Our findings from 2008-09 indicate that we need to take some measures to improve student performance. Perhaps the most critical place to work is in Math 279, Introduction to Finite Mathematics. For many years this course served both mathematics and computer science majors. In the past few years, computer science students have stopped taking the course, taking instead a course (Math/CS 278) we created for them. This allows us to focus all of our attention in Math 279 on mathematics majors. However, we have not redesigned the course since creating Math 278. The reason Math 279 is so critical is that it is the first time students are introduced to abstract mathematical reasoning, which is the key to higher-level mathematics, and thus to upper division mathematics courses. Members of the department are starting to work on revising the content of Math 279.

Also key to the mathematics major is Math 331 and Math 332. These courses form the core of the upper division component of the major. There has been some dissatisfaction among instructors about student performance in these courses. While we expect student performance to improve from changes in Math 279, we will pay close attention to these courses to see if changes in Math 279 are sufficient to improve performance in 331 and 332, or if we need to revise those courses also.

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.)

Questionnaires will be given to instructors of undergraduate courses that ask faculty to directly address student aptitude of the learning outcome listed above. Faculty will rate numerically students’ aptitude.

**DATA COLLECTION:**

*Which students will provide the evidence?* All upper division math majors

*Who will collect the evidence?*

*When?* At the end of each semester.

*How?* Office staff will distribute questionnaires to faculty, who will then provide the evidence and return it back to the staff. They will collect it and give it to the head of the department’s Majors and Minors Committee.

*How and by whom will the evidence be quantified?* The faculty on the Majors and Minors Committee will do this.

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

We use a four-point scale. They translate to:

4 = strongly evident  
3 = evident  
2 = barely evident  
1 = not evident

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

We feel that if 2/3 of students are assessed a score of 3 or 4 on the questionnaire, then this is a satisfactory level of performance sufficient to determine that the program is effective in meeting our expectations.

With whom will findings of the assessment be shared?

When?

How?

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.

What opportunities for discussion and decision-making will be realized? Since we will discuss the findings in a departmental faculty meeting, all faculty will have the opportunity to discuss outcomes and make suggestions on new strategies. The department as a whole, led by the Majors and Minors Committee, will decide on what course to take.