

**DALTON STATE COLLEGE  
COMPREHENSIVE PROGRAM REVIEW**

**Program/Subject Area: B.S. Mathematics with Secondary Certification**  
**Review Period: 2009-2014**

**1. PROGRAM GOAL AND STUDENT LEARNING OUTCOMES**

Program goal statement: The Mathematics BS program will effectively prepare graduates for their future careers in Mathematics Education and provide students with a full foundation of knowledge and skills in mathematics.

Program outcomes:

1. Graduates will express a high rate of satisfaction with the mathematics program.
2. Graduates will have high job or graduate program placement rates.
3. Graduates will have high employer satisfaction rates.
4. 100% of graduates who take the GACE exam will gain certification.

Student learning outcomes:

1. Students will demonstrate an understanding of and ability to construct mathematical proofs.
2. Students will demonstrate an ability to work with axiomatic mathematical structures.
3. Students will demonstrate the ability to communicate using proper mathematical language and notation verbally, graphically and in writing.

## 2. MEASURES OF EFFECTIVENESS

### (a) Five-year enrollment summary by headcount, FTE, & full-time/part-time status

	2009-10	2010-11	2011-12	2012-13	2013-14	% Change
Headcount	0	0	9	23	28	211.1%
FTE	0	0	8.8	24.1	28	218.2%
Full-time	0	0	5	17	20	300%
Part-time	0	0	4	6	8	100%

Analysis and comments:

This program has grown significantly and consistently over the review period in all areas.

### (b) Five-year enrollment summary by gender & race/ethnicity

	2009-10	2010-11	2011-12	2012-13	2013-14	% Change
<b>Gender</b>						
Female	0	0	3	7	14	366.7%
Male	0	0	6	16	14	133.3%
<b>Race/Ethnicity</b>						
American Indian	0	0	0	0	0	
Asian	0	0	1	0	0	
African-American	0	0	0	1	0	
Hispanic	0	0	1	4	3	
White	0	0	3	17	22	633.3%
Multiracial	0	0	0	0	0	
Undeclared	0	0	4	1	3	

Analysis and comments:

The number of female students in the program has increased to the point of enrollment being equally male and female. Although almost all enrolled are White, there has been a slight increase in the Hispanic enrollment though the numbers are still small in comparison.

### (c) Average class size and credit hours

	2009-10	2010-11	2011-12	2012-13	2013-14
Average class size	30.2	28.4	24.5	22.8	23.3
Student credit hours	10046	10419	9239	7808	7350

Analysis and comments:

The average class size has dropped during the review period and can be explained primarily by the fact that the class sizes of upper-level mathematics courses are significantly smaller than 1000- and 2000-level general education mathematics courses.

**(d) Faculty teaching in program**

	2009-10	2010-11	2011-12	2012-13	2013-14
Total Faculty	34	34	32	26	26
Full-time Faculty	16	21	21	20	18
Part-time Faculty	18	13	11	6	8
<b>Gender</b>					
Male	25	26	25	19	17
Female	9	8	7	7	9
<b>Race/Ethnicity</b>					
American Indian/Pacific	0	0	0	0	0
Asian	1	1	1	1	2
African-American	1	1	1	0	0
Hispanic	2	0	0	0	1
White	29	30	28	22	22
Multiracial	0	0	0	0	0
Other	2	2	2	2	1
<b>Tenure Status (full-time)</b>					
Tenured	5	5	6	8	8
On-tenure track	9	10	12	8	8
Non-tenure track	2	3	3	3	2
<b>Rank (full-time)</b>					
Professor	3	3	3	3	4
Associate Professor	3	3	4	4	4
Assistant Professor	7	8	9	8	7
Instructor/Lecturer	2	3	4	3	3
<b>Highest Degree (full-time)</b>					
Doctorate	10	11	13	13	14
Specialist	1	1	0	0	0
Master's	3	4	6	4	2
Bachelor's	1	1	1	1	2
Associate's/Other	0	0	0	0	0

**Analysis and comments:**

The decline in the total number of mathematics faculty during the review period can be explained with the increase in the number of full-time faculty. Obviously, as the number of full-time faculty (who teach a heavier load than part-time faculty) increased, the number of part-time faculty decreased, thereby bringing down the total number of faculty. During the five year evaluation period, the percentage of full-time faculty versus part-time faculty has gone from almost 50/50 in 2009-10 to 69% full-time and 31% part-time in 2013-14. This increase in full-time versus part-time is due to having all upper-level mathematics courses taught only by full-time faculty. While there is currently little gender or racial/ethnic diversity among the faculty, 89% of full-time faculty are either tenured or tenure track, and 78% hold terminal degrees. As the department grows, it should strive to improve diversity within the faculty.

