

## **Disciplinary Standards for Faculty of the Department of Mechanical Engineering**

*[ Approved in December of 2008 ]*

A significant amount of this document was adapted from The Committee on Faculty Affairs Final Recommendation on Re-Examination of the Promotion and Reappointment Document (PRD) August, 2008; however, it was amended to better reflect the teaching, scholarly activity, and service activities of the faculty in the Department of Mechanical Engineering at The College of New Jersey. It is clear that these standards are not replacements for those discussed (in full details) and presented in the *PRD-August 2008*.

The requirements for promotion at TCNJ are more stringent than those for 4<sup>th</sup> year reappointment and tenure; therefore applicants for 4<sup>th</sup> year reappointment and tenure may also select to strive to fulfill the requirements for promotion to Associate Professor. Taking guidance from the broadly defined attributes for each rank offered by the Final Recommendation on Re-Examination of the Promotions Document authored by the Committee on Faculty Affairs dated from May 5, 2005, standards relevant to the Engineering departments can be defined. Fundamentally, it is important to illustrate at each rank whether the program with which a faculty is associated with is better because of the contributions of that faculty member. Such contributions should be impacting, meaningful, positive, and sustainable. The difference of the standard for different ranks should be related only to the maturity level of those contributions, not the type. In other words, all faculty should be involved in similar types of endeavors; however, the combination of quantity, quality, intensity, and success level would be expected to be higher for a faculty with full Professor rank than with an Associate Professor rank.

The following three sections (A., B., and C.) address teaching, scholarly/professional activity, and service separately. However, for many faculty members the activities and accomplishments in the three areas overlap and as such often are enhanced, for example when scholarly or creative activity can be connected to student learning. Candidates whose activities in the three areas are integrated are encouraged to highlight this aspect of their work in the application.

### **A. Standards for teaching in Mechanical Engineering**

The College is an exemplary comprehensive institution with the mission of offering a quality education to high achieving students in a residential setting where teaching is an essential priority. Faculty should aspire to be teachers of the first order.

Teaching engineering occurs in various settings and via a diversity of forms of instruction: facilitating learning by instructing students in courses, laboratories, workshops and seminars, managing instruction, supervising students in laboratories, field work, and in independent study; advising and mentoring students on career, academic, personal counseling referral; advising students on senior projects and student groups and organizations; developing learning activities such as developing and revising curriculum, course or laboratory development; developing as a teacher-scholar to maintain currency in one's discipline and pedagogical concepts, to incorporate one's scholarship into teaching, to participate in professional development activities. Through high caliber, effective teaching, the faculty in the Department of Mechanical Engineering is committed to teaching excellence in all activities.

It is expected that the faculty members will aspire to be teachers of the first order, in keeping the mission of The College of offering a quality education to high achieving students in a residential setting. The characteristics of excellence in teaching are described in the College's *Promotion and Reappointment Document August, 2008*. It is the responsibility of the candidate to clearly demonstrate how he/she meets and fulfills such characteristics.

In Addition to the above characteristics, the Mechanical Engineering Department also values and supports the following aspects of curricular development:

- I- Incorporation of *Design* in the courses,
- II- Development of *Laboratories* and the associated *Experiments* and *Apparatus*,
- III- Maintain currency and create new courses based on the newly emerging technologies

***For Reappointment and Tenure:***

As indicated in the document *The Application Process for Reappointment and Tenure*, “Throughout the probationary period candidates should be showing steady progress toward mastery in teaching. By the time of the tenure decision there should be strong evidence of accomplishment as described above and clear promise for further improvement.”

***For pre-tenure reappointment:***

During the first years there should be evidence that the faculty member has begun showing improvement in teaching at TCNJ, as shown minimally by incorporating feedbacks from peers and students, revising courses and labs, maintaining currency of syllabi, assignments, and other course materials. During the second year there should be evidence of the progress in teaching at TCNJ, as shown minimally by adequately addressing areas that need improvement, revising /redeveloping courses and lab, improving in teaching effectiveness. During the third year there should be clear evidence of steady progress toward mastery in teaching.

***For tenure:***

By the time of the tenure decision there should be strong evidence of excellence as described above and clear promise for further improvement.

***For Promotion to Associate Professor:***

As indicated in the Promotion Document, “Promotion to Associate Professor requires evidence of continued improvement in teaching in response to feedback from peers and students, and a growing record of teaching excellence.” This pattern of continued achievement is indicated by some additional improvement from any activities above, beyond the expectations for tenure.

***For Promotion to Professor:***

The Promotion document states that “Promotion to Professor requires evidence that the candidate has reached a consistent level of teaching excellence\* and serves as an educational leader in the Department or Program.” This consistent level of teaching excellence is demonstrated by a proven record of distinguished achievement in teaching. There should also be evidence that the faculty member has attained a leadership role in developing curricula for the Department or Program, providing evaluation of the teaching effectiveness of other faculty, and contributing to more effective departmental teaching approaches.

