LAFAYETTE COLLEGE

Department of Mathematical Sciences

Scholarship Guidelines[1]

This document details the process of evaluating scholarly content produced by faculty in the Department of Mathematical Sciences for the purposes of promotion, tenure, and review. Section 4.2.2 of the faculty handbook[2] provides the following instructions to academic departments and programs for preparing scholarship guidelines (emphases added):

"Each academic department/program shall prepare guidelines stating how the College standards apply in its particular discipline. Such guidelines shall *identify the recognized forms of scholarship in the field* and shall *explain the relative importance of different forms of scholarship* for an assessment of a faculty member's scholarship."

The following guidelines have been created with these emphasized objectives in mind.

Criteria for Successful Scholarship

As outlined in Section 4.2.2 of the faculty handbook, a successful scholar at Lafayette College

1. is actively engaged in the advancement of knowledge and/or artistic creation;
2. has produced high-quality, original works of scholarship in the form of publications, exhibitions, and/or performances;
3. participates actively in scholarly discourse with professional peers, such as through involvement in conferences, presentation of invited lectures, or published reviews of other scholars' work.

In the Department of Mathematical Sciences, the **primary indicators** of successful scholarship are peer-reviewed articles, books, or monographs presenting original research in the mathematical sciences.

Additional means of demonstrating scholarly achievement appear, in no particular order, in the bulleted list below. The department encourages the pursuit of such achievements to

[1] Last updated: Oct 8, 2024.
[2] https://provost.lafayette.edu/wp-content/uploads/sites/25/2024/07/2024-25-Faculty-Handbook-rev-07.24.2024.pdf

support a record of scholarly productivity. However, such achievements, on their own, are insufficient for satisfying the primary criterion of successful scholarship stated above.

- Invited lectures and conference presentations.
- Positively peer-reviewed and/or funded grant proposals submitted to external agencies.
- Publication of textbooks and expository works in the mathematical sciences.
- Software development that has public distribution with acknowledgment of authorship and evidence of peer review.
- Scholarship of teaching and learning[3].
- Invited reviews of other scholars' works.
- Articles and communications intended for a non-specialist audience and/or the general public.
- Publication in undergraduate journals through undergraduate engagement experiences such as Excel, REU, or honors thesis work.

Primary Guidelines

1. **General description of scholarship in the mathematical sciences:** Faculty in the department engage in research that spans a wide spectrum of the mathematical sciences. The following loose classification of subfields in the mathematical sciences is intended to convey the breadth of research in which department faculty are currently engaged. It should be noted that a candidate may have a research portfolio that includes aspects of one or more of the following categories.

    a. *Theoretical Mathematics:* Research in theoretical mathematics entails the study of abstract mathematical structures in a rigorous manner. This often requires solving a mathematical "problem", formulated in precise mathematical language. As such, the vast majority of research papers in theoretical mathematics contain one or more theorems (precisely formulated mathematical claims) accompanied by proofs (mathematically rigorous justifications of such claims, which could be computational in nature).

    b. *Applied Mathematics:* Applied mathematics encompasses, broadly speaking, the application of mathematical techniques to study real-world phenomena. Faculty engaged in applied mathematics research may be focused on the development of new mathematical models to explain complex real-world systems, the adaptation and/or use of existing mathematical tools to study novel applications, or the advancement of original mathematical techniques and algorithms that can be

[3] Scholarly studies of student learning in the mathematical sciences that are based in pedagogical theory, backed by evidence, and published in peer-reviewed journals or books.

utilized to promote new forms of analysis. Presentation of results may include simulation studies, theorem-proof style results, introduction of novel algorithms, or demonstration of improvements to existing methodologies (e.g. in accuracy, computational efficiency, or prediction quality), among others.

c. *Statistics:* Statistical science involves learning from data and measuring, controlling, and communicating uncertainty. Research in the field can involve contributions to the empirical or mathematical foundations of statistics, as well as the application of statistical techniques in novel ways. Often, statistical research entails the use of existing statistical methodologies in innovative ways in interdisciplinary settings. Products from such research can include theorem-proof style results, experimental design, data collection and analysis, simulation studies, and the development, deployment, and support of computing algorithms.

