Teacher-Scholar Model

Department of Physics and Engineering
West Chester University of Pennsylvania

Overview

A teacher-scholar in physics and engineering understands the subject matter with sufficient depth to select, structure, and organize the knowledge of the field. In addition, the teacher-scholar leverages this depth of understanding to convey knowledge efficiently and effectively to students. In general, the teacher-scholar demonstrates a commitment to creating new knowledge, to applying knowledge to solve problems, to synthesizing disparate strands of knowledge, to investigating how students learn, and to using their experience in such scholarly activities to inform and guide their instruction in the classroom. Teaching and scholarship are complementary activities. Teaching can engender ideas that lead to scholarly activity, and scholarly activity can bring ideas and contemporary concepts into the classroom, and, more importantly, can spark enthusiasm for teaching and for the discipline. The Department fosters the goal for each of its faculty to strive for and achieve a balanced excellence in both teaching and scholarship. The Department understands that this balance changes throughout the career of the faculty member. Given West Chester University's strong and enduring commitment to its broad range of educational programs and its equally strong commitment to fostering the scholarly activities of its faculty, the Department of Physics and Engineering places a high value on effective teaching that is informed by the scholarly activity of its faculty and on research that has an impact on the learning experiences of its students.

Statement of Values Related to the Teacher-Scholar Model

Effective teaching involves not only the effective and efficient communication of an important body of knowledge but also the capacity for self-reflection. Scholarship involves the discovery of new knowledge, its integration and synthesis into relevant disciplines, and its application to new or persistent problems. The balance of teaching effectiveness and scholarship itself depends on a variety of factors, including but not limited to the nature of the research undertaken in any subdiscipline, the role of students in a research program, and changes in expectations during the progression of a career. In some subdisciplines, faculty members are especially productive early in their careers, while in others, productivity may depend on a long period of reflection, analysis, and synthesis.

In a University, an obligation rests on every individual faculty member to embrace and embody the Teacher-Scholar model by both participating in scholarly activity and engaging students through instruction. Participation in scholarly inquiry ensures that faculty members remain intellectually curious, vibrant, and informed, creating an environment in which the values associated with the pursuit and advancement of knowledge can be transmitted. A two-tiered faculty consisting of one group who both teach and are actively engaged in scholarship and another group who only teach is inimical to the Teacher-Scholar Model. The Department strives to foster

the Teacher-Scholar Model by building strong, competent faculty who are engaged in intellectual advancement and in the instruction of students.

Faculty members bring their own strengths and interests to their work within the Department and University, and we should collectively be able to recognize these strengths and interests in the assignment of duties to individuals, to the extent that it is consistent with the requirement of involvement in both teaching and scholarly activity. Just as the balance between teaching and research in the work of an individual may reflect the strengths and interests of that person, the balance may vary over the course of a career. The exigencies of the Department may intervene to alter the balance at certain times, as, for example, when a revised curriculum is put in place, or when staffing problems force reassignments of teaching responsibilities, or when a major reconfiguration of research activity is initiated. Ignoring either teaching or scholarship for protracted periods, however, is not in the spirit of the Teacher-Scholar Model.

Even at the undergraduate level, students ought to be introduced to concepts at the forward edge of Physics and Engineering and encouraged to engage in their own pursuit of knowledge. University graduates are characterized by habits of thought suited to addressing outstanding intellectual problems, not lists of individual skills. Faculty should foster an atmosphere in classes that encourage this intellectual pursuit of new knowledge. In this context, the department highly values the supervision and mentoring of undergraduate research assistants and recognize it as a high impact practice, while acknowledging the limitations on faculty in this endeavor imposed by the depth of knowledge required to engage in research in some subdisciplines, the cost and availability of research grade equipment, and time.

Effective Teaching in Physics and Engineering

In the context of the Teacher-Scholar Model, faculty are challenged to undertake intellectual activity that stimulates both teaching and learning, forming an integrated process where various forms of scholarship complement teaching, where teaching fosters continued scholarship, and learning flows naturally from the relationship between them.

Effective teaching in physics and engineering incorporates: (1) classroom sessions characterized by organized presentations of ideas and activities relevant to the goals of the course, (2) the revision and re-examination from time to time of the goals and learning objectives for the course with respect to national and/or professional standards and the needs of the students, (3) the revision and re-examination from time to time of the content and structure of a course in response to changes in the knowledge of the field and the needs of the students, as well as the incorporation of new pedagogical approaches where appropriate, (4) occasional references to ideas related to, but peripheral to, the major ideas examined in a course to weave together the ideas presented in the course with ideas in the same discipline or related disciplines, (5) an openness to questions and comments regarding the ideas presented in a course, (6) a supply of activities outside of class that support student learning of the ideas presented in class, (7) the availability of the instructor outside of class to address at length the ideas presented in class, as well as to provide counsel and advice

regarding strategies for success in the course, (8) an effective means of assessment and evaluation of each student's achievement in connection with course work, (9) course revision based on student feedback and assessment, and (10) an environment wherein the values associated with the pursuit and advancement of knowledge are instilled in the students.

