Program Summary

Summary Title: Mathematics and Statistics Program Review: BS and MS
Applicable Programs: 27.0101 Mathematics, General : Bachelors
                    27.0101 Mathematics, General : Masters

Accreditation: Not Associated with an Accreditation Review.

Last Review Year: 2002

Status: PENDING

Major Changes

1. The Department revised the undergraduate and graduate programs in the 2003-2004 academic year.
2. The Department also modified and updated all course descriptions.
3. The faculty has been using D2L for many classes. MAPLE has been used in calculus courses; MATLAB in upper level math classes; SPS and SPSS have been used in statistics classes; and the HAWKES system has been used in Elements of Statistics.
4. The Department purchased 10 new computers for the faculty and 7 new laptop-PCs for classroom teaching.
5. The number of adjuncts has decreased both in numbers and percentage.
6. The Department has instituted sets of outcomes and assessment data to meet University requirements.
7. The Department increased sections sizes for STA 2023 with increased utilization of graduate assistants.
8. The Department offers certificate programs in Biostatistics and Computational Mathematics.
10. The Department was awarded NSF grants in 2007 and 2008 for the REU program.

Strengths

Teaching—Strengths and Opportunities

Strengths

- The department has a reputation for teaching well, especially subjects that many students dislike
- Small class sizes relative to most universities
- Teaching is counted heavily in hiring, teaching, and promotion
- Technology equipped classrooms
- Long distance learning classrooms
- Faculty members have some choices in the courses they teach
- Faculty typically teach in their areas of expertise
- Proseminar programs give students an opportunity to do independent study, to learn to write mathematics, and to make oral presentations
- Students have out-of-class opportunities to meet with faculty, especially since many students study in the Mathematics Building, work in the tutoring lab, grade papers, and do proseminars or other independent study.
- Students get reinforcement of the material they have covered in class through working in the tutoring lab or grading papers
- Teaching assistants make faculty more effective and efficient instructors
- The chairman maintains collegial atmosphere in department
- Strong support from administrative staff; office manager and word processing specialist are effective and helpful
Opportunities

- Develop more on-line and distance learning courses
- New building could facilitate interdisciplinary courses
- New building will provide more contact with non-mathematics majors
- New building will provide more contact with faculty in other disciplines

Research—Strengths and Opportunities

Strengths

- Faculty maintain strong presence in scholarly activities in spite of heavy teaching load
- Junior faculty get course releases whenever possible
- Some summer grants for research or pursuing external grants are available
- Faculty are encouraged to attend conferences and are supported to do so when possible
- Colloquium series

Opportunities

- University competitions for summer funding and research awards
- New building could enhance possibility for collaborative research
- New building could enhance possibility for external grants, which could make possible new funding sources

University, Public, and Professional Service and Other—Strengths and Opportunities

Strengths

- The chairman promotes and supports public service and outreach
- Service counts for tenure and promotion
- The department emphasizes external events, such as association meetings and events for high school students
- Departmental faculty visit area high schools
- International Week lunch presents department in very positive light

Opportunities

- New building will enable faculty in other departments to know more about the departmental faculty and our students

Weaknesses

Teaching—Weaknesses and Threats

Weaknesses

- Ft. Walton Beach distance learning students receive inadequate attention
- There are not enough teaching assistants
- Graders don’t always have access to textbooks for the courses they grade
- Faculty members have inadequate blackboard space in their offices
- There are not enough summer courses

Threats

- Budget cuts could increase reliance on adjuncts and reduce number of graders and teaching assistants
- Success rate in calculus courses

Research—Weaknesses and Threats

Weaknesses

- Faculty members often do not have colleagues in their sub-disciplines
- There are not enough tenure track faculty
- Inadequate summer research support
- Inadequate course release time
Inadequate travel funds
Inadequate funding to bring in visitors, especially those who can mentor faculty

Threats

Budget cuts could degrade strengths and exacerbate weaknesses mentioned above

University, Public, and Professional Service and Other—Weaknesses and Threats

Weaknesses

None

Threats

- Budget cuts could cause heavier teaching loads, thus reducing the time for service activities

Recommendations

Recommendations from the Program Review Team

Innovations In Teaching

Concerns

- At present the feeling in the faculty seems to be a willingness to take on an extra load of work to help overcome difficult budget times and shortages of resources. Changes in expectation which began to regard these new workloads as the norm would be very poorly received.
- The department also has to create a suite of new policies to deal with the way in which course-load interacts with these new teaching formats. At present the largest classes that faculty regularly teach have class-sizes in the 30s. The new redesigned classes are lectured to over 100.
- Similarly a relatively small class taught with students at several locations may also require rather more time than a traditional face-to-face presentation.

