NATIONAL RECOGNITION REPORT
Initial Preparation of Mathematics Education Teachers at the Secondary Level

NCATE recognition of this program is dependent on the review of the program by representatives of the National Council of Teachers of Mathematics (NCTM).

COVER PAGE

Name of institution

University of Louisiana at Monroe

Date of review

MM DD YYYY

02 / 01 / 2009

This report is in response to a(n):

- Initial Review
- Revised Report
- Response to Conditions Report

Program Covered by this Review

Mathematics Education

Program Type

First teaching license

Award or Degree Level

- Baccalaureate
- Post Baccalaureate
- Master's

PART A - RECOGNITION DECISION

SPA Decision on NCATE Recognition of the Program(s):

- Nationally recognized
- Nationally recognized with conditions
- Further development required **OR** Nationally recognized with probation [See Part G]
- Not nationally recognized

Test Results (from information supplied in Assessment #1, if applicable)

The program meets or exceeds an 80% pass rate on state licensure exams:

- Yes
- No
- Not applicable
- Not able to determine

Comment:

100% pass rate for 2007-2008. No candidate completers for 2006-2007.

Summary of Strengths:

Candidates have multiple opportunities to display their content and pedagogical expertise.

PART B - STATUS OF MEETING SPA STANDARDS

Standard 1. Knowledge of Problem Solving. Candidates know, understand and apply the process of mathematical problem solving.

Indicators:

1.1 Apply and adapt a variety of appropriate strategies to solve problems.

Met	Not Met

1.2 Solve problems that arise in mathematics and those involving mathematics in other contexts

Met	Not Met

1.3 Build new mathematical knowledge through problem solving.

Met	Not Met

1.4 Monitor and reflect on the process of mathematical problem solving.

Met	Not Met

Standard 1 comments:

Indicators 1.1 and 1.2 are satisfied by Praxis II.
Assessments 2 and 7 provide insufficient evidence to support Indicators 1.3 and 1.4.

Standard 2. Knowledge of Reasoning and Proof. Candidates reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry.

Indicators:

2.1 Recognize reasoning and proof as fundamentals aspects of mathematics.

Met Not Met

2.2 Make and investigate mathematical conjectures

Met Not Met

2.3 Develop and evaluate mathematical arguments and proofs.

Met Not Met

2.4 Select and use various types of reasoning and methods of proof.

Met Not Met

Standard 2 comments:

Assessments 2 and 7 provide insufficient evidence to support Indicators 2.1-2.4.

Standard 3. Knowledge of Mathematical Communication. Candidates communicate their mathematical thinking orally and in writing to peers, faculty and others.

Indicators:

3.1 Communicate their mathematical thinking coherently and clearly to peers, faculty, and others.

Met Not Met

3.2 Use the language of mathematics to express ideas precisely.

Met Not Met

3.3 Organize mathematical thinking through communication

Met Not Met

3.4 Analyze and evaluate the mathematical thinking and strategies of others.

Met Not Met

Standard 3 comments:

Assessments 2 and 7 provide insufficient evidence to support Indicators 3.1-3.4.

Standard 4. Knowledge of Mathematical Connections. Candidates recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding.

Indicators:
4.1 Recognize and use connections among mathematical ideas.

Met	Not Met
j	j

4.2 Recognize and apply mathematics in contexts outside of mathematics.

Met	Not Met
j	j

4.3 Demonstrate how mathematical ideas interconnect and build on one another to produce a coherent whole.

Met	Not Met
j	j

Standard 4 comments:

Indicators 4.1 and 4.2 are satisfied by Praxis II.
No assessment convincingly addresses Indicator 4.3.

Standard 5. Knowledge of Mathematical Representation. Candidates use varied representations of mathematical ideas to support and deepen students' mathematical understanding.

Indicators:

5.1 Use representations to model and interpret physical, social, and mathematical phenomena.

Met	Not Met
j	j

5.2 Create and use representations to organize, record, and communicate mathematical ideas

Met	Not Met
j	j

5.3 Select, apply, and translate among mathematical representations to solve problems

Met	Not Met
j	j

Standard 5 comments:

All indicators are satisfied by Praxis II.

Standard 6. Knowledge of Technology. Candidates embrace technology as an essential tool for

teaching and learning mathematics.

Indicators:

6.1 Use knowledge of mathematics to select and use appropriate technological tools, such as but not limited to, spreadsheets, dynamic graphing tools, computer algebra systems, dynamic statistical packages, graphing calculators, data-collection devices, and presentation software.

Met	Not Met
○	○

Standard 6 comments:

No assessment convincingly supports this indicator.

