

**Program Review
Department of Mathematics
Weber State University
March 2008**

1. Review Team

The review team consisted of Dr. Peter Alfeld (Professor, Department of Mathematics, University of Utah), Dr. Robert Heal (Professor, Department of Mathematics and Statistics, Utah State University), Dr. Sue Harley (Professor, Department of Botany, Weber State University), and Dr. Eric Swedin (Associate Professor, Department of Information Systems and Technologies, Weber State University).

2. Review Materials and On-Site Visit

The Department provided the review team with the following materials: Executive Summary, Department Program Review (39 pages), Student Statistical Summary, Faculty Statistical Summary, and copies of written exit interviews from graduating students.

On March 6, 2008, the review team met with Dr. Kent Kidman (the department chair) and Dr. Dale A. Ostlie (Dean, College of Science), most of the department faculty, the department secretary, the director of Developmental Mathematics, and several undergraduate students.

3. Degree Programs and Majors

The Department offers a bachelor's degree with three emphases for the mathematics major: Regular (theoretical, preparation for graduate school), Applied (flexible requirement, preparation for industry), Teaching (secondary education with mathematics endorsement). The number of majors (65-85) and graduates (9-16 per year) has been flat over the last several years with about half of the graduates in mathematics education.

Given the size of the Ogden metropolitan area, and the significant need for mathematics teachers in secondary education, the review team recommends that the Department place high priority on the recruitment of additional mathematics teaching majors. WSU and many of the mathematics faculty have excellent relationships with local teachers and administrators. It should be possible for Department faculty to develop recruitment brochures, visit high school classrooms (giving talks when possible), and prepare web-based materials that can be distributed to graduating high school seniors.

The department has done a commendable job identifying and responding to the needs of its varied student constituencies: students in QL classes, Math majors, Math Teaching majors, and Elementary Education majors seeking the Elementary Education Mathematics Endorsement. Furthermore, the effort to provide upper-division math specialist courses to obtain the Elementary Education Mathematics Endorsement is unique in the State of Utah and the effort is well recognized by K-8 school administrators.

4. Faculty

Currently, the Department has 12 faculty members, 10 with Ph.D.s, and 2 with master's degrees. Scholastic standards are appropriately rigorous. A Ph.D. is required for employment as a regular faculty member, and an appropriate level of scholarship is necessary for tenure and promotion.

Despite some past disagreements the level of collegiality in the department appears to be high.

The age distribution of the faculty is healthy. Recent hires are of impressive quality, and two new mathematics Ph.D.s from excellent programs will join the WSU mathematics this fall. There is a significant amount of scholarly activity among the current faculty, a noteworthy accomplishment given the 12-hour teaching loads! The faculty should be encouraged to provide greater participation in the local MAA chapter.

5. Students

Class sizes are small, no more than 50, more typically 30, and less than 15 for many of the advanced level courses.

Those students we met were very pleased with their education at WSU. They also seemed to be very capable. We spoke with one Applied Mathematics major and three Mathematics Teaching majors. These students agreed that their teachers are easily accessible and competent in their fields. Their positive comments about the faculty, course offerings, small class sizes, etc. were consistent with the larger set of opinions supported by the exit interview data from graduating students.

6. Teaching

Essentially all classes at the calculus level and above are taught by Ph.D. level faculty, a worthy goal for any institution of higher education in the State of Utah.

Our review team learned that some students and some non-math faculty expressed concern that math classes are unreasonably demanding. This impression is not supported by the teaching evaluation data that indicates the Department's instruction ratings to be at the College of Science average. The exit interviews with graduating students showed that these students are generally quite impressed with the teaching effort of the faculty and recognized the faculty to be highly competent.

The department is committed to providing the courses their students need to graduate, to the point of teaching classes with just 1 or 2 students when necessary, a commendable effort.

Funds should be provided to offer grading services to faculty. That would free faculty time for scholarly activity, and more interaction with students. Potential graders could be advanced math majors, and perhaps science majors. Apart from freeing faculty time, working as graders would help math students to support themselves with math-related work, rather than unrelated chores.

Students should be able to review course evaluations, including student comments, of faculty from whom they consider taking classes.

Course loads appear to be quite uniform. Consideration might be given to differentiating those loads in both directions to support scholarly activity, program development, independent study, research experiences by students, or perhaps a Math Club.

7. Facilities and Equipment

Many of the Math faculty, from senior faculty to recent hires, expressed a desire to be physically closer to their colleagues in the other departments in the College of Science. It is difficult for them to become acquainted with the rest of the college faculty and vice versa.

The space allocated to the Math Department in Building 4 poses many challenges for the department. The building itself is old, in need of repair, and highly unattractive when compared to the numerous modern, appealing structures on the WSU campus. The classrooms are small, and too much furniture is squeezed into the rooms to accommodate the course enrollments. The shortage of multimedia classrooms puts undue strain on scheduling. Many of the Math classrooms (including rooms that the department might acquire in Building 3) need to be equipped with PCs with appropriate software and web access, ceiling mounted digital projectors, and digital visual presenters ("Elmo" units). Some of the chalkboards should be replaced with white boards, when appropriate.

Nearly all WSU students must complete a math course and are therefore subjected to the inadequate spatial and technical resources in their mathematics classes. The College of Science and the WSU central administration should seriously consider the needs of the Mathematics Department when planning for construction of the next new building.

8. Developmental Mathematics

Splitting off the Developmental Math Program seems to be a good idea, and considered as such by most department members. It is certainly an innovative approach that is unique among Utah institutions. It is important that the Mathematics Department remain engaged in current and future operation of the program by reviewing curriculum materials, examinations, standards, and other aspects of developmental math that impact the mathematics program.

The DM program is taught mostly by adjuncts with a small core of permanent, full-time instructors. The problem of students being ill prepared is likely to be permanent. The review committee was surprised by the relatively low pay level of the full-time DM instructors. We recommend that the status of all DM teachers and their pay should be fair and adequate.

The success of the DM program should be monitored by evaluating student performance in QL courses, and tracking student success in more advanced math classes.

9. Department Administration

Budgeting seems to be rational and smooth at Weber State University. Department budgets are not sensitive to fluctuations of student credit hours.

The Department secretary considers her work-load appropriate (DM has its own secretary) and she enjoys her work and position. There is universal agreement in the department that she is doing an excellent job. Faculty interviewed by the review team expressed strong support of the Department Head and his leadership.

The Department's web site is out of date and does not match the level of design and quality of other departments in the College of Science. A major redesign effort is necessary. A few suggestions: the WSU-Math website could include recruitment material for potential students, scholarship information, course syllabi, links to current online course material, employment information, examples of student course schedules with a graph indicating course prerequisites, a schedule of events, links to nationally recognized essays on mathematics, links for math-ed majors.

The Department operating budget needs to be increased in order to support the outreach effort to recruit new students, to provide graders for faculty, to create a distinct peer tutoring service to students enrolled in courses at the 2000 level and above, to redesign the Department web site, and to obtain additional computing and technology resources for the classrooms.

10. Conclusion

Our visit was pleasant and everybody was friendly, candid, and forthcoming with information.

The WSU mathematics faculty is a healthy mix of experienced and young faculty, all of whom are competent, and as a Department have established an overall rigorous, well-constructed curriculum. Given continued faculty commitment and financial support by the College of Science and WSU administration for research and scholarly activity, and with significantly improved facilities and equipment in the near future, the Department has enormous potential to achieve even greater success in its mission to integrate mathematics into the personal and professional lives of students.