(\* It is expected that the occasional course will be evaluated at less than an excellent level, for example when a new course is being developed. This should be explained in the application.)

**B. Disciplinary Standards for Scholarly Activity**

As stated in the *Committee on Faculty Affairs Final Recommendation on Re-Examination of the Promotion Document August, 2008*, TCNJ embraces the model of a professor as a teacher-scholar. The College recognizes the need for faculty to actively engage in research projects relevant to their field, and to publish scientific findings in respected refereed journals.

A key facet of the teacher-scholar model is the role of a faculty member as a teacher of scholarship to undergraduate students. Engagement of students in undergraduate scholarly activities not only enhances a research project by allowing more efficient and consistent execution of its tasks, but also affords the students a learning experience that is not attainable in typical classroom settings. Faculty should thus strive to serve as mentors who pass their knowledge and expertise about a particular topic to their students, who can gain a sense of fulfillment from contributing to new knowledge or pedagogy.

Regarding scholarly activity, the committees involved in the evaluation of candidates should take into account the nature of the work and field (e.g. experimental vs. numerical, emerging technology vs. more mature technology, etc.), and the difficulties involved in completing research in each field. The quality of the research is of more importance than mere quantity; although candidates for re-appointment, tenure, or promotion are expected to consistently engage in new research and to bring new projects through fruition. The quality of the scholarly research is defined by its significance to one’s field of study, and requires peer-review to validate the significance of the work; hence, the importance of the publication of research in refereed

journals. The entire body of an applicant's research history is applicable for illustrating a pattern of continued scholarship, but works finished since appointment at TCNJ or since the last promotion are required for promotion, and carry greater weight.

There may be some years when the level of scholarly activity is reduced (but not eliminated) due to a significant increase in teaching or service, such as serving as a department chair. In such cases the reduction in scholarship should not be counted against the candidate, but there should be evidence that the candidate's scholarly/creative/professional activity has been maintained to some degree and has promise for full resumption when the other activities return to normal levels.

Faculty need to initiate and maintain a sustainable research program in a field of study relevant to Mechanical Engineering that will support faculty-oriented and student-supported research efforts. Adequate infrastructure to support both faculty and student-supported research should be established. Collaborations are encouraged, but not at a level that will limit the ability of the faculty to perform individually directed research programs. In a collaborative effort, the faculty member must be a major contributor to the work and must demonstrate that the work could not have been done without the individual's contribution.

### ***Interdisciplinary Work:***

The productivity of a faculty member in discipline-related research may be complemented by productivity in interdisciplinary scholarship. Types of interdisciplinary scholarship, either cross-departmental or interschool collaborations, include interdisciplinary research, pedagogical research, and development of interdisciplinary projects in education or practice.

For interdisciplinary work, scholarly activity should be evaluated in the same manner as previously, with primary emphasis being given to refereed journal publications and submitted grant proposals that initiated or sustained a significant research endeavor.

For interdisciplinary work between two disciplines which typically do not share a common background (i.e. – engineering and business), the school recognizes that the end result of the collaboration may not be of a substantial technical nature as to be published in the typical refereed engineering journals. Therefore, a net result of this sort of collaboration leading to peer-reviewed conference papers, national presentations, publications in refereed journals not of a technical nature, etc. should be given equal weight as if the end result was a publication in a refereed technical journal, or a submitted grant proposal that initiated or sustained a significant research endeavor. Additionally, in keeping with the mission of the College and its emphasis on student involvement in scholarly activity, interdisciplinary collaboration between two unlike disciplines which utilizes significant student involvement between both disciplines should be looked upon very favorably and be recognized as scholarly activity.

### ***Guidelines for Scholarly Achievement:***

A successful scholarship program can be defined by: 1) several projects in different stages of development or a systematic plan for one's projects; 2) student involvement; 3) primary responsibility for a significant portion of one's scholarship; 4) research initiated at TCNJ; and 5)

an appropriate history of the dissemination of scholarly product(s) in peer-reviewed formats. The following list is not all-encompassing, but does offer several avenues for acceptable endeavors that are acceptable paths for the fulfillment of scholarly activities for faculty seeking reappointment and tenure, and promotion. All faculty should strive to excel in a combination of endeavors.