**(e) Percent of classes taught by full-time faculty**

2009-10	2010-11	2011-12	2012-13	2013-14
77.2%	79%	89.9%	93%	91%

Analysis and comments:

The percentage of mathematics classes being taught by full-time faculty has increased since the inception of the program and has remained steady. All upper-level mathematics courses are taught by full-time faculty which should be considered a strength of the program since full-time faculty are likely to be more invested in the program, and all hold terminal degrees in the discipline.

**(f) Number of degrees conferred**

2009-10	2010-11	2011-12	2012-13	2013-14
NA	NA	0	3	1

Analysis and comments:

These graduation numbers are reasonable for a new program and should increase as the program becomes more established.

**(g) Placement rates: Five-year summary of job placement rates, if applicable**

2009-10	2010-11	2011-12	2012-13	2013-14
NA	NA	NA	80%	100%

Analysis and comments:

Eighty percent of the 2012-13 graduates are employed in the teaching field of their content area (math).  
(20% unknown)

The 2013-14 graduate is employed in the teaching field of his content area (math).

Historically, gathering this data is problematic, and it is difficult to obtain accurate and complete information from these former students.

## (h) Summary and evidence of achievement of program outcomes

### Describe the extent to which students have achieved current program outcomes

*Program Outcome 1: Graduates will express a high rate of satisfaction with the mathematics program.*

The results of a graduate survey indicated that 100% of those surveyed were extremely satisfied with the mathematics program and their understanding and knowledge of mathematics and related fields.

*Program Outcome 2: Graduates will have high job or graduate program placement rates.*

The results of a graduate survey indicated that 100% of those responding were enrolled in a graduate program and were employed in their field.

*Program Outcome 3: Graduates will have high employer satisfaction rates.*

Employer Survey Results: Information from this survey is combined and does not separate Early Childhood Education from Secondary graduates. The company that provided the information was dropped in 2012, and the GaPSC decided it would create both the Employer and Alumni Satisfaction surveys. As yet, we have not received any data from them on either. Thus, we have been provided no data since Spring 2012. The percentages below indicate the satisfaction rate on all elements of the survey which was administered up through 2012.

- 2009-2010 Survey = 100%
- 2010-2011 Survey = 100%
- 2011-2012 Survey = 100%
  
- 2012-2013 Survey results are unavailable. The GaPSC is creating new surveys.
- 2013-2014 Survey results are unavailable. The GaPSC is creating new surveys.

Obtaining employer satisfaction rates is extremely problematic.

*Program Outcome 4: 100% of graduates who take the GACE exam will gain certification.*

When the number of students taking the GACE test is low, passing rates for secondary education students are not disaggregated in order to protect the anonymity of individual test takers. However, due to the low number of students who have completed the program to date, we have ancillary evidence that 100% of the graduates who have taken the GACE have gained certification.

## **(i) Summary and evidence of achievement of student learning outcomes**

**Describe the extent to which students have achieved current student learning outcomes in Area F and/or upper-division courses, if applicable. (current year)**

*Student Learning Outcome 1: Students will demonstrate an understanding of and ability to construct mathematical proofs.*

**Math 3101**

An average of 71% of students correctly performed proof by induction.

An average of 71% of students successfully proved an if and only if statement.

An average of 77% of students successfully proved a statement about divisibility.

**Math 3201**

75% of students demonstrated logical reasoning to prove mathematical properties.

75% of students demonstrated the ability to prove or disprove geometric theorems.

92% of students demonstrated the ability to prove theorems or measurements for coordinate geometry.

*Student Learning Outcome 2: Students will demonstrate an ability to work with axiomatic mathematical structures.*

**Math 4101**

82% of students demonstrated mastery of the definition of a group on an assignment.

78% of students demonstrated understanding of subgroup and normal subgroup structure.

77% of students successfully generated permutation groups and cyclic groups.

81% of students successfully worked with group isomorphisms and homomorphisms.

75% of students successfully worked with symmetry from an algebraic perspective.

**Math 4201**

95% of students demonstrated an understanding of integers and their properties.

70% of students demonstrated an understanding of prime numbers.

85% of students demonstrated an understanding of congruences and their related theorems.

80% of students demonstrated an understanding of representations of integers.