2. **Research activity while at Lafayette and future scholarly potential:**

a. In assessing a tenure candidate's record for continued scholarly development and promise of further growth, particular attention is paid to scholarly work done while the candidate was employed at Lafayette. Evidence of individual initiative, such as identifying a suitable project and developing it to produce published scholarship, is especially valued.
b. Records of accomplishment indicative of continued scholarly development in the mathematical sciences vary widely in quantity and regularity of publication. Consequently, a record of scholarly accomplishments might appear irregular or uneven over the time period of a candidate's employment at Lafayette, yet still reflect continued scholarly development and promise of further growth.
c. A successful record of scholarly achievement in the mathematical sciences may also vary in content. That is, a body of work could be a series of interdependent papers that build on each other or could be papers in disparate subfields of the mathematical sciences.
d. At the time of a review, a candidate may submit work at various stages of completeness, possibly including some work that is still in-progress and not yet peer-reviewed. Ideally, the majority of the works in the Scholarship Portfolio will have been peer-reviewed and either be in print or accepted for publication at an appropriate venue.

3. **Publication venues and authorship:**

    a. In accordance with Section 4.2.2.1.4 of the faculty handbook, evaluation of a candidate's scholarly record is based primarily on the expert opinion of tenured members of the department and external reviewers who hold terminal degrees in the mathematical sciences or closely-aligned disciplines. While the general quality and reach of publication venues may be taken into account, no specific metrics (such as impact factors) are used to determine the importance of published work. Original work may also appear in conference proceedings or book chapters, instead of being published as a traditional journal article.
    b. Articles in the mathematical sciences often appear in venues that list co-authors' names in alphabetical order. Consequently, no inference regarding the relative importance of individual contributions to such articles should be drawn from the order in which the authors are listed. Indeed, even discerning the precise contributions of the various co-authors can be problematic. Certain subfields of the mathematical sciences may follow different conventions for attributing authors' contributions to a piece of scholarly work. Therefore, it is necessary to take into account candidates' explanations of the nature and significance of their contributions to co-authored publications.
    c. Given the highly collaborative nature of research in the mathematical sciences, candidates for tenure and promotion are not expected to have produced any solo-authored papers.

4. **Undergraduate involvement in research:** It is commendable for department members to involve undergraduate students in their scholarly work in a meaningful way. However, many research projects in the mathematical sciences necessitate more background than undergraduates can be expected to have. Consequently, we do not require such involvement from any of our faculty.

5. **Contributions to other disciplines:**

    a. Mathematical or statistical skills of department faculty may be in demand outside the academic setting (e.g. involvement in classified projects for government agencies) and it may not be possible to use the traditional peer-review process to assess the contributions made by faculty to proprietary work. In these cases, other forms of evidence may be of value in judging the overall contributions of the faculty member.
    b. Consulting with scholars in other academic disciplines can be an important activity. For this reason, we value scholarly consulting, and recognize the positive

role it can play in professional development. However, a scholarly program that is limited to routine consulting on projects from other disciplines will be insufficient to support an application for promotion or tenure.

Additional Guidelines

1. **Promotion to full professor:** It is to be expected that faculty may prioritize different facets of scholarly achievement post-tenure based on their interests and strengths, though the primary criterion for successful scholarship stated above still applies.

2. **COVID-19 addendum:** The department recognizes that the disruptions caused by the COVID-19 pandemic may have significantly impacted scholarly activities and productivity. Following the guidance in Section 4.2 and Appendix X of the Faculty Handbook, the department will consider these impacts during its reviews of scholarship records and encourages faculty members to explain impacts that are particular to their individual situations and scholarly activities.