

Academic Program Review 2010
Executive Summary
Department of Mathematics
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The Department of Mathematics was included in the ninth cycle of academic program review for the 2010-2011 academic year. Included in the program review process was the composition of a self-study document based on faculty analysis and a visitation by an external reviewer. Dr. Richard Gillman served as the external reviewer and read the self-study, interviewed faculty, staff, administration, and students, and submitted a separate analysis.

The departmental self-study completed by the faculty and staff is the major document for this program review. This document reveals the strengths and challenges through the departmental perspective and reflects the commitment of the department for self-analysis, reflection, and evaluation. The institutional expectation is that the department and college administration will use the self-study document, the dean's report, and an executive summary as guides for the next several academic years as the department addresses the recommendations. Since this process requires an enormous amount of time and effort from all participants, it is necessary to ensure that the results are used to inform decisions and future courses of actions. Therefore, the department chair, and Dean of the College of the Sciences will be expected to provide a summary of activities undertaken during the 2011-2012 academic year as a result of the program review.

It should be noted that Dean Johnson's analysis noted the department's strengths and provided recommendations. The following administrative executive summary is provided to add value to the process and provide additional depth and context for the department and the Dean to celebrate commendations and in addressing noted challenges and recommendations. The department chair and college administration will be expected to provide a summary of activities undertaken since the 2010-2011 academic year as a result of the program review. This report will be due to the provost by October 1, 2012.

Summary Analysis

The self-study document as submitted by the Department of Mathematics was informative and provided the documentation necessary to assess departmental and programmatic strengths and challenges. The department should be commended for the quality of the report and the effort expended in completing it. It can also be determined from reading the self-study report, the observations of the reviewer, and the summary comments of the college dean that the department has several strengths and challenges. The purpose of this summary is to emphasize some of the points made by Dean Johnson and the reviewer and provide additional commentary and focus to areas they may not have addressed in their analysis.

1. Department and Program Goals - The Mathematics department is one of thirteen in the College of the Sciences. It offers four majors, three minors, and one graduate degree. The department also contributes courses to the general education program and offers courses to support other majors. The department has identified 10 key goals and several associated

outcomes by which it guides its activities and resources. Specific goals were also identified per program and for general education. Department goals are focused around the areas of effective teaching, scholarship, human resource management, internal and external collaboration and partnerships, and student recruitment and career placement. While departmental goals were related directly to college and university goals and while most were written to be assessable, goals had no levels of expected achievement. This is a major problem since there is little information by which to judge goal attainment. This will need to be an area of emphasis and improvement within the next year. The department also needs to engage in discussion and define what activities, initiatives, processes it needs to develop and implement to achieve all department goals. None were listed in the program review. Without purposefully planning, developing, and implementing designed activities, the likelihood of goal achievement is lessened. A summary was provided in terms of goal success, although the lack of expected achievement made interpretation difficult. Some meaningful results included:

- SEOIs of department are generally lower than College and University averages
- Faculty (n=17) produced significant scholarly activity (141 talks, 36 peer reviewed articles, 9 books or book chapters, 18 funded grants)
- Classroom arrangement does not tend to fit program requirements and needs
- Faculty offices are spread out between three building and range in terms of usability and aesthetics
- Self-support revenue has been primarily used for faculty travel as related to scholarship.
- Five new tenure track faculty have been hired the last five years
- Student recruitment efforts are low to non-existent while the establishment and identification of various scholarships has increased
- There is little evidence of alumni data and tracking, particularly as it relates to alumni entrance to graduate school and employment
- The department has developed student learning assessment plans and reports for major performance, while little leadership/effort has been expended towards measuring and enhancing campus level quantitative literacy and reasoning
- Curriculum has been modified as based on student learning assessment results

In terms of these findings, the department is encouraged to examine SEOI results closer to determine trends. Are some classes consistently rated lower than others regardless of faculty? Are some faculty rated lower than others? This type of information is helpful in improving courses and in knowing which faculty may need development opportunities or mentoring. Also, the department needs to engage in budgeting discussion that considers all sources of revenue/state budget and compares it to expense and need. For example, the use of summer revenue for enhanced faculty travel is positive. However, the department has other competing needs (equipment, software licenses, etc.). Since faculty are provided reasonable travel stipends already, the department may decide to use its revenue for these other areas. The point is that further discussion and a budgeting plan is needed that ties goals to revenue sources. This will assist the department in better matching what it hopes to achieve with what it reasonably funds. In addition, the department must expend additional effort in recruitment particularly for the actuarial science and mathematics education programs. The department needs to develop a

recruitment plan with admissions and public relations. This plan should include efforts meant to improve web related and print materials that might attract interested students. Also, the department needs to provide campus-wide leadership in measuring and enhancing quantitative literacy and reasoning. While an area of institutional expectation within general education, the department has been absent in terms of leadership for the past several years. This needs to change in order to enhance student academic achievement and improve this important skill.

2. Students – Student accomplishments were well documented in the review. Clearly, undergraduate research through conferences and SOURCE is a major component of department efforts to enhance student academic enhancement. Although it exists, the department needs to provide more detailed documentation and explanation of specific student services and activities (e.g., clubs) it provides to support student success (e.g., advising, tutoring, web resources, etc.).
3. Facilities & Equipment – There is compelling commentary from the department regarding the need to consolidate and enhance faculty office space, improve communal spaces, and provide for secure storage spaces. Reference was made to a departmental space audit completed in 2005 where it was estimated that there was a need for approximately 50% more total space. These issues should be addressed through continued planning within the college and university facility planning processes. A plan needs to be developed by the college and department in conjunction with facilities within the year that outlines space improvements to improve working conditions and student learning. Changes in classroom seating (tables vs individual student desks) should be possible while faculty office arrangement and organization may take longer to consolidate.
4. Library and Technological Resources – The loss of library resources was noted as was the increased congestion of the Bouillon computer lab. Mention was also made of the adequacy of computer software, although it was unclear as to the level of issue or need as based on the review.
5. Other – The reviewer and Dean noted several departmental challenges related to the systematizing of processes, initiatives, and approaches. For example, student engagement in undergraduate research is a departmental strength. However, a plan to ensure all students have exposure and opportunities to engage in these types of experiences does not exist. The same can be said in terms of technology integration and skills development by students. Also, defined plans/methods to achieve departmental, program, and student learning outcomes is needed. The only way to develop and achieve such plans and processes is through regular departmental and related committee meetings and work. The newly elected chair is strongly encouraged to engage the department in such regular meetings and activities.

Overall, the department has been successful in several areas during the past five years. Some of these areas include student and faculty scholarship, student learning outcomes measurement and results, and curriculum reform and development. The most pressing needs of the department at this point are related to space, strategic and budget planning, and leadership for the university in terms of quantitative literacy and reasoning. These areas have particular meaning and importance to the long-term sustainability of the department, college, and university.