

## **\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 and provides several courses that serve other departments. Mathematics faculty must, over time, demonstrate significant breadth in instructional capacity.

#### **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 may include an effective use of technology that promotes student development.

##### **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 “**

#### **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.

Most students in mathematics courses are in other degree programs. Hence, the department values the positive use of discipline-specific applications appropriate to students in the course. Such applications provide context and may increase engagement with the material.

#### **1.5 Further Criterion Considerations**

The department places a high value on professional development intended to improve instruction and course delivery. Ongoing curriculum development is valued, as is the design of course elements where the instructor has freedom beyond the catalog description and core topics.

#### **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. Interdisciplinary collaborative research efforts with faculty in other departments is valued and appropriate.

##### **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**



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

Applied mathematics research may include educational and pedagogical research.

**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 a wider audience including researchers from other disciplines. It is therefore appropriate for math faculty to publish papers that extend, translate, and apply mathematical results in quality journals outside of the mathematical domain. The scholarship of teaching and learning (SoTL), which involves the systematic investigation of a question about teaching or learning using sound methodology that is grounded in the literature and subject to peer review, is also highly valued and can contribute to the overall body of scholarly work. However, SoTL research should not be the only contributions to the research portfolio in an application for promotion to associate professor. All the aforementioned types of peer-reviewed publications are appropriate for faculty at undergraduate-focused institutions such as Florida Poly.

The department values scholarly work that engages students in mathematics. Papers published in collaboration with students and for 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 many papers in high-quality journals.

Due to the wide range of journals in the mathematical sciences, the Department Evaluation Panel will include a discussion of the journal quality present in a faculty member's record of scholarship.

Also, very few mathematics conferences have refereed conference proceedings. Conference presentations, both in contributed and invited paper sessions, at recognized conferences, while not equivalent to publications in refereed conference proceedings, is highly valued by the department and can be an important supplement to a faculty member's publication record.

### 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. Collaborative effort to pursue funding that enhances the profile of the department is highly valued, including grants aimed at improving teaching and learning in mathematics. The department recognizes that unsuccessful applications can be an important part of the process toward obtaining grants, and therefore values quality peer-reviewed applications, even if they are not funded. Grant activity should be viewed as part of a faculty member's overall scholarship profile.

### **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.