Effective Use of Development Plan for Promotion and Tenure of Engineering Technology Faculty

H. Öner Yurtseven
Indiana University Purdue University Indianapolis

Abstract

This paper reports the results of using faculty development plans by engineering technology administrators in mentoring and guiding newly hired engineering technology faculty through the promotion and tenure process. There is also an attempt to delineate the intensely debated topics of the roles of engineering technology faculty as compared to their closest colleagues, engineering and science faculty, when it comes to defining teaching, research and service in order to measure the performance of engineering technology faculty for purposes of promotion, tenure, annual reviews and salary recommendations. Administrators with responsibilities for engineering technology programs may occasionally be at a loss in making the case for their faculty members in a university setting where strong engineering and science units exist side by side with an engineering technology unit.

A suggested guideline of how to initiate a development plan for a newly hired faculty for engineering technology administrators is described in detail. This paper also invites engineering technology faculty and administrators to help build a set of broad expectations for promotion and tenure of engineering technology faculty which are recognized by all colleagues in engineering, engineering technology and science.

Introduction

Engineering and engineering technology have always been part of a larger set commonly referred to as technology but science is not entirely in the sphere of the technology set. There is perhaps not one single word to describe the union of technology and science. The fields of engineering, engineering technology, and science, however, have long been considered to be part of a continuum or a spectrum [1].

The educators who teach engineering, engineering technology and science, therefore, attempt to cover the overlapping concepts, principles and applications in this continuum. A somewhat clear distinction has emerged over the years between the roles, responsibilities and performance qualifications of science and engineering educators. However, engineering technology educators have not been so lucky as to have widely accepted and respected roles within the community of engineering and science educators.

The vital faculty issues such as professional development, promotion and tenure have been debated and brought to some form of maturity for engineering and science faculty although there are still wide variations from one institution to another. In a given higher

education setting, however, a mathematics faculty member or an electrical engineering faculty member knows what hoops to jump through to get to the promised land of tenure. Their peers who will make the recommendation to grant or reject promotion and/or tenure all seem to know what it takes to vote for or against the candidate.

In a typical university setting, as the lay of the land for a newly hired engineering or science faculty member is presented and expectations are spelled out, and the necessary resources such as laboratory space, equipment for experimental research, computer set up, release time, graduate and/or undergraduate student assistance, etc., are provided. Thus, the necessary elements of meeting a set of expectations are spelled out and an unwritten contract is agreed upon between the newly hired engineering or science faculty member and the university through a set of administrators such as the department chair, dean, vice president and president.

This tradition for engineering and science faculty has not been extended to engineering technology faculty except in rare cases where the sizes of the engineering technology student body and faculty are comparable to other disciplines on a given campus, especially to engineering and science programs.

In the following two sections, some practical and tested methods are presented on how to create an environment for engineering technology faculty members in which newly hired faculty can progress towards promotion and/or tenure successfully in a fashion similar to what the engineering and science faculty have done for a long time. The Appendix contains a sample of a three-year faculty development plan for a newly hired fictitious engineering technology faculty member.

Building a Professional Development Portfolio

In real life, only death and taxes are certain and inevitable. It is possible, though not legal; to avoid the taxes but there has not been a recorded case of anyone escaping death. In academic life, on the other hand, review by peers is also inevitable, like taxes or death, whether it is for the purpose of promotion, tenure, or post-tenure evaluation.

Peer review for a newly hired faculty member can come in many forms. These may include annual evaluation by department chair or a group of tenured faculty, or a three-year review involving both the department and school peers, or the ultimate process of going through the tenure or promotion process, involving peer reviews at all three levels, i.e. department, school and the university levels. This structure, therefore, suggests that a new faculty member needs to be prepared for a peer review very early on as the building block of a professional portfolio.