Recommendations

- Decisions must be made to take these added responsibilities into account when teaching loads are assessed.
- Implementations at other institutions nationally show that the new redesign format would be assisted tremendously by having a computer lab in which students could work their computer-assisted assignments in a supervised environment. The review team would like to recommend that a suitable lab be introduced into the new building that will soon house the Mathematics Department.
- The team would also recommend some form of lab fee for those students who take redesigned classes. This fee could be used to upkeep the computers in the lab, and also pay graduate students stipends for new students to staff the lab time.

Enrollment

Concerns

The review team was concerned about the way in which undergraduate advising depended on a single instructor. It seems a huge undertaking for one person to meet with and guide 90 students each semester. Students also voiced concern that a faculty member without a PhD may not be able to give the same guidance that a PhD faculty would.

Recommendations

- Review the advising function to increase the role of faculty in academic advising.
- The review team would also recommend a full review of the undergraduate course offerings. The department has been able to provide a good selection of upper division classes over the last two years. Now would be a good time to put in place a rotation of classes and set out a roadmap to optimize the classes that are available to majors over a 2-year cycle. This would further solidify and possibly enhance the program, while also allowing majors to plan their courses several semesters ahead.
Graduate Programs

Concerns

- The review team was concerned that at present the selection of graduate classes is heavily skewed towards statistics topics. Clearly this means that students who intend to continue on to a career in statistics, or doctoral study in a statistical field are well prepared. Yet there was concern that the present breadth of courses would not give a new teacher a wide view of mathematics topics.
- Also students who continue to a pure mathematics doctoral program would not have the core pure mathematics coursework to prepare them to take comprehensive exams. Instead they would be faced with retaking a master-level curriculum at another institution.
- Faculty expressed concern about offering new graduate classes that might well have small enrollment, and so be cancelled.

Recommendations

- The review team recommends that the department review its graduate course curriculum to organize an equitable balance between topic areas.
- The review team would like to recommend that the administration take into consideration the fine management of the math department's resources, and allow the chair to use his judgment in widening the present graduate class selection, with the understanding that for a course to have a larger enrollment its second time, it must be taught the first time.

Research

Concerns

None

Recommendations (to the Administration)

- The review team is aware of the budget constraints of the present climate, but urges the administration to reward research productivity in the Department in any way possible.
- The review team asks the administration to make clear to the faculty its support for Dr. Li's unchanging leadership role in the new School of Science and Engineering, and that the successful operational structure of the department would not be changed and affected under the new administrative structure.

See Comments Section for Dean's Response

Additional Comments

The Academic Learning Compact for the Mathematics BA is available at the following URL: http://uwf.edu/alc/ALC/Math_Stat_ALC.pdf

The Confirmation of Processes is available at the following URL:
http://uwf.edu/academic/cop/cop_mathematics_12_11_08.pdf

Dean’s Response

I am pleased to accept and respond to the very favorable program review conducted by Tristan Denley (Chair), Nestor Arguesa, and Chandra Prayasga. I am in complete agreement with their overall conclusion that the department is in remarkably good shape. I am very proud of the quality of work and the character that has emerged in the department and pleased that the reviewers mirror my conclusions about the positive features and attendant worries concerning the department's needs.

Innovations in Teaching

I have been quite impressed by the project undertaken by the department to transform the teaching of statistics. The pilot data on this project suggest the goals of cost-cutting and retention have been achieved and I look forward to other courses in General Studies being redesigned similarly to take advantage of what we have learned in the statistics course. I am most grateful for the involvement of the team in this nationally prominent movement. I am also pleased that the department seems open to using software tools and cooperating with the delivery of courses at distance and online.