Faculty need to publish relevant research in high-quality, peer-reviewed journals. The quality of a journal can be quantified using a combination of the following characteristics:

- Professional sponsorship or other affiliation status
- Status of the journal editors within their respective fields
- Total circulation of the journal
- Article citations five or more years after the publication date
- Average citation record for the journal
- Acceptance/rejection rates for the journal

In addition to the publication of scholarly work, faculty are expected to further their scholarship through a combination of the following endeavors:

- ◆ Present and/or publish relevant research in high-quality conferences. The quality of a conference or conference proceeding can be quantified using a combination of the following characteristics:
  - A peer review process
  - The scope of the professional organization sponsoring the conference, i.e. international, national, or regional
  - Acceptance/rejection rates for submissions
- ◆ Seek external funding for equipment, research, and curriculum enhancement and development. Potential sources include not-for-profit organizations, government sources, and private companies
- ◆ Be active in the consulting and/or professional arena. Such activities are considered scholarly when they are within the faculty's scholarly area and involve the creation, rather than the application, of knowledge
- ◆ For invited publications and presentations (including invited presentations at professional meetings and conferences or contributions to printed publications), the quality of the work can be quantified according to:
  - The scope of the professional organization extending the invitation (international, national, or regional)
  - The stature of the editor of the book or journal requesting the article
  - The academic standing of the publisher
  - The readership of the journal or book

- ◆ Engage in the development of book materials, which has been contracted by a reputable publishing entity. The quality of a published book can be quantified using a combination of the following characteristics:
  - The academic standing of the publisher, e.g. national recognition as an academic publisher
  - Published reviews of the work
  - Evidence of readership, e.g. size of the press run or sales
  - Citation frequency

### ***Reappointment and Tenure:***

Faculty is expected to initiate an individual and original research program in an area of interest that adds to the diversity of research in the department of their appointment. Integral to this program should be the involvement of undergraduates as active participants who learn new skills and gain insight into current topics of research and development. *The scholarly activity and professional endeavors should be evidenced by at least one publication in a refereed journal. Additionally, the faculty must show scholarship in one of the following forms: one additional publication in a refereed journal (published or accepted), or two (2) refereed Technical Conference Papers at the National or International level, or a major grant proposal that has been funded. Evidence of growth and potential for a sustained scholarly effort must be established.*

### ***Promotion to Associate Professor:***

Faculty are expected to maintain a pattern of continuing achievement since the initial appointment, with specific evidence of previous and continuing scholarly activity and professional endeavors. The evidence should include at least two (2) publications in refereed journals. Additionally, the faculty must show scholarship in one of the following forms: one additional publication in a refereed journal (published or accepted), or two (2) refereed Technical Conference Papers at the National or International level, or a major grant proposal that has been funded. An external review may be requested by the applicant as one component of this evidence.

### ***Promotion to Professor:***

In general, the rate of research productivity for this rank must be higher than that expected for the rank of Associate Professor. Faculty is expected to sustain and expand a pattern of achievement since the attaining of the rank of Associate Professor, with evidence indicating the maturation of the scholarly and professional record. Evidence of maturation of scholarly activities include: invited presentations at national and international conferences or professional organizations; the writing and obtaining of grants. An external review is highly recommended as one component of this evidence. Those promoted to the rank of Professor should be held in high regard by their peers and should be role models for their junior colleagues.

### **C. Engineering Service expectations for reappointment, tenure, and promotion**

As stated in the 2008 Promotions Document, “The College also depends on faculty contributions to ensure that it achieves its educational mission through effective and efficient operations. The College’s commitment to participatory governance and the needs of academic Programs and units necessitate a spirit of service and citizenship. Faculty contributions to the good of the community are expected to increase concomitantly with the institution’s commitment to the individual. Normally, this means that faculty will be expected to accept more significant service responsibilities once they have earned tenure. Prior to tenure, faculty should shoulder an equitable portion of the responsibilities in their Department or school and may, depending on their interests and other obligations also choose to become involved in other campus opportunities and events.” At a minimum the candidate should satisfy the following conditions:

#### ***Reappointment and Tenure:***

Requires active participation in at least one Departmental and/or School committee per each academic year. The work accomplished by any such committee should result in a positive contribution to the Department and/or School. Participation in the assessment activities of the department is another critical required component.

#### ***Promotion to Associate Professor:***

Requires service to the Department, School, and/or College contributing to the effective operation and growth of the institution; to the community (applying academic skills and experience to the solution of campus, local, national, or international problems); and/or to the profession (advancing one’s academic profession through active participation in professional and scholarly organizations). Active participation in the *Assessment Activities* of the department and making significant contributions is expected for promotion to this rank.

#### ***Promotion to Professor:***

Requires consistent service and leadership in the Department, School, and College, contributing significantly to the effective operation and growth of the institution; in the community (applying academic skills and experience to the solution of campus, local, national, or international problems); and/or profession (advancing one’s academic profession through active participation in professional and scholarly organizations). Active participation in the *Assessment Activities* of the department, making significant contributions, and playing a major role is highly expected for promotion to the rank of Full Professor.