

OFFICE OF QUALITY PROFESSIONALS AND SPECIAL SCHOOLS
Summary of State Board of Education Items
October 17-18, 2013

OFFICE OF EDUCATOR LICENSURE

11. Approval of Proposal from the University of Mississippi to Modify its Supplemental Endorsement Program in Secondary Mathematics as Recommended by the Commission on Teacher and Administrator Education, Certification and Licensure and Development

Background Information:

The University of Mississippi proposes a request to add an approved secondary mathematics supplemental endorsement program to its current initial certification programs. The proposal consists of 21 hours of mathematics, which aligns with the recommendations of the Mississippi Association of Mathematics Teacher Educators (MAMTE) and programs in other southern states.

The program will provide the advanced mathematics preparation and content knowledge needed to teach mathematics effectively at the high school level as outlined by the *Common Core State Standards for Mathematics*.

The Commission on Teacher and Administrator Education, Certification and Licensure and Development approved the proposal on September 6, 2013.

Recommendation: Approval

Back-up material attached



Office of Teacher and Administrator Preparation
 Mississippi Department of Education
 359 N. West Street/P.O. Box 771
 Jackson, MS 39205-0771
 601.359.3631

EDUCATION PROGRAM APPROVAL REQUEST FORM

Institution: University of Mississippi

Date Submitted: 4/23/13

Submitted by: Dr. David Rock

Commission Approval Date: _____

Dean, School of Education

State Board Approval Date: _____

Proposed date of Program Implementation: Academic Year 2013 – 2014

Proposal Request and Support Materials are provided for the approval to implement:

New Program

Modifications to Existing Program

Licensure Requirement

In addition to your current education program course list/description, you must provide: 1) a copy of the proposed new program; 2) the current program with clear indication of proposed modifications; 3) any evidence of institutions (state, regional or national) with the same or a similar course of study; 4) evidence of qualified faculty; and 5) any other documentation that further supports the proposal.

Please state your specific request:

The University of Mississippi would like to offer a **Secondary Mathematics Supplemental Endorsement** program that could be added on to our current initial certification programs. This program will provide the advanced mathematics preparation needed to teach mathematics at the high school level as outlined by the *Common Core State Standards for Mathematics*. Many education majors currently look to add on additional certifications to their initial license. This program will ensure that those seeking add-on endorsements have appropriate content knowledge to teach mathematics effectively. Our proposed program is in line with the recommendations of the Mississippi Association of Mathematics Teacher Educators (MAMTE) organization as well as similar programs in other southern states.

State rationale:

The MDE recently amended the policy for obtaining Secondary Mathematics Supplemental Endorsement from any 21 hours of mathematics coursework to an approved program of study. By completing a prescribed program of mathematics coursework, teachers will be better prepared to meet the expectations of the *Common Core State Standards for Mathematics* and to help Mississippi students become college and career ready.

NOTE: Program approval is subject to standard review procedures that involve several entities and, therefore, timelines for final approval by the Office of Teacher and Administrator Preparation (TAP) may vary. After TAP approves the program, if it is a new or modified program or requires licensure changes, it may then be subject to approval by the Licensure Commission on Teacher and Administrator Education, Certification and Licensure and Development and the State Board of Education before candidates are eligible for Mississippi Teacher Licensure.

EDUCATION PROGRAM PROPOSAL REVIEW FORM (R)

Reviewer Name: Bonnie Oppenheimer, Ph.D.	Reviewer Phone: 662-329-7239
Reviewer Title/Position: Professor of Mathematics and Associate Chair of the Department of Sciences and Mathematics Mississippi University for Women	Reviewer Email: boppenheimer@as.muw.edu
Institution Submitting Proposal: University of Mississippi	Date Submitted to TAP: 04/23/13
Proposed Date of Implementation: Fall 2013	Proposal to Implement a New or Modified: Endorsement Program

In addition to the current education program outline/course description, the proposal material should include for your review, where applicable the following:

- A copy of the current program
- An outline of the proposed program with clear indication of any proposed modifications
- Proposed course syllabi and course descriptions
- A list of faculty who will provide instruction for the proposed courses/program of study and their curriculum vitae
- A list and example of a program outline for similar (or same) programs/courses of study at one or more IHLs (instate or out-of-state), or provide URLs if posted online
- Documentation of institution administrative approval and MS IHL approval (if MS public institution)
- Current special program recognition where applicable
- Any other documentation that further supports the rationale for the proposal

As a qualified education professional, your review should ensure the program utilizes current content that is infused with state (InTASC) standards and national professional association standards, and the program provides instruction for program candidates on the most recently adopted state curriculum frameworks or common core for subject areas when appropriate, or adheres to other applicable state content and instruction policy and guidelines.

Request: Approval for a supplemental endorsement program in secondary mathematics

Provide findings/comments/recommendations (if needed, please use additional space or provide an attachment):

The course descriptions were sufficient; no syllabi needed. This is a step in the correct direction for high school mathematics teachers to be well qualified to teach the Common Core State Standards in Mathematics if the teachers didn't get initial licensure from a 7-12 mathematics program.

