

0. Form NP – New Program Proposal Form

NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): Northwest Missouri State University

Program Title: Elementary Mathematics

Degree/Certificate: Master of Science in Education (MSEd)

Options: _____

Delivery Site(s): Online and ITV

CIP Classification: 13.1311 (Please provide a CIP code)

Implementation Date: Fall 2013

Cooperative Partners: Northwest Missouri State University

_____ University of Central Missouri

_____ Missouri State University

_____ University of Missouri–Columbia

_____ Southeast Missouri State University

Expected Date of First Graduation: 2015

AUTHORIZATION

Douglas Dunham, Provost

Name/Title of Institutional Officer

Signature

Date

Gregory Haddock, Vice Provost

Person to Contact for More Information

(660) 562-1145

Telephone

1. Need (Form SE - Student Enrollment Projections)

Student Demand:

i. Estimated enrollment each year for the first five years for full-time and part-time students (Please complete Form SE.)

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Full-time</i>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<i>Part-time</i>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>
<i>Total</i>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>15</u>

ii. Will enrollment be capped in the future?

With the plan to share the program among five state institutions there is no plan to cap enrollment at this time.

What method(s) or data were used to project student enrollment for this proposed program?

Information shared at the Missouri Council of Teachers of Mathematics conference Nov. 30, 2012 showed there could be 80-100 to begin in Fall 2013, with 15-20 from the Northwest region.

A. Market Demand:

. National, state, regional, or local assessment of labor need for citizens with these skills
The Missouri Department of Elementary and Secondary Education has approved a 24 hour Elementary Mathematics Specialist certification, and five universities (MU, UCM, MS, NW, and SEMO) are developing a collaborative program of courses that we believe will meet the requirements of this EMS certification.

B. Societal Need:

i. General needs which are not directly related to employment
The call to improve student achievement in mathematics is particularly challenging at the elementary level where teachers generally receive limited specialized training in mathematics or mathematics pedagogy. In order to address this demand for highly-trained mathematics teachers who may act as administrators and supervisors of mathematics programs, mathematics coaches, and teachers of mathematics at the elementary level, the Missouri Department of Elementary and Secondary Education has established an advanced certification

1. Need (Form SE - Student Enrollment Projections)

of Elementary Mathematics Specialist. This program is designed to prepare students for this certification by offering in-depth study of grade appropriate mathematics as specified in the Common Core State Standards for Mathematics (2010), supervised application of pedagogy and leadership training.

C. Methodology used to determine "B" and "C" above.

Collaboration and planning among the five institutions over 2-1/2 years.

2. Duplication and Collaboration: (Form CL – Collaborative Programs)

If similar programs currently exist in Missouri, what makes the proposed program necessary and/or distinct from the others at public institutions, area vocational technical schools, and private career schools?

Collaborative program, explained below.

Does delivery of the program involve a collaborative effort with any external institution or organization?

Yes (If yes, please complete Form CL.)

Form CL – Collaborative Programs

Sponsoring Institutions: Northwest Missouri State University

University of Central Missouri

Missouri State University

University of Missouri–Columbia

Southeast Missouri State University

Degree program: MSEd in Elementary Mathematics

Length of agreement: open-ended

1. Which institution(s) will have degree-granting authority?

Each institution will create individual degrees and will have degree-granting authority. The distribution of coursework will be at each institution and also shared via online and ITV instruction.

2. Which institution(s) will have the authority for faculty hiring, course assignment, evaluation, and reappointment decisions?

Each institution will have the authority for faculty hiring. The collaborative consortium will agree to course assignment, but faculty evaluation and reappointment decisions will be at each institution.

3. What agreements exist to ensure that faculty from all participating institutions will be involved in decisions about the curriculum, admissions standards, exit requirements?

Each institution will assign one administrator and two faculty members to an administrative group and a curriculum group, respectively. The curriculum group would

2. Duplication and Collaboration: (Form CL – Collaborative Programs)

make decisions about curriculum content and delivery and make recommendations to each university regarding program admission standards and exit requirements.

4. Which institution(s) will be responsible for academic and student-support services, e.g., registration, advising, library, academic assistance, financial aid, etc.?