Standard 7. Dispositions. Candidates support a positive disposition toward mathematical processes and mathematical learning.

Indicators:

7.1 Attention to equity

Met	Not Met
○	○

7.2 Use of stimulating curricula

Met	Not Met
○	○

7.3 Effective teaching

Met	Not Met
○	○

7.4 Commitment to learning with understanding

Met	Not Met
○	○

7.5 Use of various assessments

Met	Not Met
○	○

7.6 Use of various teaching tools including technology

Met	Not Met
○	○

Standard 7 comments:

Assessments 2 and 7 do not adequately support any of these indicators.
Assessment 6 supports 7.1.
Assessment 3 supports 7.3.
Assessment 5 supports 7.5.
No assessment is found to support 7.4 or 7.6.

Standard 8. Knowledge of Mathematics Pedagogy. Candidates possess a deep understanding of how students learn mathematics and of the pedagogical knowledge specific to mathematics teaching and learning.

Indicators:

8.1 Select, use, and determine suitability of the wide variety of available mathematics curricula and teaching materials for all students, including those with special needs such as the gifted, challenged and speakers of other languages.

Met Not Met

8.2 Select and use appropriate concrete materials for learning mathematics.

Met Not Met

8.3 Use multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge.

Met Not Met

8.4 Plan lessons, units and courses that address appropriate learning goals, including those that address local, state, and national mathematics standards and legislative mandates.

Met Not Met

8.5 Participate in professional mathematics organizations and uses their print and on-line resources.

Met Not Met

8.6 Demonstrate knowledge of research results in the teaching and learning of mathematics

Met Not Met

8.7 Use knowledge of different types of instructional strategies in planning mathematics lessons.

Met Not Met

8.8 Demonstrate the ability to lead classes in mathematical problem solving and in developing in-depth conceptual understanding, and help students develop and test generalizations

Met Not Met

8.9 Develop lessons that use technology's potential for building understanding of mathematical concepts and developing important mathematical ideas.

Met Not Met

Standard 8 comments:

Assessment 3 provides evidence to support all indicators except 8.5. No concrete evidence is required in the Work Sample to support this indicator. Although Assessment 5 provides tangential support, it does not adequately address specific indicators within the rubric. Assessment 6 provides evidence to support 8.5.

Standard 9. Knowledge of Number and Operations. Candidates demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships among number and number systems, and meanings of operations.

Indicators:

9.1 Analyze and explain the mathematics that underlies the prcedures used for operations invloving integers, rational, real and complex numbers.

Met Not Met

9.2 Use properties involving number and operations, mental computation, and computational estimation.

Met Not Met

9.3 Provide equivalent representations of fractions, decimals, and percents.

Met Not Met

9.4 Create, solve, and apply proportions.

Met Not Met

9.5 Apply the fundamental ideas of number theory.

Met Not Met

9.6 Makes sense of large and small number and number systems.

Met Not Met

9.7 Compare and contrast properties of numbers and number systems.

Met Not Met

9.8 Represent, use and apply complex numbers

Met Not Met

9.9 Recognize matrices and vectors as systems that have some of the properties of the real number system.

Met Not Met

9.10 Demonstrate knowledge of the historical development of number and number systems including contributions from diverse cultures.

Met Not Met

Standard 9 comments:

Indicators 9.1 - 9.9 are satisfied by Praxis II. No evidence is found to support Indicator 9.10.

Standard 10. Knowledge of Different Perspectives on Algebra. Candidates emphasize relationships among quantities including functions, ways of representing mathematical relationships, and the analysis of change.

Indicators:

10.1 Analyze patterns, relations, and functions of one and two variables.

Met Not Met

10.2 Apply fundamental ideas of linear algebra.

Met Not Met

10.3 Apply the major concepts of abstract algebra to justify algebraic operations and formally analyze algebraic structures.

Met Not Met

10.4 Use mathematical models to represent and understand quantitative relationships.

Met Not Met

10.5 Use technological tools to explore algebraic ideas and representations of information and in solving problems.

Met Not Met

10.6 Demonstrate knowledge of the historical development of algebra including contributions from diverse cultures.

Met Not Met

Standard 10 comments:

Indicators 10.1, 10.2, and 10.4 are satisfied by Praxis II. Assessments 2 and 7 do not provide sufficient evidence to support 10.3 and 10.5. No evidence is found to support 10.6.

Standard 11. Knowledge of Geometries. Candidates use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties.

Indicators:

11.1 Demonstrate knowledge of core concepts and principles of Euclidean and non-Euclidean geometry in two- and three-dimensions from both formal and informal perspectives.

