

# *Department of Mathematical Sciences*

## Assessment Plan

### **1. Goals for student learning at the program level**

The overall mission of the mathematics majors is to prepare students for the lifelong study and use of mathematics. As for the specific educational goals of the program, we expect our graduates to be able to:

1. Organize and analyze data and information and synthesize problem solutions using appropriate mathematical tools;
2. Formulate conjectures, find counterexamples and state and prove theorems carefully;
3. Learn mathematics outside of the classroom through self-study or group-study, including the ability to refresh knowledge;
4. Communicate mathematics effectively both orally and in writing;
5. Use technology to aid in the above.

### **2. Descriptions of methods demonstrating that students have learned.**

- Our formal assessment of the program's goals is done through the courses MATH 405 Senior Seminar and MAED 410 Seminar: Mathematics for High School Teachers. Each mathematics major is required to take one of these two capstone courses. Both of these courses require each student to give two presentations, one on a problem assigned by the instructor, and the other on a topic (usually a journal article) of the student's choice. These presentations are done orally, making use of the blackboard, overhead projector, and/or computer; during them, faculty members and the other students in the class ask questions frequently. In addition, each student submits written versions of their presentations, which become a part of the student's permanent file. Each presentation is rated by those faculty in attendance (see attachment). We end these capstone courses by asking the students to tell us how the program did and did not meet their needs. The students form a focus group to discuss the programs. We plan to add a written survey at this point.
- The Mathematical Sciences faculty closely monitors each student's progress through the program. We often share with each other results on quizzes and examinations, particular when a question tests the students' knowledge of some fundamental concept. We call these "mini-assessments".
- All mathematics education majors go through a yearly portfolio screening. Arrogate data from this assessment are used for program improvement.

- As we notice problems we sometimes design an assessment to look at those areas, try making a change and then try the assessment again. We use this to see if there was in fact some improvement.

Information gathered in this way is reviewed at the end of the academic year by those instructors who taught the courses during that year. The Department meets after final exams each spring to review the findings, look for evidence that the goals are being met, or for indications of problems. The Department then looks for ways to initiate changes to improve the program.

In addition to the above practices, we would like to develop procedures for keeping better track of our alumni, and for surveying them on a regular basis as to what they perceive to be the strengths and weaknesses of the program.

### **3. Time lines for assessment practice**

Results from MATH 405 and MAED 410, and other assessments performed during the year, will be reviewed at the end of the academic year by those instructors who taught the courses during that year. The Department meets after final exams each spring to review the findings, look for evidence that the goals are being met, or for indications of problems. The Department then looks for ways to initiate changes to improve the program.

### **4. Assignments of responsibility for carrying out the assessment plan**

The instructors for MATH 405 and MAED 410 will compile their results and present it to the Department during our assessment meeting during the week after the spring final exams. The Chair will report the findings from the department meeting.

### **5. Record-keeping to allow access to student learning data by all institutional units relevant to their area for use to improve their effectiveness, programs and services**

The data and reports are kept in the department chair's office and where feasible on the Mathematical Science Department Angel site.

### **6. *\*\*This is the most important:* Processes for using assessment results to improve learning and evidence of change**

Results from assessments performed during the year, will be reviewed at the end of the academic year by those instructors who taught the courses during that year. The Department meets after final exams each spring to review the findings, look for evidence that the goals are being met, or for indications of problems. The Department then looks for ways to initiate changes to improve the program. Often we will set up a committee to study the problem in detail and propose changes during the following academic year.

#### Reference

*CUPM Guidelines for Assessment of Student Learning*, Mathematical Association of America, Washington, D.C., 2005.

# MATH 405 – Senior Seminar

## Assessment of Oral Presentation

Name: \_\_\_\_\_ Semester: \_\_\_\_\_ Year: \_\_\_\_\_

Major:        Math/Adol. Ed.        Math/Mid. Ed.        Math/Liberal Arts

Title: \_\_\_\_\_ First \_\_\_\_\_ or Second \_\_\_\_\_ Presentation

For each item, please circle the number between the bi-polar terms that best indicates the presenter's level of accomplishment on that item. Write "NA" if the item does not apply, and use the space between items for any brief written comments.

1. The problem or purpose of the article was stated clearly.  
Unclear    1        2        3        4        5        Clear
2. The presentation was well prepared.  
Unprepared        1        2        3        4        5        Well prepared
3. The presentation was well organized.  
Poorly organized    1        2        3        4        5        Well organized
4. The background material and/or examples provided were relevant to the problem/article.  
Irrelevant    1        2        3        4        5        Relevant
5. The mathematics used in the presentation was correct.  
Incorrect    1        2        3        4        5        Correct
6. The logical development was clear and the proofs were correct.  
Unclear/Incorrect        1        2        3        4        5        Clear/Correct
7. The speaker showed an understanding of the definitions and terms used in the presentation.  
Lack of understanding    1        2        3        4        5        Understanding
8. The speaker showed an understanding of the theorems used in the presentation.  
Lack of understanding    1        2        3        4        5        Understanding

9. The speaker used mathematical notation correctly and appropriately.  
Incorrect/Inappropriate    1    2    3    4    5    Correct/Appropriate

10. Technology was used appropriately to enhance the audience's understanding.  
Inappropriate    1    2    3    4    5    Appropriate

11. Visual aids were used appropriately.  
Inappropriate    1    2    3    4    5    Appropriate

12. The speaker's use of voice (clarity, appropriate variation in pitch/rate/intensity, etc.) enhanced the presentation and helped maintain audience interest.  
Poorly done    1    2    3    4    5    Well done

13. The speaker maintained consistent eye contact with the audience.  
Poorly done    1    2    3    4    5    Well done

14. The speaker involved the audience to an appropriate degree.  
Poorly done    1    2    3    4    5    Well done

15. The speaker's movements, gestures, appearance, and use of the blackboard and/or overhead projector contributed to the effectiveness of the presentation.  
Poorly done    1    2    3    4    5    Well done

16. The speaker used proper grammar, spelling, and pronunciation.  
Poorly done    1    2    3    4    5    Well done

The following items are to be completed by the instructor:

17. The presenter chose a problem/article and scheduled his/her presentation in a timely manner.  
Untimely    1    2    3    4    5    Timely

18. The presenter's consultation with faculty was appropriate.  
Inappropriate    1    2    3    4    5    Appropriate

Overall grade for the presentation, including the written portion:

F    D-    D    D+    C-    C    C+    B-    B    B+    A-    A