Each institution will be responsible for these support services for students enrolled in their programs and courses.

5. What agreements exist to ensure that the academic calendars of the participating institutions have been aligned as needed?

Students will follow the calendar of the course for the home institution in which it is offered.

6. In addition to the information provided by each participating institution regarding Financial Projections (Form FP), please address the following items:

- A. How will tuition rates be determined if they differ among the institutions?

Students will pay the rate of their home university in which they are enrolled, regardless of which university is delivering the course.

- B. Has a formal agreement been developed regarding cost-sharing policies? If yes, please include it as part of the proposal. If no, please summarize the current understanding between all parties and the plans for developing a formal agreement.

There is no need for cost sharing. The students will pay home institution rates for course enrollment.

- C. What arrangements, if any, have been made for exchange of money between participating institutions?

No money will be exchanged. The purpose is that the same cohort of students will end up taking courses from each institution, balancing out the need to level revenue.

7. What commitments have been made by all participants to evaluate the program systematically?

The Curriculum Group plans to meet monthly, as needed, as we get the courses up and running, to evaluate the content, discuss the effectiveness of the delivery methods, and deal with unforeseen issues that may arise with the model. Once the program has run for a complete two-year cycle, the Curriculum Group will meet as needed, but at least twice a year. The Administrative group will determine what needs are there for meetings and at what frequency.

2. Duplication and Collaboration: (Form CL – Collaborative Programs)

8. If one institution wishes to discontinue the program, what agreements exist for terminating the offering?

It is an open-ended agreement. If an institution decides to move from the program the Administrative Group will work with the remaining institutions to determine that the courses thus abandoned would be covered by one of the other institutions.

3. Program Structure: (Form PS - Program Structure)

PROGRAM STRUCTURE

A. Total credits required for graduation: 32

B. Residency requirements, if any: -

C. General education: Total credits: -

Courses (specific courses OR distribution area and credits):

Core Requirements (5 cr.)

Math 17-681 Curriculum Construction in Mathematics 3

Math 17-622 Introduction to Research Methods for the Social Sciences 1

Math 17-624 Research Project 1

Electives (3 cr.)

D. Major requirements: Total credits: 24

Subject Field Requirements (24 cr.)

Math 17-623 Data and Probability for Elementary Mathematics Specialists 3

Math 17-625 Number and Operation for Elementary Mathematics Specialists 3

Math 17-626 Rational Number and Ratio and Proportional Relationships for Elementary
Mathematics Specialists 3

Math 17-627 Algebraic Reasoning for Elementary Mathematics Specialists 3

Math 17-628 Geometry and Measurement for Elementary Mathematics Specialists 3

EdCI 62-623 Mathematical Leadership for Elementary Mathematics
Specialists: Foundations 2

EdCI 62-624 Mathematical Leadership for Elementary Mathematics
Specialists: Influencing and Facilitating Improvement 3

EdCI 62-625 Seminar and Internship in Numbers and Operations 1

EdCI 62-626 Seminar and Internship in Rational Numbers and Proportional Thinking 1

EdCI 62-627 Seminar and Internship in Algebraic Reasoning 1

EdCI 62-628 Seminar and Internship in Geometry and Measurement 1

E. Free elective credits: 3 (Sum of C, D, and E should equal A.)

F. Requirements for thesis, internship or other capstone experience:

Math 17-624 is capstone course

G. Any unique features such as interdepartmental cooperation:

3. Program Structure: (Form PS - Program Structure)

Coursework is shared between faculty from the Department of Professional Education and the Department of Mathematics, Computer Science and Information Systems.

5. Program Characteristics and Performance Goals: (Form PG).

PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name: Northwest Missouri State University

Program Name: MSEd in Elementary Mathematics

Date: January 2013

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

Program Admission Requirements

1. A minimum overall grade point average of 2.75 on the undergraduate transcript or an undergraduate overall GPA of 2.50 to 2.74 and a 3.25 GPA on eight hours of required graduate coursework at Northwest in the major program where admission is requested.
 2. A valid teaching certificate.
 3. Two or more years of teaching experience.
 4. A current teaching position in elementary school or middle school mathematics.
 4. A letter of recommendation from a current administrator who has completed a performance-based annual evaluation on which the teacher has achieved the level of developing or higher.
 5. Successful completion of the Analytical Writing Assessment.
- Characteristics of a specific population to be served, if applicable.
Elementary teachers wishing to receive Elementary Mathematics Specialist certification.

Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
Instructors of Record must have Graduate Faculty status on their campus.

5. Program Characteristics and Performance Goals: (Form PG).

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.

100% full-time faculty.

- Expectations for professional activities, special student contact, teaching/learning innovation.

Seminar and Internship classroom visits, planning sessions to prepare for the ITV meetings, and Curriculum Collaboration meetings.

Enrollment Projections

- Student FTE majoring in program by the end of five years.

15 students in five years

- Percent of full time and part time enrollment by the end of five years.

All students (100%) will be part-time since they will also be educators.

Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.

7 per year at 3 and 5 years.

- Special skills specific to the program.

Above average ability to teach mathematics at the elementary level.

- Proportion of students who will achieve licensing, certification, or registration.

100% [All students who complete the program and pass the Middle School Mathematics PRAXIS may apply for certification. Some students may already have a graduate degree and will therefore only be interested in taking the 24 hours needed for the certification, not pursuing the MEd.]

- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.

In order to earn the Elementary Mathematics Specialist certification from DESE, students must pass the Middle School Math PRAXIS exam.

- Placement rates in related fields, in other fields, unemployed.

100% [In order to be in the program, students must be teaching in an elementary or middle school classroom.]

- Transfer rates, continuous study.

There may be students who take the 24 hour package for the EMS certification that do not want to complete the MEd program.

5. Program Characteristics and Performance Goals: (Form PG).

6. Program Accreditation

Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.

All programs in education at Northwest are NCATE/DESE accredited.

Alumni and Employer Survey

Expected satisfaction rates for alumni, including timing and method of surveys

Besides regular course evaluation surveys, students will be e-mailed a survey upon graduation, one year after graduation, and five years after graduation.

Expected satisfaction rates for employers, including timing and method of surveys

Principals of alumni will be e-mailed a survey 18 months and 5 years after the completion of the EMS program. The 18 months allows time for one year of teaching and state testing results.

7. Institutional Characteristics: Please describe succinctly why your institution is particularly well equipped or well suited to support the proposed program.

Northwest already has strong education programs, the technological infrastructure to support ITV and online delivery of courses, mathematics education faculty who have been involved in the development of the collaborative since its inception. Northwest also serves rural communities that have limited access to other universities in the state.

8. Any Other Relevant Information:

Two letters of support, see attached in Appendix.

Articulation of courses with all universities, see attached in Appendix.

A collaborative agreement with participating institutions will be forthcoming as an MOA.

September 27, 2012

Dr. Barbara Reys
303 Townsend Hall
University of Missouri
Columbia, MO 65211

Dear Dr. Reys:

The Missouri Department of Elementary and Secondary Education (DESE) wishes to extend its support as a partner in the proposed National Science Foundation project, *Preparing and Studying the Impact of Missouri Elementary Mathematics Teaching Specialists*.

We understand that the group of partners including five state universities, three public school systems, the Department of Higher Education, and DESE will recruit and prepare a cohort of elementary mathematics specialist teachers. Upon completion of the required coursework, the teachers will be issued an elementary mathematics specialist (EMS) certificate. The team will also study the impact of EMS professionals on student learning outcomes.

The collaboration will enable project staff and partners to create and deliver a strong program of study aimed at improving the mathematical content and pedagogical expertise of elementary teachers in Missouri. It will test a model that uses EMS certified teachers to provide instruction to a significant percentage of upper (Grade 4 and 5) students.

To support this effort, DESE staff will serve on the Advisory Board of the project and will also meet regularly with the Project Leadership Team. We will also assist by sharing information about the project with Missouri school administrators and educators.

We look forward to this exciting opportunity and to the benefits that will be provided to the teachers and students of Missouri.

