1. What are the program's educational goals?

- The major goal of our program is to give students seeking degrees in mathematics a broad understanding of the field of mathematics.
- Students should have the ability to read and understand technical mathematical writing, including proofs, in such areas as algebra and analysis.
- Students should have the ability to communicate mathematical ideas, both in written and verbal form, to others.
- Students should be able to model complex problem situations in equivalent mathematical form and, once a solution is found, be able to translate the solution into the original problem context.
- Students should be able to use appropriate technology to explore and solve mathematical problems.
- Students should be able to apply mathematical knowledge in non-academic contexts.

Note: the above educational goals are currently being revised. One fundamental change is that the word “mathematics” will be replaced with the phrase “mathematical sciences” to acknowledge that the department’s educational goals span the fields of classical pure mathematics, applied mathematics, probability and statistics. This is more than just a change in terminology, as the revised goals and indicators will reflect.

2. What assessment techniques did the program use?

The main instrument of assessment has been the portfolios, which contain representative student work for all 400 level Mathematical Sciences courses. Representative work for each course is chosen by the instructor and may include such items as final examinations, homework assignments, projects, papers, etc. Independent student research projects may also be included in the relevant area portfolios.

We also track student achievement on the professional actuarial exams, the Putnam Exam, the Indiana Section Mathematics Competition, and the Mathematical Contest in Modeling. In addition, we collect GRE scores when available and keep records of student success in gaining admission to graduate school, including whether they are given financial support.

A survey of all students in mathematical sciences courses at the 200 level and above was carried out during the fall semester of 2010.
Also, an informal faculty inventory is part of the annual departmental teaching retreat, as well as through continuing discussion in the departmental curriculum committee and department faculty meetings.

3. What has your program done with assessment information this year? (e.g. communicated results to faculty, staff, alumni and students, made changes in the curriculum, made changes in the budget, added new courses. . .)

a. We communicated the results of the student survey to faculty and considered changes in scheduling that would better meet student needs. In response to student requests, we scheduled the course Math-M435 Differential Geometry for Fall 2011.

b. Through student advising, we identified a need for a Common Core Natural World course in mathematics at the 300 level. Math-N390, Mathematics as a Human Endeavor has been approved by the Senate Curriculum Committee and is now in the final stages of remonstrance. If approved, it will replace Math-M380, History of Mathematics in our offerings.

4. Does your academic program have courses which fulfill General Education requirements? What general education goals does the course address? How do you assess whether these goals have been met?

courses: K300, K310, M111, M118, M119, M125 & M126, M115, M215, M216

The following goals of general education (see page 34 in the 2009-2010 IUSB Bulletin) that are addressed in these courses include the following. Students in courses in the mathematical sciences learn to

· Retrieve, evaluate, and use information effectively
· Write clearly and correctly, and analyze written texts in the mathematical sciences
· Understand, construct and analyze quantitative arguments
· Understand, construct and analyze arguments presented in verbal and visual form
· Understand the power and purpose of a scientific view of the natural world

More specifically, in courses in the mathematical sciences, students construct conceptual knowledge of mathematics, and learn general processes and procedures that apply conceptual knowledge to solve a variety of problems in the mathematical sciences, the health sciences, the natural sciences, the social sciences and business. Techniques of reasoning include methods of symbolic manipulation, visual and graphical methods, as well as written and oral communication of mathematical ideas.

Attention to meeting the specified general education goals are an intrinsic part of the courses and are assessed through combinations of written homework, quizzes and tests, projects and group work. We are implementing a new procedure with the cooperation of course coordinators for monitoring and analyzing grade distributions and success rates in these courses.
5. After reflecting on assessment activities in your unit, as a result of assessment what are two issues you would like to address?

* We are in the process of revising the department assessment plan this year, developing a more complete and detailed set of goals and indicators, as well as a plan for long term assessment of progress in meeting the goals.

* We will continue to review the curriculum for our three bachelors degree programs to match offerings to student needs. In particular, due to a faculty discussion of student difficulties with the transition to the proof-based courses, we may change the nature of the course that is used as a pre-requisite.