85% of students demonstrated an understanding of number theoretic functions.

95% of students demonstrated an understanding of Diophantine equations and their solutions.

*Student Learning Outcome 3: Students will demonstrate the ability to communicate using proper mathematical language and notation verbally, graphically and in writing.*

**Math 3101**

An average of 96% of students correctly answered logic questions.

An average of 71% of students correctly performed proof by induction.

**Math 4101**

72% of students applied group theory to solve problems arising in various branches of mathematics.

**Math 4301**

73% of students demonstrated an ability to use graph theory in real-life applications.

*Student Learning Outcomes 1, 2, 3:*

The results of a graduate survey indicated the following:

100% of those surveyed were satisfied or extremely satisfied with the mathematics program, their understanding of and ability to construct mathematical proofs, their ability to apply mathematics to real world problems using technology when appropriate, their ability to work with axiomatic

mathematical structures, and their ability to communicate using proper mathematical language and notation verbally, graphically and in writing.

#### **(j) Evidence of program viability**

Based on enrollment history, retention rates, degree completion/graduation rates, and other program outcomes, comment on whether continued resources should be devoted to this program. Your comments should consider external factors such as the following: Are your students getting jobs? What is the job outlook for graduates? Are students prepared for the jobs they get? How is the field changing? Are the program faculty members in touch with employers and getting feedback on our students' performance? Do employers see a need for changes in the program?

The job outlook for graduates in the B.S. Mathematics with Secondary Certification is very good. There continues to be a high demand for secondary mathematics teachers both locally and nationwide. The continued job outlook for graduates of the program is good, but obtaining accurate and complete job placement information and graduate school acceptance rates is problematic. Based on a graduate survey, 100% of those responding were enrolled in a graduate program and/or were employed in their field. As further evidence of the program's viability, the required math courses in this program overlap with the requirements of the B.S. Mathematics program (which has a higher enrollment), making the B.S. Mathematics with Secondary Certification program a viable program at Dalton State College.

### **3. USE OF ASSESSMENT RESULTS FOR PROGRAM IMPROVEMENT**

What improvements have occurred since the last program review or assessment?

This program has not previously been reviewed.

### **4. REVIEW OF CURRICULUM**

What changes or revisions have been made to the program, its curriculum, or its student learning outcomes since the last program review or assessment?

This program has not previously been reviewed, but some curriculum changes in the program during the current review period include the following.

Two new courses, MATH 4102 Abstract Algebra II and MATH 4001 History of Mathematics, have been approved.

The Area A requirement for MATH 1113 was revised to read, "Math 2253 may be substituted if the student meets the prerequisites for MATH 2253."

The prerequisite for MATH 3101 was changed from MATH 2255 to MATH 2254.

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## 5. PROGRAM STRENGTHS AND WEAKNESSES

### Strengths:

The math content in the program is very strong and prepares students extremely well for graduate school or employment. The results of a graduate survey indicated that 100% of those surveyed were extremely satisfied with the program, their understanding of and ability to construct mathematical proofs, their ability to apply mathematics to real world problems using technology when appropriate, their ability to work with axiomatic mathematical structures, and their ability to communicate using proper mathematical language and notation verbally, graphically and in writing. Survey results also indicated that 100% of those responding were enrolled in a graduate program and were employed in their field.

Graduates of this program have a 100% pass rate on the GACE test.

Additionally, the program has a dedicated group of high quality faculty members.

### Weaknesses and concerns:

The number of graduates was low and inconsistent during this review period. As the number of students in the program increases in the future, we would expect the number of graduates to increase also.



**6. RECOMMENDATIONS FOR FOLLOW-UP AND/OR ACTION PLANS (if needed)**

Issue/concern:

Obtaining employment placement and satisfaction rates along with graduate school acceptance rates is problematic.

Specific action(s):

Since this type of follow-up is a problem experienced throughout the college, the Academic Leadership Team and the Office of Institutional Research and Planning is investigating the use of the CSO Graduate Placement Survey to follow up with students after graduation for the college as a whole as a centralized reporting system.

The GaPSC is creating both an Employer and Alumni Satisfaction survey.

Expected outcomes:

This new program with its regularly scheduled graduate contact should improve the data collection, giving a more accurate picture of graduates.

Time frame:

Person(s) responsible:


Office on Institutional Research  
GaPSC

Resources needed:

Funds for administering the survey

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Reviewed/Approved by Vice President for Academic Affairs

  
\_\_\_\_\_ Date 8/18/2016