Sincerely,



Karla Eslinger, Ed.D.
Assistant Commissioner
Office of Educator Quality



September 27, 2012

Dr. Barbara Reys
303 Townsend Hall
University of Missouri
Columbia, MO 65211

Dear Dr. Reys:

The Missouri Department of Higher Education (MDHE) welcomes the opportunity to partner in the proposed National Science Foundation project, *Preparing and Studying the Impact of Missouri Elementary Mathematics Teaching Specialists*.

The MDHE is committed to facilitating partnerships among Missouri universities. In particular, we support collaborative efforts to organize and offer learning experiences leading to certification or degrees at Missouri institutions. We are particularly pleased with the partnership established by this group that includes five institutions of higher education, three K-12 public school systems, and the Department of Elementary and Secondary Education.

The collaboration will enable project staff and partners to build and test the impact of a strong program of study aimed at improving the mathematical content and pedagogical expertise of elementary teachers in Missouri. To support this effort, MDHE staff will serve on the Advisory Board of the project and will foster communication and collaboration on project goals. We will also assist by sharing information about the project with other Missouri institutions of higher education.

In summary, the MDHE looks forward to working with the Project Staff on this important work.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rusty Monhollon".

Rusty Monhollon, Ph.D.
Assistant Commissioner for Academic Affairs

Elementary Mathematics Specialist Collaborative Courses

NOTE: * As of January 21, 2013, the courses at these universities are still in the proposal approval processes on their campuses.

University	Course Number	Course Title	Catalog Description	
MSU*	MTH 758	Data and Probability for Elementary Mathematics Specialists	3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.	
MU*	LTC 8876	Teaching Data Analysis and Mathematical Modeling	<i>The course will develop understanding of data analysis and mathematical modeling. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum.</i>	Course Sequence will undergo review in Spring 2013
NW	17-623	Data and Probability for Elementary Mathematics Specialists	The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum.	
SEMO*	MA624	Data And Probability	The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum.	
UCM	MATH 5840	Data and Probability for Elementary Mathematics Specialists	The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum.	

University	Course Number	Course Title	Catalog Description	
MSU*	MTH 750	Number and Operations for Elementary Mathematics Specialists	3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Internship and Seminar in Number and Operations. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.	
MU*	LTC 8871	Teaching & Learning Number/Operations Advanced	<i>Course will develop understanding of learning and teaching pre-number concepts, counting and cardinality, numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.</i>	Course Sequence will undergo review in Spring 2013
NW	17-625	Number and Operation for Elementary Mathematics Specialists	The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.	
SEMO*	MA621	Number and Operations	The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.	
UCM	MATH 5800	Number and Operation for Elementary Mathematics Specialists	The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.	