- I **recommend approval** of this proposal for submission to the Licensure Commission on Teacher and Administrator Education, Certification and Licensure and Development.
- I **do not recommend approval** of this proposal for submission to the Licensure Commission on Teacher and Administrator Education, Certification and Licensure and Development.
- I **recommend approval pending** evidence of amendments to the proposal that address cited areas of concern (attached).

UNIVERSITY OF MISSISSIPPI

Secondary Mathematics Supplemental Endorsement

PROGRAM REQUIREMENTS

21-hour program of study requiring the following:

- **Calculus (choose 6 credit hours from the following):**
 - MATH 261 – Unified Calculus & Analytic Geometry I
 - MATH 262 – Unified Calculus & Analytic Geometry II
 - MATH 263 – Unified Calculus & Analytic Geometry III
- **Advanced Level Algebra**
 - MATH 319 – Introduction to Linear Algebra
- **Statistics**
 - MATH 115 – Elementary Statistics
- **Geometry**
 - MATH 390 – Techniques in Teaching Secondary Level Math
- **Trigonometry**
 - MATH 123 – Trigonometry
- **Discrete Mathematics**
 - MATH 301 – Discrete Mathematics

NOTE: All current University of Mississippi transfer equivalency agreements will be honored as they relate to this program of study.

COURSE DESCRIPTIONS

115. ELEMENTARY STATISTICS. Descriptive statistics; probability distributions; sampling distributions; estimation; hypothesis testing; and linear regression. Prerequisite: Successful completion of DS 099, if required. Classes meet twice a week for lecture in the classroom; students must spend an additional 50 minutes in the computer lab (JAC A01) each week. (3 hours)

123. TRIGONOMETRY. College trigonometry. Prerequisite: successful completion of DS 099, if required. (3 hours)

261. UNIFIED CALCULUS & ANALYTIC GEOMETRY I. Differential and integral calculus; analytic geometry introduced, covered in integrated plan where appropriate. Four-term sequence for engineering and science majors. Prerequisite: may not book until successfully completing DS 099. (3 hours)

262. UNIFIED CALCULUS & ANALYTIC GEOMETRY II. Differential and integral calculus; analytic geometry introduced, covered in integrated plan where appropriate. Four-term sequence for engineering and science majors. Prerequisite: Math 261 with minimum grade of C, may not book until successfully completing DS 099. (3 hours)

263. UNIFIED CALCULUS & ANALYTIC GEOMETRY III. Differential and integral calculus; analytic geometry introduced, covered in integrated plan where appropriate. Four-term sequence for engineering and science majors. Prerequisite: Math 262 with minimum grade of C, may not book until successfully completing DS 099. (3 hours)

301. DISCRETE MATHEMATICS. Elementary counting principles; mathematical induction; inclusion-exclusion principles; and graphs. Prerequisite: Math 261 with minimum grade of C. (3 hours)

319. INTRODUCTION TO LINEAR ALGEBRA. Vectors, matrices, determinants, linear transformations, introduction to vector spaces. Prerequisite: Math 262 with minimum grade of C. (3 hours)

390. TECHNIQUES IN TEACHING SEC. LEVEL MATH. Teaching techniques for algebra, geometry, trigonometry, and calculus are presented and discussed. (3 hours)

EVIDENCE OF QUALIFIED FACULTY

The Department of Mathematics at the University of Mississippi employs qualified full-time faculty and adjunct faculty to teach the mathematics courses outlined above. Some of these faculty members may include:

Haidong Wu, Ph.D., Professor, Ph.D., Louisiana State University, 1994

Dr. Wu is a full-time faculty member in the Department of Mathematics. He teaches undergraduate and graduate level mathematics courses including MATH 262 and MATH 263.

Julie Riales, Ph.D., Adjunct Faculty, Ph.D., University of Mississippi, 2011

Dr. Riales teaches MATH 390 for the mathematics department as an adjunct faculty member. She has a Ph.D. in mathematics education. She also serves as the Mathematics and Science Curriculum Specialist for the Grenada School District.

Laura Sheppardson, Ph.D., Associate Professor, Ph.D., Georgia Institute of Technology, 2003

Dr. Sheppardson is a full-time faculty member in the Department of Mathematics. She teaches MATH 301 and MATH 302.

Lanzhen Song, Ph.D., Instructor, Ph.D., University of Mississippi, 2009

Dr. Song is a full-time instructor in the Department of Mathematics. She teaches MATH 115.

Sandra Spiroff, Ph.D., Assistant Professor, Ph.D., University of Illinois at Urbana-Champaign, 2003

Dr. Spiroff is a full-time faculty member in the Department of Mathematics. She teaches both undergraduate and graduate level mathematics courses, including MATH 319.