Assessment of faculty teaching in the discipline of physics and engineering must include evaluations made by other faculty in Physics and Engineering because faculty members in Physics and Engineering are most familiar with the challenges involved in teaching their disciplines. The perspectives of other faculty in the sciences and related disciplines, being less insular than those within the discipline, are also valuable in assessing the teaching effectiveness of faculty in Physics and Engineering. Students, primarily because they lack the overarching vision of requirements imposed by the discipline and curriculum that determine the pace and format of a course, are inexperienced evaluators. Indeed, research has shown that the type of learning that results in fundamental change in how students perceive the world and operate in it, the type of learning that persists in time, is not strongly correlated with their evaluations of a course. Thus, teaching assessments from faculty should be given more consideration than student evaluations. Scores on student evaluations within ±2 standard deviations of the Department average are not statistically distinguishable from the average and are therefore not significant. In such a case, an evaluation of teaching effectiveness must rely on other measures. Furthermore, high scores on student evaluations are not indicators that authentic learning has occurred. To create an environment conducive to teacher-scholars, the Department should ensure that past performance on student evaluations does not limit the ability of a faculty member to take risks and evolve a course to improve learning.

In addition, assessment of student learning outcomes at both the course level and program level is critical to the continued development and evolution of the Department. Although all faculty members in the department value assessment, there is a need to unify our efforts by having a faculty member serve as assessment coordinator for the Department. This faculty member will oversee the assessment at the program level, facilitate the collection and sharing of information at the course level, and represent the Department at College or University assessment events.

Scholarship in Physics and Engineering

A scholar is an individual who contributes to the development and fostering of knowledge and whose activity is recognized by peers at the regional, national, or international level. Though scholarship often is associated with the idea of pushing beyond the boundaries of what is currently known, activities such as interpreting, analyzing, and critiquing knowledge are also vital parts of the scholar's challenge. Scholarly work of many different types should properly be included in the balance of responsibilities within the Teacher-Scholar Model.

Broadly, scholarship in Physics and Engineering is creative, intellectual work that is communicated to and validated by their peers. The best scholarship is characterized by a critical review and evaluation by one's own professional community and by having members of this community use,

build upon, and develop further these creative works. Such scholarly activity may include but is not limited to (1) peer-reviewed or publisher-evaluated contributions and publications, (2) proposals to and awards from funding agencies to conduct a scientific project or research program or to establish an innovative method of teaching in Physics and/or Engineering, (3) abstracts and presentations delivered at conferences or to organizations, (4) patents, and (5) professional consultation, including, but not limited to, reviewing manuscripts submitted for publication; reviewing grant proposals for a funding agency; organizing, planning, or participating in professional workshops or panels; judging or moderating presentations or exhibitions; or reviewing books or academic programs.

The listing of these indicators of scholarly activities is not intended to exclude other forms of intellectual contributions which shall be recognized and esteemed due to developments and changes in the practice of the professional aspects of Physics and Engineering.

Service to the University and Community

Service to the University and Community is an integral part of the Teacher-Scholar Model of faculty. The Department recognizes three categories of service: to the Department and University, to professional and academic organizations, and to the community. Faculty in Physics and Engineering serve as resource persons within the Department, mentoring and assisting faculty, especially newer faculty and temporary faculty.

The Department leaves the venue to the interests and discretion of the individual. Service to the community includes, but is not restricted to, the application of pertinent knowledge to local, regional, state, national and international agencies and organizations. Professional and academic service to organizations includes organizing sessions at conferences, serving on boards and committees, and serving on panels to review proposals, papers, and programs at this and other universities. University service also includes student-based service and the contribution to faculty governance at the Department, College and University level.

Epilogue

A commitment to the Teacher-Scholar Model should be evident in all decisions which are made within the Department and the University. These include decisions as to recruitment and hiring of new faculty, and decisions about renewal of probation, tenure, and promotion. They would also include decisions as to work assignments made by the Chair for faculty and broader policy decisions about the curriculum.

Approved on 07 September 2005 by the regular Faculty of the Department of Physics and Engineering,
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