University	Course Number	Course Title	Catalog Description
MSU*	ELE 730	Internship in Number and Operations	1(0-2) Prerequisite: Admission into a program for Elementary Mathematics Specialist and two years of elementary or middle school teaching. Must be taken concurrently with MTH 750. A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on concepts related to numbers and operations in base ten appropriate in K-5 students.
MU*	LTC 8881	<i>Internship – Number and Operations in Elementary Schools</i>	<i>A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (parents and teachers) on number and operations concepts.</i>
NW	62-625	Seminar and Internship in Numbers and Operations	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (parents and teachers) on number and operations concepts.
SEMO	MA611	Internship in Numbers and Operations	Supervised teaching practicum and online seminars in which candidate acquires experience working with a range of students and adult learners on Number and Operations concepts.
UCM	ECEL 5800	Internship in Numbers and Operations for Elementary Mathematics Specialists	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (parents and teachers) on number and operations concepts.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	MTH 752	Rational Numbers and Proportional Thinking for Elementary Mathematics Specialists	3 (3-0) Prerequisite: MTH 750 and permission of program coordinator. The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Internship and Seminar in Rational Numbers and Proportional Thinking. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.
MU*	LTC 8872	<i>Teaching & Learning Rational Number Advanced</i>	<i>The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.</i>
NW	17-626	Rational Number and Ratio and Proportional Relationships for Elementary Mathematics Specialists	The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.
SEMO*	MA622	Rational Numbers and Proportional Thinking	The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.
UCM	MATH 5810	Rational Numbers and Proportional Relationships for Elementary Mathematics Specialists	The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	ELE 732	Internship in Rational Numbers and Proportional Thinking.	1(0-2) Prerequisite: Admission into a program for Elementary Mathematics Specialist and two years of elementary or middle school teaching. Must be taken concurrently with MTH 752. A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on rational number and proportional thinking concepts.
MU*	LTC 8882	<i>Internship – Rational Number in Elementary Schools</i>	<i>A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on rational number and proportional thinking concepts.</i>
NW	62-626	Seminar and Internship in Rational Numbers and Proportional Thinking	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on rational number and proportional thinking concepts.
SEMO*	MA612	Internship in Rational Numbers and Proportional Thinking	Supervised teaching practicum and online seminars in which candidate acquires experience working with a range of students and adult learners on Rational Number and Proportional Thinking concepts.
UCM	ECEL 5810	Internship in Rational Numbers and Proportional Relationships for Elementary Mathematics Specialists	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on rational number and proportional thinking concepts.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	MTH 754	Algebraic Reasoning for Elementary Mathematics Specialists	3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra. To be taken concurrently with Internship and Seminar in Algebraic Reasoning. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.
MU*	LTC 8874	<i>Teaching & Learning Algebraic Reasoning Advanced</i>	<i>Course focuses on the content and complexities of teaching and assessing algebraic reasoning in grades 1-6. Includes examination of representation, analysis of mathematical structures, patterns, functions, and the transition from arithmetic to algebra.</i>
NW	17-627	Algebraic Reasoning for Elementary Mathematics Specialists	This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra.
SEMO*	MA627	Algebraic Reasoning	This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra.
UCM	MATH 5820	Algebraic Reasoning for Elementary Mathematics Specialists	This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	ELE 734	Internship in Algebraic Reasoning	1(0-2) Prerequisite: Admission into a program for Elementary Mathematics Specialist and two years of elementary or middle school teaching. Must be taken concurrently with MTH 754. A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on concepts related to algebraic reasoning appropriate in K-5 students.
MU*	LTC 8884	<i>Internship - Algebraic Reasoning in Elementary Schools</i>	<i>A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on concepts related to algebraic reasoning appropriate form K-5 students.</i>
NW	62-627	Seminar and Internship in Algebraic Reasoning	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on concepts related to algebraic reasoning appropriate form K-5 students.
SEMO*	MA617	Internship in Algebraic Reasoning	Supervised teaching practicum and online seminars in which candidate acquires experience working with a range of students and adult learners on Algebraic Reasoning concepts.
UCM	ECEL 5820	Internship in Algebraic Reasoning for Elementary Mathematics Specialists	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on concepts related to algebraic reasoning appropriate form K-5 students.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	MTH 760	Geometry and Measurement for Elementary Mathematics Specialists	3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary curriculum. To be taken concurrently with Internship and Seminar in Geometry and Measurement. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.
MU*	LTC 8873	<i>Teaching & Learning Geometry and Measurement Advanced</i>	<i>This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary mathematics curriculum.</i>
NW	17-628	Geometry and Measurement for Elementary Mathematics Specialists	This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary mathematics curriculum.
SEMO*	MA626	Geometry and Measurement	This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary mathematics curriculum.
UCM	MATH 5830	Geometry and Measurement for Elementary Mathematics Specialists	This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary mathematics curriculum.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	ELE 738	Internship in Geometry & Measurement	1(0-2) Prerequisite: Admission into a program for Elementary Mathematics Specialist and two years of elementary or middle school teaching. Must be taken concurrently with MTH 758. A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on geometry and measurement concepts.
MU*	LTC 8883	<i>Internship: Geometry/Measurement in Elementary Schools</i>	<i>A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with students and adult learners (teachers and parents) on geometry and measurement concepts appropriate for K-5 students.</i>
NW	62-628	Seminar and Internship in Geometry and Measurement	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on geometry and measurement concepts.
SEMO*	MA616	Internship in Geometry and Measurement	Supervised teaching practicum and online seminars in which candidate acquires experience working with a range of students and adult learners on Geometry and Measurement concepts.
UCM	ECEL 5830	Internship in Geometry and Measurement for Elementary Mathematics Specialists	A supervised mathematics teaching practicum with online seminars in which the candidate acquires experience working with a range of students and adult learners (teachers and parents) on geometry and measurement concepts.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	ELE 736	Foundations of Mathematical Leadership I for Elementary Mathematics Specialists	2(2-0) Prerequisite: Admission into a program to Elementary Mathematics Specialist certification and two years of elementary or middle school teaching experience. This introductory course provides opportunities for participants to develop knowledge and understanding of leadership principles and the process of continuous improvement as it relates to the roles and responsibilities of elementary mathematics specialists.
MU*	LTC 8877	<i>Foundations of Mathematics Leadership in Elem Schools</i>	<i>This course provides opportunities for participants to develop knowledge and understanding of leadership principles and the process of continuous improvement as it relates to the roles and responsibilities of elementary mathematics specialists.</i>
NW	62-623	Mathematical Leadership for Elementary Mathematics Specialists: Foundations	This introductory course provides opportunities for participants to develop knowledge and understanding of leadership principles and the process of continuous improvement as it relates to the roles and responsibilities of elementary mathematics specialists.
SEMO*	EL667	Mathematical Leadership for Elementary Mathematics Specialists: Foundations	This introductory course provides opportunities for participants to develop knowledge and understanding of leadership principles and the process of continuous improvement as it relates to the roles and responsibilities of elementary mathematics specialists.
UCM	ECEL 5855	Foundations of Mathematical Leadership fir Elementary Mathematics Specialists	This introductory course provides opportunities for participants to develop knowledge and understanding of leadership principles and the process of continuous improvement as it relates to the roles and responsibilities of elementary mathematics specialists.