It is possible to build a reasonably strong portfolio for a new faculty member starting with the hiring process. The final candidate emerging from a search process for a faculty position needs to be appraised of the expectations of the position and has to be given almost a preliminary blue print of how to succeed in the promotion and tenure process. This is crucial since the teaching load, service assignments and expected research,

scholarship and creative activity during the first few years are good indications of success or failure for a new faculty member. The following process is a tool engineering technology administrators can use to assist new faculty in the development process.

a. The department or program chair meets with the new faculty member to prepare a draft faculty development plan during the first semester of employment. A sample plan is given in the next section. This plan typically includes the terms of hiring and any special conditions connected to the terms and what the new faculty member wishes to accomplish in terms of teaching excellence, distinction in research, scholarship and creative activity, and service or engagement recognition. It would be wise, of course, for the new faculty member to indicate the nature and amount of the resources needed and promised to accomplish the plan.
b. Once agreed to by both the chair and the new faculty member, the draft plan is forwarded to the dean for feedback and approval.
c. Just before the completion of the first year of service, a meeting is arranged with the dean, the department chair, and faculty member to review progress. If necessary, the development plan is modified as agreed to by all parties.
d. This annual meeting of the new faculty member, the department chair, and dean continues until the new faculty members achieves the sought after promotion and tenure, which typically takes six years from the time of hiring.

Sample Development Plan

A typical faculty development plan may include the following elements.

a. General information
   This section has the hiring date, rank, and title for the new faculty member as well as the terms of appointment, such as duration, when the evaluation reviews are done, and any special conditions applicable for the appointment. An example of a special condition may be release time from teaching or service during the probationary period before tenure is achieved. The faculty member needs to have such conditions articulated carefully in writing so that there will not be a misunderstanding or denial of the agreement by the school administration at a later date. The dean of the school has to make certain that the new faculty member is on track in terms of satisfactory progress toward tenure given that the necessary resources and opportunities are made available to the faculty member.

b. Teaching and learning related activities
   For a great majority of engineering technology faculty, teaching and learning is the selected area of excellence for promotion and tenure. Armed with rich practical industry and business experience coupled with strong interest and enthusiasm for teaching make engineering technology faculty members agents and advocates of technology transfer to future practitioners. This fact, however, does not lead to demonstrating excellence in teaching as defined by

the institution. Engineering technology faculty members need to ensure that in-class performance is documented through student evaluations of the course and instructor, as well as peer evaluations of classroom teaching [2], which has to be performed periodically.

Engineering technology faculty members have the challenge of following the rapid changes engineering, science and technology and bring the knowledge of these changes to the classroom. This results in continuously changing course content as well as using new technologies such as the Internet in their teaching. For example, faculty members can, therefore, become coordinators for a set of courses in a specialty area allowing them to modify the contents and integrate new technologies into the teaching of these courses.

Another component that needs incorporation into the development plan in the teaching and learning area is the scholarship of teaching. Here engineering technology faculty may report on pedagogical experiments and the use of new and novel approaches to engineering technology education in properly refereed technical conferences, technical journals and magazines.

c. Research, scholarship, and creative activities
The measurement of success in research, scholarship, and creative activities in the academic setting varies widely among disciplines. In engineering, medicine and science, the numbers of research articles in prestigious professional journals with respectable citation indexes as well as the dollar amount of research grants and contracts are all accepted measurements.

In many institutions, engineering technology faculty members are also expected to perform at least satisfactorily in research, scholarship and creative activities. The definition of what is acceptable as satisfactory can be quite elusive. In many academic institutions, therefore, engineering technology faculty are measured using the norms developed for engineering and science faculty as they are deemed to be the closest in terms of area of expertise. This often creates an extraordinary tension for engineering technology faculty as they either do not have the background and training to perform theory oriented research or they are not given the resources to conduct similar research even when they have the background to do it. The other extreme that some universities go to is not require any type of research, scholarship or creative activities from engineering technology faculty members but then often these faculty members are not treated as equal peers and colleagues.
It is essential, therefore, that the new engineering technology faculty member is given an indication of what the research expectation is and how the appropriate level of satisfactory performance can be attained. Presentations and publications in conferences and journals similar to that of ASEE can provide one set of evidence for satisfactory research. The complementing component can be abstracts, articles, letters and notes an engineering technology faculty can publish in appropriate trade journals.

d. Service and/or engagement activities
New engineering technology faculty can usually find more opportunities than they care for in this area as department chairs and/or deans quite frequently assign one or more service activities to them. These activities may include departmental, school, and university committee memberships, activities in professional societies, consulting for business and industry, and other engagements with city, state or national organizations. The trick here is to minimize the commitment to service activities as much as possible during the probationary period so that the faculty member can achieve appropriate balance among three areas of teaching, research and service. It would be advisable for a faculty member to choose just a few service activities and pursue them diligently to accumulate the necessary experience and evidence for the professional portfolio.