The department has been among the leaders in CAS for stepping up to the plate to get a hard job done. Our recent budget crunch has only provided more opportunity to demonstrate their largesse. I do not intend to have chronic overload conditions in...
any department in the college and the administration is working hard on ways to reduce this strain. Similarly, the metrics used to determine workload are under consideration. This is challenging because the nature of workload can be dramatically affected by the specific variation of the course (e.g., Illuminate, Tanburg, etc.) and its interaction with the technological expertise of the faculty member. However, I am open to a proposal from the department about how workload should be affected and would work with the chair and the Director of the SSE to implement and maintain a fair and equitable assignment.

With regard to recommendations in the teaching area, I am in favor of a lab fee for the redesigned courses. In fact, such a fee will be implemented as soon as this summer as an example of hybrid courses. We have not determined yet how the fees will be distributed but we will be discussing this matter with CAS Chairs. Although we are getting a new building in which Mathematics & Statistics will be housed, we do not have adequate space to dedicate a lab to redesigned courses in this department. Unfortunately, changing the architectural design of the building to produce one large lab space instead of multiple lab spaces at this point in our process will be cost prohibitive. I sincerely wish the idea had emerged during planning. However, we will be making every effort to reserve lab spaces in the building to support the class appropriately.

Enrollments/New Programs

I am pleased about the growth of the program and the options within it that has made the department's enrollment pattern quite sturdy in the last few years. With regard to concerns about advising, this problem will be the focus of some reform in the college next year rather broadly. I think the faculty need to be reinvigorated about their responsibilities to provide career direction to students but I am not concerned that they can get solid course advice and scheduling input from someone who does not hold a PhD. I think this is a viable model if faculty will embrace the obligation to talk with students about their dreams, not the minutiae of course scheduling. I strongly endorse the 2 year rotation system to deal with greater predictability of courses and ensure fuller classes. This is a good next step in the evolution of enrollment management practices in the department.

Graduate Programs

I am satisfied with the growth of the masters program in numbers but I am concerned about the shortcomings of the program noted by the review team. It is unclear to me why statistics would be the predominant feature of the graduate program when a broader based masters might produce a better range for all participants. My preference would be for the department to address the feedback about quality concerns in the masters by retooling the existing curriculum rather than trying to develop separate tracks since we simply don't have the numbers of students that would support such specialization. The department members are right to be concerned that planning for small numbers would lead to course cancellation and quite a bit of frustration for all concerned. There is already some latitude about tolerating small class sizes for new programs but I would not want the department to construe that strategy as endorsement of establishing classes that show little promise of meeting minimum course numbers set by the provost.

Research

I agree that the production of scholarship from the department is laudatory. Unfortunately, in the dreadful budget times we are facing, there is no discretionary funding to reward top performers. I regret this situation, but clearly don't have much control in such a lean year. I certainly will take into account the history of the department in cooperating with our course delivery needs as we refine strategies about new hires.

Administration

I want to reassure the department that I have no intention of fusing with a department structure that works as well as this one does. I think Dr. Li's management of the department has been superb. The new structure of the SSE will not impinge on his ability to do that work or to represent the department's needs to the Dean in any way. The advantage of the new structure is that the Director of the SSE can serve as a galvanizer for STEM initiatives on campus and help coordinate more fluid boundaries across relevant science groups. The other units in the school (physics, engineering) are small enough that a full blown chair is not required to accomplish our goals. However, the enormous contributions made by the Department of Mathematics and Statistics through General Studies puts them in a different echelon. The fact that they maintain a graduate program as well suggests that a Chair must remain in place to address their ongoing concerns. Fortunately, the relationship between Dr. Li and Dr. Ter Haar, the Director of SSE, is one of great respect and mutual support. I do not anticipate difficulties as a consequence. If anything, I think opportunities for the department should be enriched by this new arrangement as greater numbers of administrators will be looking out for the department's best interests.

Conclusion

I want to thank both the department's review team and the department members themselves for such a positive and well deserved review. I am proud of this department not just for the high quality teaching, research, and service contributions, but because they have so conscientiously pursued an approach that celebrates individual differences and demonstrates how much can be accomplished when respect for these differences is the foundation for a solid educational program. We have much to learn from them.