Met Not Met

11.2 Exhibit knowledge of the role of axiomatic systems and proof in geometry.

Met Not Met

11.3 Analyze characteristics and relationships of geometric shapes and structures.

Met Not Met

11.4 Build and manipulate representations of two- and three-dimensional objects and visual objects from different perspectives.

Met Not Met

11.5 Specify locations and describe spatial relationships using coordinate geometry, vectors and other representational systems.

Met | Not Met

11.6 Apply transformation and use symmetry, similarity, and congruence to analyze mathematical situations.

Met | Not Met

11.7 Use concrete models, drawings, and dynamic geometric software to explore geometric ideas and their applications in real-world contexts.

Met | Not Met

11.8 Demonstrate knowledge of the historical development of Euclidean and non-Euclidean geometries including contributions from diverse cultures.

Met | Not Met

Standard 11 comments:

Indicators 11.3, 11.5, and 11.6 are satisfied by Praxis II.
Assessments 2 and 7 do not provide convincing evidence to support 11.1, 11.2, 11.4, 11.5, and 11.7.
No evidence is found to support Indicator 11.8.

Standard 12. Knowledge of Calculus. Candidates demonstrate a conceptual understanding of limit, continuity, differentiation, and integration and a thorough background in techniques and application of calculus.

Indicators:

12.1 Demonstrate a conceptual understanding of and procedural facility with basic calculus concepts.

Met | Not Met

12.2 Apply concepts of function, geometry, and trionometry in solving problems involoving calculus.

Met | Not Met

12.3 Use the concepts of calculus and mathematical modleing to represent and solve problems taken from real-world context.

Met | Not Met

12.4 Use technological tools to explore and represent fundamental concepts of calculus.

Met Not Met

12.5 Demonstrate knowledge of the historical development of calculus including contributions from diverse cultures.

Met Not Met

Standard 12 comments:

Indicators 12.1, 12.2, and 12.3 are satisfied by Praxis II.
No evidence is found to support Indicators 12.4 and 12.5.

Standard 13. Knowledge of Discrete Mathematics. Candidates apply the fundamental ideas of discrete mathematics in the formulation and solution of problems.

Indicators:

13.1 Demonstrate knowledge of basic elements of discrete mathematics such as graph theory, recurrence relations, finite difference approaches, linear programming, and combinatronics.

Met Not Met

13.2 Apply the fundamental ideas of discrete mathematics in the formulation and solution of problems arising from real-world situations.

Met Not Met

13.3 Use technological tools to solve problems involving the use of discrete structures and application of algorithms.

Met Not Met

13.4 Demonstrate knowledge of the historical develpment of discrete mathematics including contributions from diverse cultures.

Met Not Met

Standard 13 comments:

Indicators 13.1 and 13.2 are satisfied by Praxis II.
No evidence is found to support Indicators 13.3 and 13.4.

Standard 14. Knowledge of Data Analysis, Statistics, and Probability. Candidates demonstrate

an understanding of concepts and practices related to data analysis, statistics, and probability.

Indicators:

14.1 Design investigations, collect data, and use a variety of ways to display the data and interpret data representations that may include bivariate data, conditional probability and geometric probability.

Met Not Met

14.2 Use appropriate methods such as random sampling or random assignment of treatments to estimate population characteristics, test conjectured relationships among variables, and analyze data.

Met Not Met

14.3 Use appropriate statistical methods and technological tools to describe shape and analyze spread and center.

Met Not Met

14.4 Use statistical inference to draw conclusions from data.

Met Not Met

14.5 Identify misuses of statistics and invalid conclusions from probability

Met Not Met

14.6 Draw conclusions involving uncertainty by using hands-on and computer-based simulation for estimating probabilities and gathering data to make inferences and conclusions.

Met Not Met

14.7 Determine and interpret confidence intervals.

Met Not Met

14.8 Demonstrates knowledge of the historical development of probability and statistics including contributions from diverse cultures.

Met Not Met

Standard 14 comments:

Indicator 14.1 is satisfied by Praxis II.
Assessments 2 and 7 do not provide convincing evidence to support Indicators 14.2-14.7.
No evidence is found to support Indicator 14.8.

Standard 15. Knowledge of Measurement. Candidates apply and use measurement tools.

Indicators:

15.1 Recognize the common representations and uses of measurement and choose tools and units for measuring.

Met Not Met

15.2 Apply appropriate techniques, tools, and formulas to determine measurements and their application in a variety of contexts.

Met Not Met

15.3 Complete error analysis through determining the reliability of the numbers obtained from measures.

Met Not Met

15.4 Demonstrate knowledge of the historical development of measurement and measurement systems including contributions from diverse cultures.

