ACADEMIC PROGRAM ASSESSMENT OF STUDENT LEARNING
Phase 1 Report, 2010-11

College: Arts and Sciences
Department: Mathematical Sciences

Program: Undergraduate Major
Degree Granted: B.S.

If multiple programs are included, please list additional programs here (graduate & undergraduate must be separate):

Check one:  Undergraduate  X  Graduate

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Check one:  Fall Implementation Schedule  X  Spring Implementation Schedule

External Accrediting Agency (if applicable)

Date of last accreditation site visit
Date of next accreditation site visit

Please attach copies of any/each rubric to be used.

Briefly Summarize your Assessment Implementation & Findings from 2009-10. How will this affect what you do for the 2010-11 academic year?

Though our findings met the standards we originally set, our assessment implementation for 2009-10 was deficient in that it involved no direct measures of assessment. To remedy this shortcoming, we plan to track our majors in the Applied Emphasis degree plan. There is a natural progression of courses in this plan: Math 392, Introduction to Ordinary Differential Equations, and Math 472, Fourier Series and Boundary Value Problems. We will implement a direct measure in these courses by having all the students in each course solve a “standard” problem on the final exam that any student at that particular level should be able to clearly articulate the solution.

NMSU Mission: New Mexico State University is the state’s land-grant university, serving the educational needs of New Mexico’s diverse population through comprehensive programs of education, research, extension education, and public service.

Academic Program Mission: The Department of Mathematical Sciences provides core education in mathematics and statistics that prepares graduate and undergraduate students to be knowledgeable and responsible citizens of the world. It does this by conducting research, scholarship, and teaching, including teaching service courses for other programs, to fulfill the land grant mission of the university.

Academic Program Goals: The program strives to produce students with a strong mathematical background, who are able to use mathematics to solve a wide range of problems and to communicate effectively their work, allowing them to pursue a graduate degree in mathematics, graduate work in related fields, teach mathematics, or employ their mathematical expertise in business and industry.
**Academic Program Objectives:** Students who complete the B.S. in Mathematics will have a broad knowledge of mathematical ideas sufficient to allow them to pursue careers in a wide range of areas, including mathematics, science, engineering, and business. They will be able to form clear and complete mathematical arguments. They will be able to communicate mathematics competently through both written and oral communication.

**Direct Student Learning Outcome (1 is required and recommended):** Students who complete the B.S. in Mathematics will be able to clearly express a written mathematical argument.

What are the specific components you will be looking for in this outcome? (Components are the particular pieces that together create success on a given outcome. For example the key components of a speech could include content, organization, eye contact and delivery. They could also include appropriate dress, appropriate use of professional language, use of visual aids and attention getter. Faculty should decide on which components that will be evaluated. This provides consistency in expectation and evaluation.)

Clarity of written expression, completeness of a mathematical argument, appropriate use of logic.

**Indirect Student Learning Outcome (Optional):**

What evidence will be used to assess the identified direct student learning outcome? (This could be a completed project, essay, presentation, solution to problem, etc. – something that students have produced.)

Our plan is to ask the instructors of Math 392 and Math 472 to add a specific problem to their final exams. The departmental Majors and Minors Committee will provide the problem.

**Data Collection:**

Which students will provide the evidence? Math majors enrolled in the courses Math 392 and Math 472.

Who will collect the evidence? The instructors of the individual classes.

When? During the final exam.

How? The Majors and Minors Committee will provide the problem to the individual instructors, who in turn will return each student’s solution to the Committee.

How and by whom will the evidence be quantified? The Majors and Minors Committee will use the attached rubric to quantify the success of each student’s solution to the problem.

What are the defined levels of performance? (eg. Not evident, Inconsistent, Competent, Accomplished)

The test question will be graded on a scale of 1 to 10. Our defined levels are as follows:

8-10: strongly evident
6-7: evident
4-5: barely evident
0-3: not evident

What level of performance is considered evidence that a student has learned the intended outcome? (eg. “Competent” – see above)

We regard a score of 6 or higher as such evidence of learning in Math 392 and 7 or higher as evidence for Math 472.
What number or percentage of students obtaining the desired level of performance is sufficient to determine the program is providing appropriate and effective learning experiences to achieve program expectations? (Benchmark)

If 2/3 of students earn a score of 6 or higher on the problem for Math 392, then this is a satisfactory level of performance sufficient to determine that the program is effective in meeting our expectations; for Math 472, we want 2/3 of the students to earn 7 or higher.

With whom will findings of the assessment be shared?

When?

How?

What opportunities for discussion and decision-making will be realized?

The Majors and Minors Committee, together with the Department Head, will first discuss the assessment findings, and consider initial recommendations program change. The committee will then discuss the findings in a department meeting near the beginning of the fall semester to allow all faculty to be aware of the findings and to make suggestions for program revision.