

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

ACADEMIC SENATE

ACADEMIC PROGRAMS COMMITTEE

REPORT TO

THE ACADEMIC SENATE

AP-006-234

Program Review for BS and MS in Mathematics

Academic Programs Committee

Date: 01/24/2024

**Executive Committee
Received and Forwarded**

Date: 03/06/2024

Academic Senate

**Date: 03/13/2024
First Reading**

BACKGROUND:

As part of the regular review cycle of campus programs, the Mathematics and Statistics Department conducted an extensive self-study for the AY 2021-2022. This was followed April 14-15, 2022, by a remote external review conducted by Drs. Glass (CSU East Bay), Young (Carnegie Mellon), and Zeigler (CSU Sacramento), and an April 25, 2022, internal review by Drs. Langford (Psychology) and Taylor (Education). Each team submitted a report, to which the department and Dean Baski have responded separately.

The departmental self-study broadly covered (1) program quality from the perspective of curriculum and pedagogy, DEI, GI 2025, assessment of student learning, and student support/satisfaction/services; (2) faculty expertise, workload, tenure density, and support; and (3) university support and resources (administrative personnel, facilities and space, library resources, and general support).

This review covers (1) the B.S. in Mathematics with two options (Secondary Teacher Preparation/Pure Mathematics and Applied Mathematics/Statistics), (2) minors in Mathematics and Statistics, and (3) the M.S. in Mathematics with four emphases in Pure Mathematics, Mathematics Education, Statistics, and Applied Mathematics. Note that since this review, the Mathematics Department has spun off the last two emphases in the M.S. into their own state-supported program with two options, to comply with EO 1071 (AS-3048-234-AP, approved by the President on December 21, 2023).

RESOURCES CONSULTED:

Dr. Alison Baski, Dean, College of Science
Dr. Jocelyn Chong, Coordinator, Assessment and Program Review
Dr. Keith Forward, Interim AVP, Academic Programs
Dr. Berit Givens, Chair, Department of Mathematics and Statistics
Dr. Jennifer Switkes, Associate Chair for Students, Department of Mathematics and Statistics

DISCUSSION:

The review teams identified many strengths of the department. They highlighted a positive departmental culture arising from a sense of community, strong research record, respectful environment for adjunct faculty, new faculty support. The department was lauded for exemplifying the polytechnic identity via a strong, project-driven curriculum across multiple disciplines and in industry. This in turn led to what was viewed as an excellent student experience, also driven by small class sizes, an openness to alternative, proven pedagogies, and access to scholarly activity and alumni. The department was viewed as being responsive to qualitative and quantitative teaching outcome data, i.e., as having a strong assessment culture that includes a robust “closing-of-the-loop” process. University resources and collaborations such as LRC and CAFE, and an overall commitment to service within the department, were highly regarded.

Reviewers note that faculty indicate a high level of satisfaction with an effective and supportive departmental leadership.

The review teams also identified challenges that the department faces, concerning principally process (institutional barriers and bottlenecks, communication inefficiencies, resource centralization) and personnel (workload, post-pandemic frictions). Regarding the former, they highlighted inefficiencies at the university level such as contract management, the IRB process, centralized resource management, and student registration. For the latter, they drew attention to TT faculty service, task, and (service) teaching workload as being particularly deleterious. The nature of student assessment in Mathematics is time-intensive and baseline funding is insufficient for scarce, qualified grading assistants. This high workload negatively affects diverse teacher-scholar principles, such as the maintenance of high impact teaching practices, including thesis supervision, an expansion into desirable new areas such as computational mathematics, and valuable training/community/global opportunities that must go begging. Ultimately, faculty time is spent on too many tasks outside of their academic and professional interests, lowering overall morale.

The unique nature of the department as a research-intensive, Master's-granting program whilst also providing university-wide service teaching leads to particularly difficult challenges, given low tenure track density and baseline resources. Faculty research interests, the flexibility to teach more varied upper division major and Master's courses, and addressing the career needs of majors all compete for bandwidth with service teaching and grading, and a high per faculty service and task load.

The review teams saw opportunities in utilizing the strong departmental/university brand for fundraising and advancement, expanding effective DEI initiatives in instruction, hiring and RTP decisions, the expansion of "high impact" practices such as student research, course coordination, and embedded peer and targeted peer support.

A particularly actionable item concerns enrollment management across Fall and Spring semesters. The department's very large service component, coupled with a university wide push for **ALL** students (including those whose majors do not have math prerequisites for any major courses) to complete their lower division GE B4 mathematics course in their first semester, leads to a roughly thirty percent drop in FTES from Fall to Spring. This enrollment shock makes hiring temporary faculty drastically more difficult as continual employment is not guaranteed, whilst contract process inefficiencies add to the burden. It ought to be feasible to better balance enrollment by changing roadmaps and encouraging students who only need math and/or statistics for GE but not their major to postpone mathematics to the Spring semester, concentrating instead on an earlier start in writing intensive courses for the Fall.

The department and Dean broadly agree with the reviewers' comments. In its post-review response, the department has drawn up an effective and actionable plan that addresses the noted challenges and opportunities for which it has agency. All faculty have signed off on

this document. The AP Committee feels that the plan is reasonable and represents a good faith framework to mitigate challenges and build on opportunities. Most proposed objectives will require departmental tenure-track faculty/committee/Chair time, which is scarce, but some may be beyond their immediate control, such as additional tenure-line faculty to meet department and university needs, and sustainable funding for student graders and related software. The department discussed the action plan with the Dean's office, which fully supports it whilst cautioning that budgetary pressures remain real.

RECOMMENDATION:

The Academic Programs Committee commends the Department of Mathematics and Statistics on the successful operation of their BS and MS programs, and for the enormous service teaching load that they shoulder on behalf of the university. The thorough and thoughtful reviews that were prepared highlight issues of critical importance at the department, college, and university level.