Conclusions

In many universities, engineering technology faculty have a challenge in putting together a strong professional portfolio prior to their promotion and tenure decision. This is because their peers in the university do not understand the distinction between engineering and engineering technology; thus they tend to apply the measurements and expectations for an engineering faculty in peer evaluations of teaching, research, and service. This paper proposes the use of faculty development plan for newly hired engineering technology faculty members as well as engineering technology administrators.

Although such a plan will go a long way in helping a new engineering technology faculty member, more work and effort are needed on the part of the engineering technology community as a whole to define the field of engineering technology more clearly, differentiating it from both engineering and science areas. If the expectations of teaching excellence and satisfactory research activity are articulated and clarified for the peers of engineering technology faculty, it would be of great help to all engineering technology educators.

Bibliography

[1] Johnston, S. F., Gostalev, J. P., and King, W. J., "Engineering and Society", Prentice Hall, 2000.
[2] Chism, Nancy V.N., "Peer Review of Teaching", Anker Publishing Company, 1999

Biographical Information

H. ÖNER YURTSEVEN, Dean and Professor of Electrical Engineering, Purdue School of Engineering and Technology, IUPUI. He received his BS in Electrical Engineering from Middle East Technical University, Turkey in 1967 and Ph.D. in Electrical Engineering from the Johns Hopkins University, Maryland in 1974.

Appendix: Sample Faculty Development Plan

Section I: Appointment Data

Name:	Robert H. Good, P.E. (fictitious person)
Rank:	Assistant Professor of Electrical and Computer Engineering Technology
Date hired:	August 1, 2001
Conditions:	a. 25 percent release time from teaching for four consecutive semesters, excluding summer semesters b. One month salary each during summer 2002 and summer 2003 for research, scholarship and creative activity c. New computer workstation fully loaded with access to software modules such as MATLAB, PSPICE, SIMULINK, MultiSIM, and LABVIEW.

Section II: Teaching and Learning

My specialty areas are microprocessor design and use of microprocessors for embedded systems. I am, therefore, interested in teaching the existing courses (ECET 205, ECET 305, and ECET 483) in these areas. I plan to update and upgrade these courses every semester with the change of technology and develop two new courses (ECET 3xx and ECET 4xx) in embedded systems as potential electives for electrical engineering technology and computer engineering technology tracks. These improvements and new experiments in teaching this subject matter will be reported at ASEE conferences and in various publications.

Section III: Research, Scholarship, and Creative Activities

I have a keen interest to follow up on the technological changes in microprocessors and embedded systems. I routinely subscribe to or have access to IEEE publications and trade journals in microprocessor and embedded systems. I plan to submit full-length and short papers and letters to some of these publications to stay current in my field.

I plan to submit project proposals to Raytheon Technical Services in the area of user interface protocols for embedded computer systems, jointly with Professor Sam T. Better in the department. I will also seek for equipment funding for department's signal processing laboratories from the National Science Foundation. I am in the process of designing some new experiments for students that will use the new proposed equipment. The development director of the school indicated that she would help me submit the same equipment proposal to few local instrumentation companies as well.

Section IV: Engagement and Service

I would like to be active in the local and regional IEEE chapters. In the school and the department, I would like to work on assessment methodologies and help the department to achieve its assessment goals. I plan to continue my technical consulting at the local Raytheon and Thomson plants, one d ay a week during the academic year and full-time during the summer months, except one month each during the summer of 2002 and the summer of 2003 as I have a research commitment to the school during these same summer months.