Course Sequence will undergo review in Spring 2013

University	Course Number	Course Title	Catalog Description
MSU*	ELE 737	Foundations of Mathematical Leadership II for Elementary Mathematics Specialists	3(3-0). This second leadership course in the EMS program focuses on research and practice related to teamwork, interaction, communication, conflict resolution, and leadership in K-5 schools. Candidates will also examine effective strategies for influencing and facilitating school/district improvement (e.g., mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning)collaborating with colleagues and administration. Candidates will focus on mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning school- and district-wide.
MU*	LTC 8878	<i>Mathematical Leadership for Elementary Schools Advanced</i>	<i>This advanced leadership course focuses on research and practice related to teamwork, interaction, communication, conflict resolution, and leadership in K-5 schools. Candidates will examine effective strategies for influencing and facilitating school/district improvement.</i>
			<i>Course Sequence will undergo review in Spring 2013</i>
NW	62-624	Mathematical Leadership for Elementary Mathematics Specialists: Influencing and Facilitating Improvement	This second leadership course in the EMS program focuses on research and practice related to teamwork, interaction, communication, conflict resolution, and leadership in K-5 schools. Candidates will examine strategies for influencing and facilitating school/district improvement (e.g., mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning) collaborating with colleagues and administration. Candidates will focus on mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning school- and district-wide.
SEMO*	MA668	Mathematical Leadership for Elementary Mathematics Specialists: Influencing and Facilitating Improvement	This second leadership course in the EMS program focuses on research and practice related to teamwork, interaction, communication, conflict resolution, and leadership in K-5 schools. Candidates will also examine effective strategies for influencing and facilitating school/district improvement (e.g., mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning)collaborating with colleagues and administration. Candidates will focus on mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning school- and district-wide.
UCM	ECEL 5855	Mathematical Leadership for Elementary Mathematics Specialists: Influencing and Facilitating Improvement	This second leadership course in the EMS program focuses on research and practice related to teamwork, interaction, communication, conflict resolution, and leadership in K-5 schools. Candidates will examine strategies for influencing and facilitating school/district improvement (e.g., mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning) collaborating with colleagues and administration. Candidates will focus on mentoring and observing colleagues, conducting professional development, and making data-informed decisions to improve student learning school- and district-wide.