated students and special training or educational outreach. The educational function of a university requires faculty who can teach effectively. Instruction must be judged according to its essential purposes and the ability to organize and conduct a course of study appropriate to the level of instruction and the nature of the subject matter; the consistency with which the teacher brings to the students the latest research findings and professional debates within the discipline; the ability to stimulate intellectual inquiry so that the students develop the skills to examine and evaluate ideas and arguments; the extent to which the teacher encourages discussion and debate which enables the students to articulate the ideas they are exploring; the availability of the teacher to the student beyond the classroom environment; and the regularity with which the teacher examines or reexamines the organization and readings for a course of study and explores new approaches to effective educational methods.

For promotion to Associate Professor, the candidate's teaching contributions must be substantial with regard to both content and teaching effectiveness. The content side refers to course development and upgrading in the light of current standards at peer institutions or engineering practice, as appropriate, preferably on the basis of the candidate's own scholarly contributions.

For promotion to Professor, the candidate must demonstrate a consistent record of success with regard to both content and teaching effectiveness. In addition, the candidate may demonstrate exceptional success either in getting material across to students, nationally recognized innovation in teaching methodology, supervising undergraduate students in project work, or incorporation of advanced research scholarship into course instruction.

A major activity related to teaching is the instructor's participation in academic advising and counseling, whether this takes the form of assisting students to select courses or discussing the students' long-range goals.

A candidate's record of accomplishments in teaching may include individual instruction, service on graduate student advisory committees, serving as Undergraduate or Graduate Program Advisor, or Advisor to engineering student honorary or professional organizations.

A candidate for promotion may cite the documented accomplishments of the student organization he/she advises as evidence of effectiveness in teaching.

The assessment of teaching effectiveness shall include student and faculty evaluation. Where possible, measures of student achievements in terms of their academic and professional careers, life skills, and citizenship should be considered.

A candidate for promotion to Associate Professor must be successful in classroom teaching both from a student prospective, as measured by IAS evaluations or other reliable means, and faculty judgment of scholarly content and effectiveness.

For promotion to Professor, the record of success must be long and substantial.

D. Contributions to a profession through published discussion of methods or through public demonstration of an achieved skill should be recognized as furthering the University's educational function.

E. The University encourages faculty participation in public service. Such professional and scholarly service to schools, business and industry, and local, state, national, and international organizations is an integral part of the University's mission. Of similar importance to the University is faculty participation in University committee work and other administrative tasks and clinical duties. Both types of service make an important contribution and should be included in the individual faculty profile.

A candidate for promotion to Associate Professor should have a record of consistent activity beyond the routine departmental committee memberships.

For promotion to Professor, the candidate is expected to demonstrate leadership by chairing committees at the departmental, college, or University level.

Service internal to the University may include advising student organizations.

Service external to the University in community, charitable, political, or nonprofit organizations contributes to satisfying this requirement.

F. Competence in professional service to the University and the public should be considered in judging a faculty member's qualifications, but except in unusual circumstances skill in instruction and research should be deemed of greater importance.

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