Met Not Met

Standard 15 comments:

Indicators 15.1, 15.2, and 15.3 are satisfied by Praxis II.
No evidence is found to support Indicator 15.4.

Standard 16. Field-Based Experiences. Candidates complete field-based experiences in mathematics classrooms.

Indicators:

16.1 Engage in a sequence of planned opportunities prior to student teaching that includes observing and participating in both middle and secondary mathematics classrooms under the supervision of experienced and highly qualified teachers.

Met Not Met

16.2 Experience full-time student teaching in secondary mathematics that is supervised by a highly qualified teacher and a university or college supervisor with secondary mathematics

teaching experience.

Met | Not Met

16.3 Demonstrate the ability to increase students' knowledge of mathematics.

Met | Not Met

Standard 16 comments:

No evidence is found in the Context section to support Indicators 16.1 and 16.2. Attachment 2 does not specify that the field experience for every candidate includes both middle and secondary classroom experiences, nor does it address the qualifications of the teacher.

PART C - EVALUATION OF PROGRAM REPORT EVIDENCE

C.1. Candidates' knowledge of content

Praxis II provides evidence of content knowledge, although grades/GPA offers the potential of significant evidence after additional information is provided.

C.2. Candidates' ability to understand and apply pedagogical and professional content knowledge, skills, and dispositions

It is apparent that candidates are well-prepared in this area, although assessments in support of this area make it an unwieldy endeavor for reviewers to determine the correlation to specific indicators.

C.3. Candidate effects on P-12 student learning

Assessment 5 provides supports for candidates' effects on student learning.

PART D - EVALUATION OF THE USE OF ASSESSMENT RESULTS

Evidence that assessment results are evaluated and applied to the improvement of candidate performance and strengthening of the program (as discussed in Section V of the program report)

Although assessments and rubric refinement and a collaborative relationship between mathematics and professional education faculty has occurred, little evidence supports significant evaluation and application of assessment results.

PART E - AREAS FOR CONSIDERATION

Areas for consideration

In Assessment 2 include curriculum requirements (course descriptions) to clarify content of required courses.

Consider revising Assessments 3, 4, 5, 6, and 7 to reflect each specific indicator rather than the main ideas represented in the standard.

For Assessment 3 several references are made to Science content.

Addressing the historical development and contributions of diverse cultures would greatly enhance candidates' content preparation.

A math-specific methods course would provide opportunities for candidates to learn how to incorporate manipulatives and mathematics appropriate software and graphing tools.

Consider building on the collaboration with the Mathematics faculty to encourage the incorporation of mathematics software, graphing tools, and data-collection devices into the content courses as well as in the methods courses.

Increasing candidates' knowledge of probability, discrete mathematics, and history of mathematics would improve their preparation for secondary mathematics teaching.

PART F - ADDITIONAL COMMENTS

F.1. Comments on Section I (Context) and other topics not covered in Parts B-E:

None

F.2. Concerns for possible follow-up by the Board of Examiners:

None

PART G - DECISIONS

Please select final decision:

- [x] Program is nationally recognized with conditions. The program will be listed as nationally recognized on websites and/or other publications of the SPA and NCATE. The institution may designate its program as nationally recognized by NCATE, through the time period specified below, in its published materials. National recognition is dependent upon NCATE accreditation.

NATIONAL RECOGNITION WITH CONDITIONS

The program is recognized through:

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02 / 01 / 2011

Subsequent action by the institution: To retain national recognition, a report addressing the conditions to recognition must be submitted on or before the date cited below.

The program has **up to two opportunities** to address conditions within an 18 month period.

If the program is submitting a Response to Conditions Report **for the first time**, the range of possible deadlines for submitting that report are 4/15/09, 9/15/09, 2/1/10, or 9/15/10. *Note that the opportunity to submit a second Response to Conditions report (if needed), is only possible if the first Response to Conditions report is submitted on or before the 9/15/09 submission date noted above. However, the program should NOT submit its Response to Conditions until it is confident that it has addressed all the conditions in Part G of this recognition report.*

If the program is currently Recognized with Conditions and is submitting a **second** Response to Conditions Report, the report must be submitted by the date below.

Failure to submit a report by the date below will result in loss of national recognition.

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The following conditions must be addressed within 18 months (see above for specific date):

1. The SPA-required number of standards and indicators is not met.
2. The minimum required amount of data are not included in the report.
3. There is a lack of quality in some assessments or scoring guides.
4. In order to use grades/GPA as an assessment, the program report must include not only an alignment with specific NCTM standards and indicators but also course descriptions.

Please click "Next"

This is the end of the report. Please click "Next" to proceed.