

Proposal for Outcomes-Based Assessment of the Graduate Program

Programmatic Goals

Listed below are the goals for graduate student success.

- Goal 1:** Students will develop an in-depth understanding in their emphasis through selection of coursework to satisfy the degree program.
- Goal 2:** Students will be able to effectively communicate mathematical ideas by using written and oral skills, as well as technological tools.
- Goal 3:** Students will develop an appreciation for their emphases both as a discipline and as a tool for solving problems.
- Goal 4:** Students will be able to read, analyze and write mathematical proofs.
- Goal 5:** Upon graduation successful students will be ready for Ph.D. programs in mathematics, statistics, math education and other related areas – including post-secondary teaching, industry or public agencies.
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Outcomes-Based Assessment of the Graduate Program

The Graduate Committee plans to implement the following outcomes-based assessment processes for the Graduate Program.

1. A Thematic Approach to Formative Assessment (TAFA)

Each year in the Spring quarter the faculty responsible for instructing 400-600 level courses during the previous three quarters will be asked to participate in formulating themes for the coming academic year. The faculty will meet in the week prior to the first full week of classes to discuss the strengths and weaknesses observed in student work during the previous three quarters. Based on these observations one or two themes will be chosen for the following academic year. The themes are intended to coordinate voluntary effort towards a common goal of enhancing strengths and ameliorating weaknesses observed. To sharpen the discussion in the spring quarter, in the eighth week of each quarter of the academic year a short survey will be distributed to the 400-600 level instructional faculty. This survey is meant to help the faculty focus their thoughts, and as such will not be collected and stored. After the first year of TAFA, a part of the annual meeting will serve to review the outcomes of the previous year's themes. This additional information will be used to help formulate the next year's theme.

Each theme selected during the TAFA Fall meeting will be analyzed against a rubric developed during the same meeting. The rubric will be developed a priori by the faculty teaching the relevant courses, but will be modified accordingly as the academic year progresses to match the changing scope of each selected theme.

Within each course students will be assigned aliases by their instructor. The work of these students will be correlated with their alias, and the evaluation of this work against the rubric will be performed by another instructor. The use of aliases will also allow for the tracking of students through course sequences, such as MAT 511 – MAT 512, as their work pertains to the current TAFE themes. The work to be evaluated may be presented as an embedded question included in a homework assignment or exam question.

TAFE is meant to isolate one or two themes, whether process or content, that we would emphasize in 400-600 level courses during the coming academic year. We anticipate that this method will have a significant payoff for our students.

2. Graduate Exit Survey

- (a) As part of the graduation requirement for the Master's Degree in Mathematics students will be required to fill out an exit survey. This survey will be filled out after the student has completed all other requirements for graduation, hence following the completion of their thesis defense or comprehensive exam. The students will be asked to write about the strengths and weaknesses they have observed in our graduate program. They will also be asked to discuss their future plans of education and employment.

Should the surveys reveal any aspects of the program in need of immediate attention, such as changes needed in scheduling, the number of courses available within a given quarter or the number of available thesis advisors, these items will be brought to the attention of the department and the associated coordinators.

- (b) A second, post-graduate survey will be sent to past graduates one year after completion of the Graduate Program. This survey will ask graduates to write about the strengths and weaknesses of the program from the perspective of their continued education or employment. They will also be asked to discuss what they have done with their degree since graduation.

The Graduate Coordinator will collect and store completed surveys. A qualitative analysis of the surveys will be completed by the Graduate Committee at the end of each academic year. A report summarizing the findings of the committee will be made available to the department for the first departmental meeting of the academic year.

3. Graduate Course Portfolio

A portfolio consists of a collection of papers, exams, projects or other samples of course work from certain courses. In general this will consist of five of the best items created in a particular class. The specific type of work collected for the portfolio will be chosen by the instructor for that course. Portfolios will be created for the following classes:

- MAT 511 – collected every year
- MAT 517, MAT 508/545 – academic years beginning in an odd year
- Selected Math-Education and Statistics courses – academic years beginning in an even year

Instructors will manage their own portfolio, and after portfolios have been collected they will be discussed by the instructors who collected them as a way of evaluating the performance of students as it pertains to their progress through the Graduate Program. Analysis will consist of a half-page statement describing the works collected, what was required of the students for that assignment, what tools the students had available to them, what the students did and why

those items selected for the portfolio represent the best work created in that class. Completed portfolios will be submitted to the Graduate Coordinator.

4. Supplemental Materials

Though not a regularly scheduled part of the assessment process, supplemental materials will be collected as they occur within the program. These items can include projects, presentations and articles completed by graduate students in the Graduate program.

Evaluation of Programmatic Goals

Listed below is the correspondence between programmatic goals and the portions of the assessment plan that evaluates each goal.

Goal 1: This goal will be evaluated by the completion of the degree program.

Goal 2: This goal will be evaluated through the use of portfolios.

Goal 3: This goal will be evaluated through both the exit surveys and the portfolios.

Goal 4: This goal will be evaluated through those portfolios collected for MAT 511.

Goal 5: This goal will be evaluated through the post-graduation survey administered one year after graduation.

Depending on the annual theme of TAFE the assessment tool will evaluate one or more of the goals above.