William Staton, Ph.D., Professor, Ph.D., University of Houston, 1978

Dr. Staton is a full-time faculty member in the Department of Mathematics. He teaches both undergraduate and graduate level mathematics courses, including MATH 425

Other Similar Programs:

Due to the change in MDE's policy for adding a supplemental endorsement in secondary mathematics, there are currently no other similar programs in the state. However, listed below are the Secondary Mathematics Supplemental Endorsement criteria for other states in the Southeastern United States.

Arkansas

(http://arkansased.org/educators/licensure/adding_licensure.html)

- Passing content area Praxis score, AND;
- University program of study (Univ. or AR - <http://coehp.uark.edu/MathematicsALP.pdf>)
 - 21 hours in math including
 - college algebra
 - calculus
 - geometry
 - 2 math electives (any level)
 - 2 math electives (3000-4000 level)

South Carolina

(<http://ed.sc.gov/agency/se/Educator-Certification-Recruitment-and-Preparation/Certification/documents/TeacherCertificationManual.pdf>)

- Passing content area examination score, AND;
- 26 hours in math outlined by state department including:
 - 6 hours of algebra (abstract, matrix, and linear)
 - 3 hours of geometry
 - 8 hours of calculus
 - 9 hours of math electives (probability, statistics, applied math, discrete math, number theory, analysis, advanced algebra, advanced geometry)

Tennessee (<http://www.tn.gov/education/lic/add.shtml>)

- Passing content area Praxis score AND completion of a university program (TN Tech Univ - http://www.tntech.edu/files/teachered/math_add.pdf)
 - 22 hours in math including:
 - calculus
 - matrix algebra
 - concepts of math
 - geometry
 - statistical methods
 - history of math
- OR Passing Praxis content area examination score (only for those teachers that currently hold a 7-12 license in another area)

Florida (<http://www.fldoe.org/edcert/rules/6A-4-0262.asp>)

- BS or higher with a major in mathematics, OR;
- BS or higher with 30 hours in mathematics including, OR;
 - 6 hours of calculus
 - Geometry
 - Probability or statistics
 - Abstract or linear algebra
- BS or higher with specialization in physics AND 21 hours of mathematics including the above listed courses

RATIONALE FOR COURSE SELECTION

The courses outlined above were chosen in order to provide teachers the mathematical content needed to be effective teachers. These courses are in line with recommendations from the Mississippi Association of Mathematics Teacher Educators (MAMTE), the National Council for Teachers of Mathematics NCATE Standards, as well as the recommendations as outlined by the Conference Board of the Mathematical Sciences (CBMS). The recommendations from these organizations are included for your reference.

MAMTE Recommendation for Secondary Mathematics Supplemental Endorsement Program

Supplemental Endorsement Program for Mathematics MAMTE Symposium, May 2012 Revised by MDE Licensure Sub-Committee, July 2012		
Hours	Course type	Notes
6	Calculus	Minimum number of hours: MAMTE strongly suggests to universities/colleges that this DOES NOT include pre-calculus course
3	Geometry	
3	Statistics	
3	Advanced Algebra Course	Linear Algebra Abstract Algebra
6	ELECTIVES (300+ level; Calculus III; Calculus IV; Elementary Functions/Pre-Cal; or Secondary Mathematics Methods Course)	Suggestion: MAMTE strongly suggests a Foundations of Math course and a Methods course

NCTM NCATE Mathematics Content for Secondary

<http://www.nctm.org/standards/content.aspx?id=2978>

(See attached)

Chapter 6 Appendix: Sample Undergraduate Mathematics Sequences

Short sequence (33 semester-hours).

- I Courses taken by undergraduates in a variety of majors (15+ semester-hours)
 - Single- and Multi-variable Calculus (9+ semester-hours)
 - Introduction to Linear Algebra (3 semester-hours)
 - Introduction to Statistics (3 semester-hours)
- II Courses intended for all mathematics majors (9 semester-hours)
 - Introduction to Proofs (3 semester-hours)
 - Abstract Algebra (approach emphasizing rings and polynomials) (3 semester-hours)
 - A third course for all mathematics majors (e.g., Differential Equations) (3 semester-hours)
- III Courses designed primarily for prospective teachers (9 semester-hours).

Long sequence (42 semester-hours).

- I Courses taken by undergraduates in a variety of majors (21 semester-hours)
 - Single- and Multi-variable Calculus (9+ semester-hours)
 - Introduction to Linear Algebra (3 semester-hours)
 - Introduction to Computer Programming (3 semester-hours)
 - Introduction to Statistics I, II (6 semester-hours)
- II Courses intended for all mathematics majors (12 semester-hours)
 - Introduction to Proofs (3 semester-hours)
 - Advanced Calculus (3 semester-hours)
 - Abstract Algebra (approach emphasizing rings and polynomials) (3 semester-hours)
 - Geometry or Mathematical Modeling (3 semester-hours)
- III Courses designed primarily for prospective teachers (9 semester-hours).