

**ASSESSMENT OF LEARNING OUTCOMES
IN THE MATHEMATICS MAJOR
PLAN AND PRACTICE (2011-2012)
DEPARTMENT OF MATHEMATICS
SUNY Potsdam
POTSDAM, NY 13676**

A. PHILOSOPHY AND MISSION

As stated in our Departmental *Position Paper* (Appendix 1) our philosophy is:

The program in Mathematics at Potsdam is based on the premise that the study of pure Mathematics can be undertaken successfully by a large number of students if they are provided with a supportive environment. This includes careful and considerate teaching by a well-trained and dedicated faculty, continual encouragement, successful role models, enough success to develop self esteem, enough time to develop intellectually, recognition of their achievement, and the belief that the study is a worthwhile endeavor. We are dedicated to providing this supportive environment not only to our majors but to all of our students.

This philosophy is the foundation upon which we build our service to the Mission of the College (Appendix 2). Primarily we carry out the College's Mission through a strong Mathematics major and minor that serves the needs of the students as well as creating opportunities for them to excel in mathematics. We provide a select group of talented students with the opportunity for extraordinary achievement through the four-year BA/MA program. Additionally we offer courses that support the college's general education program, the secondary education certification program in mathematics, the elementary education certification program, the elementary education concentration in mathematics, the 3-2 engineering program with Clarkson University, and cognates for various other disciplines.

More information on the educational philosophy and mission of the Department of Mathematics at Potsdam may be found in our *Position Paper* (Appendix 1) and in *Academic Advising for Mathematics Majors* (Appendix 3).

B. INTENDED EDUCATIONAL OUTCOMES

1. [PROOF] Graduates will know what constitutes a proof, be able to understand and construct proofs, and be able to give counterexamples where appropriate.
2. [COMMUNICATION] Graduates will use the language of mathematics correctly to communicate both orally and in writing.
3. [INDEPENDENCE] Graduates will be able to learn mathematics independently and read mathematical literature with understanding.
4. [ATTITUDE] Graduates will have a positive attitude towards mathematics and approach challenging problems with enthusiasm.
5. [KNOWLEDGE] Graduates of the mathematics program will have a fundamental knowledge of the advanced areas of Algebra and Analysis.

C. MEANS OF PROGRAM ASSESSMENT

The measurements of Assessment, shall be reported to the department Assessment Coordinator, which will be the department chair, or their designee.

1. Direct Assessment

i) Written assessment

In each of our part I classes, Math 375, Math 423 (or Math 671) and Math 451(or Math 691) the instructor will measure our students' achievement towards two of their course learning goals. These goals and the measurement tool should be chosen to aid the department in understanding our students' progress toward PROOF, COMMUNICATION and KNOWLEDGE. The instructor may use one or two quizzes, questions on a test, or some other appropriate measurement of their design. However, the measurement should be done in class and on an individual basis. The results will be scored using the rubric in Appendix 4 and submitted to the department assessment coordinator. For those BA/MA students who are enrolled in Math 423 (Math 451), but attending only Math 671 (691), the instructor of Math 671 (691) will be responsible for assessing their achievement.

ii) Oral Assessment

In Math 460 (or Math 698), the student will make an oral presentation to help assess COMMUNICATION. The results will be scored using the rubric in Appendix 5 and submitted to the department assessment coordinator.

iii) Attitudinal Assessment

In Math 460 (or Math 698), the students will undertake a reflective writing assignment to help assess their attitude towards learning and doing mathematics and thus progress towards ATTITUDE. The students' responses will be shared with the assessment coordinator who will summarize them in his annual report.

2. Indirect Assessment

There is no single method of assessment we know of which will tell us, in a short period of time, with validity and certainty, how well we accomplish our goals. We do take various less tangible steps to learn how our students are doing as they progress through our program as well as after they have completed it. These indirectly contribute to assessment of our Intended Learning Outcomes and our mission. We describe some of these below.

i) Advising

All of our majors have a faculty advisor who monitors their progress through the major. Most students find some faculty member with whom they develop a mentoring relationship - in general this mentor is the student's advisor. Primarily this helps us assess ATTITUDE.

ii) Analysis of Ability and Achievement

We study our students' achievements as indicated by their college GPA in relation to their high school average and SAT scores. This supports assessment of PROOF, COMMUNICATION and KNOWLEDGE.

In the spring semester of each academic year we produce reports entitled Analysis of Ability and Achievement for each class (Fr, So, Jr, Sr) of our majors. The analysis for the Junior and Senior classes is included in the annual Newsletter (see Newsletters 2000-2007,).

iii) Enrollment and Retention

Each year we consider the total number of majors, minors and concentrators in mathematics. Analysis of trends in this data is very important for our continued success.

Primarily this supports assessment of our mission to have many students successfully study pure mathematics.

iv) Honors and Awards earned by our students

We know of the quality of our major by the high academic achievement of our students as evidenced by the honors and awards they receive. This speaks to all our intended learning outcomes and our mission in general.

In the Awards section of our Newsletter, we list the names of all our students who receive honors and awards based on their high academic achievement. Such honors include being on the President's List for at least one semester during the year, being a Presidential Scholar, being a Departmental Scholar, being a Pi Mu Epsilon inductee or graduating with honors.

v) Job and Education Offers to our graduates

The jobs our graduates are offered and the graduate schools into which they are accepted are a good indication of the quality of our major. Education offers are a good assessment of all our intended educational outcomes while job offers primarily assess COMMUNICATION. Our Newsletter contains information about our graduates in the job market and in the pursuit of graduate degrees. This information may be found in the Education and Job Offers section as well as the Alumni section.

vi) Alumni Feedback and Support

We maintain good contacts with our many alumni via the Newsletter which is now available on-line as well as in hard copy by request. Many of our alumni complete the Request for Information form which is included in every Newsletter or can be completed on-line. The information and comments we receive give us a good impression of the job we do with our students, and are shared with our alumni in the next Newsletter. Our alumni also visit and share their thoughts with us and our students. The level of support we receive from our alumni also tells us how we are doing. Our alumni support us with their generous contributions to our Annual Fund. This helps with assessment of INDEPENDENCE and ATTITUDE.

vii) NYS Content Specialty Test

Each year we consider the results of the Potsdam education students on the NYS content specialty test. The content on the test concerns the school mathematics they will teach in

future. Although it does not directly concern college mathematics and is only taken by about half of our students it still sheds some light on our success with COMMUNICATION and INDEPENDENCE.

3. Report to the Department

Each fall semester, the Chair shall call a special meeting of the department to discuss our progress towards achieving our Intended Educational Outcomes. One week prior to this meeting, the Assessment Coordinator will distribute a written report of the results of our Direct and Indirect Assessments in the past year. At the meeting, faculty will have an opportunity to discuss this report and make suggestions for further action, if necessary.

D. APPENDICES

- 1) Department Position Paper, February 2002
- 2) Mission of the College
- 3) Academic Advising/Mathematics Majors/Fall 1997
- 4) Sample Problems, Rubric and Reporting form for Written Assessment
- 5) Sample Topics, Rubric and Reporting form for Oral Assessment
- 6) Sample Assignment and Reporting Form for Attitudinal Assessment

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