

Project Name:	Expansion of L&S Faculty Lines in Math
MIU Round(s):	3
Sponsor(s):	College of Letters and Science
Coordinator(s):	Gloria Mari-Beffa, Sigurd Angenent
Partner(s):	Gary Sandefur, Nancy Westphal-Johnson
Report Date:	Year 1, July 2012; Year 2, July 2013

Project Goal and Measures

Project Impact Measure(s)	<ul style="list-style-type: none"> • Review and revise the 3-course UW-Madison calculus sequence to better align with the fundamental learning outcomes for majors that require calculus. • Design supplemental course websites, on-line textbooks, on-line problem sets, quizzes and group projects to augment the course lectures. • Add TA support to bridge courses for math majors. • Add ongoing TA-led study groups. • Coordinate with WisCEL for the instruction of lower level Math courses (Math 95, 101, 112) in WisCEL space.
Project Impact Data Source(s)	Math Department and Academic Planning and Institutional Research (achievement gap and enrollments).
Baseline Measure(s)	Academic Year 2010-11 will be used as a baseline.

MIU Impact Measures

A	Increased access in bottleneck areas	Covered by project goals (course access goals are in courses required for math and other math-intensive majors).
C	Increased capacity for high-impact practices	Increasing faculty numbers will allow for smaller class sizes in Honors sections and in bridge classes for the Math major.
D	Increased student learning and teaching excellence	Supplemental course materials (on-line textbooks, quizzes, problem sets) and the addition of TA-led study groups will increase time-on-task and immediate student feedback. Topical problem sets related to learning outcomes for math-intensive majors will be included in the calculus sequence.
E	More tenured, tenure-track faculty teaching undergraduate courses	The new faculty members will teach undergraduate courses.

Expansion of L&S Faculty Lines in Math, Page 2

F	Decreased achievement gaps	APIR routinely provides information on achievement gaps in courses to departments. Math courses typically have high achievement gaps and addressing these is critical to the success of students at UW-Madison. Implementation of lower-level math courses in WisCEL space is intended to reduce the achievement gap in these courses. The achievement gap in the calculus sequence of courses will be monitored before and after the new course enhancements to examine their impact.
G	Attention to diversity in new hires	The Math Department made efforts to recruit a diverse group of faculty candidates and were successful at increasing the gender diversity of the department.

Progress Reports

Year 1, 2011-12

- Reviewed and revised the 3-course calculus sequence to better align with the learning outcomes needed in math-intensive majors and to allow students more opportunities for working with problem sets in a supportive/structure environment.
- Developed course web-sites, on-line textbooks, pre-lecture quizzes, problem sets, and group projects for Math 221 and partially for Math 222 and 234.
- Planned for the implementation of lower-level math courses (Math 95, 101 and 112) in WisCEL space.
- Developed long-term plans for initial and ongoing TA training.
- Added TA support to bridge classes for math majors. These courses have enrollments above their intended capacity and are key, and often difficult, writing-intensive courses for math majors (Math 421, 341, and 461). At the end of the courses, students were surveyed about the degree to which the TA support was helpful. Most students thought the class needed a TA and that the TA support helped them in the class.
- Completed hiring of three MIU-funded faculty positions.

Year 2, 2012-13

- Developed and implemented common framework for Math 221 instruction, including newly-designed on-line calculus texts, on-line homework, quizzes, and group projects. These changes have been well received and are working well.
- Continued work on the on-line texts for Math 222 and 234, the other 2 courses in the 3-course calculus sequence.
- Organized comprehensive training program for new teaching assistants, mainly for the calculus course sequence.
- Progress to MIU goals is slower than anticipated due to the loss of faculty in the Math Department that is not offset by the new faculty lines funded by MIU.

Expansion of L&S Faculty Lines in Math, Page 3

Year 2, continued

- Assessment: Reviewed student outcomes and learning in Math 421, a key course for proof-writing. Despite increased TA support, students continue to struggle with this class. Realization of MIU goals is complicated by the increase in course enrollments that occurred at the same time as the MIU funding.
 - Assessment: Reviewed grade distributions in Math 221 for both targeted minority and non-targeted students and observed a closing of a long standing achievement gap. Although the alternative administration of the final exam (due to the blizzard and campus closing) may have elevated the overall course GPA, data analysis shows that the targeted minority students did as well as non-targeted students in all lectures and from the beginning of the course
-