

Doctoral Program in Mathematics Education
Outcomes Assessment

Objectives and Outcomes

The objectives of the program are:

1. To prepare students to achieve their professional goals in mathematics education in a collaborative environment
2. To prepare students to conduct research effectively in mathematics education in a collaborative environment
3. To provide leadership and expertise at local, state, national and international levels for the improvement of mathematics education

The outcomes of the program are:

1. To prepare students to achieve their professional goals in mathematics education in a collaborative environment, the program aims to offer a variety of educational experiences that are designed to develop in students:
 - a. a strong foundation in advanced mathematical sciences
 - b. a theoretical foundation in the learning of mathematics for a broad range of age groups and diverse populations
 - c. an applied foundation in the teaching of mathematics to a range of age groups with diverse populations
 - d. a disposition of reflective practitioners as teachers of mathematics, educators of mathematics teachers, and as researchers in mathematics education
 - e. the knowledge and ability to lead and contribute to dialogues and debates about historical, philosophical, psychological, and sociological perspectives in mathematics education: attending meetings, presenting research to peers for critical feedback, participating in working groups, publishing research, etc.
2. To prepare students to conduct research effectively in mathematics education in a collaborative environment, the program aims to offer a variety of educational experiences that are designed to develop in students the ability to:
 - a. read and review the literature in an area of study in such a way that reveals a comprehensive understanding of the literature
 - b. identify research questions/problems that are pertinent to a field of study and provide a focus for making a significant contribution to the field
 - c. gather, organize, analyze, and report data using a conceptual framework appropriate to the research question and the field of study
 - d. interpret research results in a way that adds to the understanding of the field of study and relates the findings to teaching and learning in mathematics
 - e. communicate their research effectively in both written and oral forms using language appropriate to the field of study
 - f. establish a productive research agenda that prepares students to extend their research beyond graduate school

3. To provide leadership and expertise at local, state, national, and international levels for the improvement of mathematics education, the program seeks institutional support that will allow program to:
 - a. attract and admit a larger number of high-quality candidates – state, national, and international – to place more program graduates in research-oriented universities, and to establish a network for continued research in cooperation with these graduates
 - b. encourage and provide resources for faculty to:
 - interact with school systems and school administrators in matters such as designing curricula, teacher development, and research in the schools
 - influence educational policy through interaction with the N.C. Department of Public Instruction, the N.C. General Assembly, and other state and national policy makers
 - participate actively in national and international professional organizations
 - c. prepare students to become educational leaders in mathematics education in their schools (K-16, colleges, and universities), their communities, their states, and their nations
 - d. fully meet the objectives and outcomes of the program, including such goals as providing resources for attracting grants, establishing endowed chairs, hiring faculty to assume more of the duties associated with undergraduate teacher education, providing faculty study leaves, and paying salaries to teaching and research assistants that are nationally competitive

Outcomes Assessment Plan

Data to be collected

Outcome	Data	Source	Collected
1. To prepare students to achieve their professional goals in mathematics education in a collaborative environment	Progress Toward Degree Report (in which students track and reflect upon their professional development)	Students	Annually
2. To prepare students to conduct research effectively in mathematics education in a collaborative environment	Rubrics to be filled out at student's proposal presentation and oral defense (see attached)	Faculty members on student's committee	At each defense
3a. Attract and admit a larger number of high-quality candidates – state, national, and international – to place more program graduates in research-oriented universities, and to establish a network for continued research in cooperation with these graduates	Application statistics; job placement statistics; Graduate Faculty Assessment Reports: joint grants and publishing with previous graduate students	The Graduate School; graduate faculty	Annually
3b. Encourage and provide resources for faculty to: <ul style="list-style-type: none"> interact with school systems and school administrators in matters such as designing curricula, teacher development, and research in the schools influence educational policy through interaction with the N.C. Department of Public Instruction, the N.C. General Assembly, and other state and national policy makers participate actively in national and international professional organizations 	Graduate Faculty Assessment Reports: educational leadership in local schools, policy-making, and professional organizations	Graduate faculty	Annually

