FLORIDA POLYTECHNIC UNIVERSITY

Department Clarification "Framework"

Department: Applied Mathematics

Clarifications formally approved on: _____December 6, 2022_____

Departmental clarifications:

1.0 Instruction

Core Criterion: A faculty member must clearly be contributing to the instructional mission by demonstrating proficiency and breadth in instructional quality and capacity.

The department of applied mathematics serves several important institutional objectives through its teaching activities. Hence, high quality teaching is the top priority for the department of applied mathematics. Indeed, the department plays a critical role in the STEM core, provides several courses that serve other departments, and delivers many of the largest classes on campus. Faculty must therefore dedicate a larger portion of time to ensure teaching effectiveness and be able to more carefully demonstrate their contributions to the department's teaching mission.

1.2 Overall Criterion Considerations & Requirements

1.2 (A) A faculty member must clearly be contributing to the instructional mission

An important piece of the department mission is to teach STEM core courses. Faculty can demonstrate their contribution to that end through their ability and willingness to teach such courses effectively. Moreover, faculty in applied mathematics must demonstrate the versatility to teach a broad range of courses from STEM core, through engineering service courses, to advanced courses in mathematics.

1.2 (B) Instructional effectiveness

Faculty should employ best and varied pedagogical practices that ensure student engagement, which includes an effective use of technology that promotes student development toward cutting-edge applications.

1.2 (C) Student assessment of instruction

Faculty should demonstrate meaningful consideration of student evaluations. Positive student evaluations are valued by the department, as are changes in instructional practice that are a result of carefully considered student feedback.

1.3 Factors to consider in terms of "effort "

A sometimes disproportionately high amount of effort is necessary to accommodate the large number of students taught by the department. Faculty effort can be demonstrated in part by the large number of students they teach, the time spent participating in course coordination, and the creation of educational materials such as handouts, projects, quizzes, exams, etc. It is not uncommon for an assistant or associate professor to be teaching more than 100 students in a semester, across two different courses. Instructors often teach upward of 120 students.

1.4 Factors to consider in "quality"

Faculty teach many courses across the STEM core and other service courses that often include large numbers of students early in their academic careers. Unfortunately, such courses can, in some cases, have a high number of students that do not complete the course successfully. However, faculty are still expected to hold all students to a high standard. Faculty will therefore not be negatively assessed based on lower rates of successful student completion of their courses without first a careful reflection of the fuller context of such performance.

1.5 Further Criterion Considerations

The department places a high value on professional development intended to improve instruction and course delivery.

New course development, and significant course redesign, is an important way that faculty members contribute to the department's mission and is highly valued.

2.0 Research or Other Creative/Scholarly Activities

Core Criterion: a faculty member has **a unique and scholarly expertise in their field** and has activity that aligns with this professional direction.

Clarifications listed below

2.2 Further Criterion Considerations

2.2 (A) Directing thesis committees or project advisory groups.

Applied Mathematics does not currently have an active graduate program or one in immediate development. Faculty may be involved in thesis committees for other departments.

2.2 (B) Publications and patents

(we are asked here to provide recommendations for publication venues that are considered high value for the fields represented by the department)

2.2 (C) Articles published... (more specialized venues of publication)

2.2 (D) Multi-author publications

Math faculty often collaborate on multi-author papers by providing their mathematical expertise toward another author's research.

2.2 (E) Articles that are simply the result of student work in a class

Applied mathematics research may include educational and pedagogical research. In particular, professional activities involving our students that enhance the reputation of Florida Poly.

2.2 (F) Provisional patents

Due to the nature of applied mathematics research, faculty are unlikely to file for patents.

2.2 (G) Patents that have been granted

Due to the nature of applied mathematics research, faculty are unlikely to file for patents.

2.2 (H) Activity with industrial partners

Some areas of work in applied mathematics such as data science and mathematical computation may have direct impact on Business, Industry, and Government, but many areas will not.

2.2 (I) Research, creative and scholarly activity

Applied Mathematics research is a broad and ill-defined area of scholarship. Mathematicians often work across diverse areas that may be far removed from their original area of study. Often, mathematicians explore brand new and emerging fields such as those related to data science.

While obtaining new results is important and is highly valued, the mathematics community also places high value on publications that brings clarity to the theoretical work of others, provides unexpected connections between topics, re-visits historically important work in a modern light, finds novel applications of known results, and makes mathematical research areas accessible to students. Work in the scholarship of teaching and learning mathematics is also valued and can contribute to the overall body of scholarly work but should not be the only contributions to the research portfolio. These types of publications and associated conference presentations are appropriate for faculty at undergraduate-focused institutions such as Florida Poly.

The department values scholarly work that engages students in mathematics. Papers published with students are important for the reputation of the institution.

The expository standard in mathematics journals tends to be very high. As an example, journals published by the Mathematical Association of America have a large readership and acceptance rates below 10%. Moreover, the publication cycle is often 18 – 24 months from submission to print. It is difficult for mathematics faculty to publish a large number of papers in high-quality journals. Mathematics, as a field, does not have the equivalent of the "technical report" often found in other disciplines. Also, very few mathematics conferences have refereed conference proceedings.

2.3 Proposal and grant application

Much of the research done in Applied Mathematics doesn't require funding, so faculty may not apply for grants. It is not common for faculty to get individual research grants.

3.0 Service: a faculty member is contributing to their department and profession in a positive way.

Clarifications listed below

3.2 Criterion Considerations

3.3 Special Consideration of Administration Contribution

Mathematics teaches several large, highly coordinated courses. The course coordinator role is high-demand and very time-intensive. The selection as a course coordinator indicates a high-level of confidence in the particular faculty member.

4.0 Overall recommendation: criteria notes, appropriate to rank and reappointment and/or reappointment: strong, ongoing contribution to the University, ability to perform their full suite of duties with a high degree of quality and independence by demonstrating accomplishment in teaching, appropriate trajectory in research, and service that positively advances the University, department, and program

Clarifications listed below on section 4.2.