3c. Prepare students to become educational leaders in mathematics education in their schools (K-16, colleges, and universities), their communities, their states, and their nations	Alumni surveys	University Planning and Analysis	Annually
3d. Fully meet the objectives and outcomes of the program, including such goals as providing resources for attracting grants, establishing endowed chairs, hiring faculty to take on more of the duties associated with undergraduate teacher education, providing study leaves, and paying salaries to teaching and research assistants that are nationally competitive	Report of achievement of support goals of program	Director of Graduate Program	Biennially

Summary: Data to be collected

- Progress Toward Degree Reports (an annual report in which students track their professional development, including certain kinds of courses taken, workshops and professional meetings attended, papers presented, research published, and a written reflection on their professional development)
- Rubrics to be filled out at student's proposal presentation and oral defense (see attached)
- Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating, reasons for not matriculating);
- Job placement statistics
- Graduate Faculty Assessment Reports: joint grants, publishing with previous graduate students, educational leadership in local schools, policy-making, and professional organizations
- Alumni surveys
- Report of achievement of support goals of program

Summary: When data are to be collected

Data to be collected individually when available for each student

- Rubrics to be filled out at student's proposal presentation and oral defense

Data to be collected annually

- Progress Toward Degree Reports (an annual report in which students track their professional development, including certain kinds of courses taken, workshops and professional meetings attended, papers presented, research published, and a written reflection on their professional development)

- Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating, reasons for not matriculating);
- Job placement statistics
- Graduate Faculty Assessment Reports: joint grants, publishing with previous graduate students, educational leadership in local schools, policy-making, and professional organizations
- Alumni surveys

Data to be collected biennially

- Achievement of faculty hiring goals on compact plan

Eight-year cycle for outcomes assessment

Year	Objective	Data to be Analyzed	Document
1 2003/04		<i>Development of outcomes, measures, and assessment plan</i>	
2 2004/05	1	•Progress Toward Degree Reports (in which students track and reflect upon their professional development)	External review report due 9/1/05
3 2005/06	2	•Rubrics to be filled out at student's proposal presentation and oral defense	
4 2006/07	3	<ul style="list-style-type: none"> •Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating, reasons for not matriculating); •Job placement statistics •Graduate Faculty Assessment Reports: joint grants, publishing with previous graduate students, educational leadership in local schools, policy-making, and professional organizations •Alumni surveys •Report of achievement of support goals of program 	Biennial report submitted to the Graduate School
5 2007/08	1	•Progress Toward Degree Reports (in which students track and reflect upon their professional development)	
6 2008/09	2	• Rubrics to be filled out at student's proposal presentation and oral defense	Biennial report
7 2009/10	3	•Application statistics (number of applicants, percentage of applicants accepted, percentage of accepted candidates matriculating, reasons for not matriculating);	

		<ul style="list-style-type: none"> • Job placement statistics • Graduate Faculty Assessment Reports: joint grants, publishing with previous graduate students, educational leadership in local schools, policy-making, and professional organizations • Alumni surveys • Report of achievement of support goals of program 	
8 2010/11	1	<ul style="list-style-type: none"> • Progress Toward Degree Reports (in which students track and reflect upon their professional development) 	Biennial report

EVALUATION RUBRIC: PRELIMINARY EXAM – PROPOSAL PRESENTATION

Doctoral Candidate: _____

	poor	competent	excellent
• reviews the literature in a way that demonstrates a comprehensive understanding of the research in the area of study			
• identifies research questions or problems pertinent to the field of study, providing a focus for making a significant contribution to the field			
• provides a plan for gathering, organizing, and analyzing data using a conceptual framework appropriate to research question and field of study			
• demonstrates a good understanding of how the research results may contribute to the field of study and to teaching and learning in mathematics			
• communicates proposal effectively and professionally, using language appropriate to the field of study			
• establishes a productive research agenda that could prepare student to extend his or her research beyond graduate school			

EVALUATION RUBRIC: DISSERTATION

Doctoral Candidate: _____

	poor	competent	excellent
• reviews the literature in a way that demonstrates a comprehensive understanding of the research in the area of study			
• identifies research questions or problems pertinent to the field of study, providing a focus for making a significant contribution to the field			
• gathers, organizes, analyzes, and reports data using a conceptual framework appropriate to the research question and the field of study			
• interprets research results in a way that adds to the understanding of field of study and relates findings to teaching and learning in mathematics			
• communicates research effectively in both written and oral forms using language appropriate to the field of study			
• has established a productive research agenda that prepares student to extend his or her research beyond graduate school			