Program Report for the Preparation of Secondary Mathematics Teachers
National Council of Teachers of Mathematics (NCTM)

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

COVER SHEET

1. Institution Name

Arkansas State University

2. State

AR

3. Date submitted

MM DD YYYY

09 / 15 / 2008

4. Report Preparer's Information:

Name of Preparer:

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Name:

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6. Name of institution's program

Mathematics (BSE Degree program)

7. NCATE Category

Mathematics Education

8. Grade levels[(1)] for which candidates are being prepared

Secondary (7-12)

(1) e.g. Early Childhood; Elementary K-6

9. Program Type

- Advanced Teaching
- First teaching license
- Other School Personnel
- Unspecified

10. Degree or award level

- Baccalaureate
- Post Baccalaureate
- Master's
- Post Master's
- Specialist or C.A.S.
- Doctorate
- Endorsement only

11. Is this program offered at more than one site?

- Yes
- No

12. If your answer is "yes" to above question, list the sites at which the program is offered

13. Title of the state license for which candidates are prepared

Mathematics 7-12

14. Program report status:

- Initial Review
- Response to One of the Following Decisions: Further Development Required, Recognition with Probation, or Not Nationally Recognized
- Response to National Recognition With Conditions

15. State Licensure requirement for national recognition:

NCATE requires 80% of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Test information and data must be reported in Section III. Does your state require such a test?

- Yes
- No

SECTION I - CONTEXT

1. Description of any state or institutional policies that may influence the application of NCTM standards. (Response limited to 4,000 characters)

With an enrollment of approximately 10,300 students, Arkansas State University-Jonesboro (ASU-J) is the largest of the seven campuses of the Arkansas State University System. Founded in 1909 as a regional agricultural training school, ASU is the only comprehensive public university located in Northeast Arkansas. Programs at the specialist's, master's, bachelor's and associate's degree levels are available through the nine colleges of the university, and the institution offers doctoral programs in Educational Leadership, Environmental Science, Heritage Studies, and Molecular Biosciences. In the region serviced by the institution, ASU is well known for its excellent programs in teacher education.

The BSE in Mathematics degree is a secondary-level (7-12) teacher education program qualifying candidates to apply for initial licensure upon completion of the degree. It is housed in the Department of Mathematics and Statistics, in the College of Sciences and Mathematics. However, faculty members in each content area department who are responsible for teacher preparation are also members of the Professional Education Unit, and the Head of the Professional Education Unit is also the Dean of the College of Education (COE). The Department of Mathematics and Statistics is one of eleven non-COE departments of the University with teacher education programs. Thus, faculty members who are responsible for teacher preparation have the opportunity to work very closely on a regular basis with colleagues from the COE and from many other departments who have a variety of teacher education-related responsibilities within the Professional Education Unit. The Professional Education Unit has a governance system that includes all programs in the decision-making process.

1. State and Institutional Policies
The Arkansas Department of Education (ADE) regulates certification standards for public school teachers in the State of Arkansas. Upon completion of an approved program at ASU, and pursuant to successful licensure application procedures, the ADE issues an Initial License to beginning teachers. Candidates in Mathematics pursue certification to teach at the secondary (7-12) level only. The Professional Education Unit and its various shared-governance entities oversee policies for admission, retention, and exit from the many teacher education programs within the Unit. Committees within the Unit make decisions regarding curriculum, requirements for field experiences, Unit assessments, and all changes to teacher education programs at the elementary, mid-level and secondary levels.

Candidates for the BSE degree in Mathematics must complete a 124 credit-hour program of study (see attachment), including 46-49 credit-hours of requirements in general education, a 43 credit-hour major in Mathematics, professional education requirements of 33 credit-hours, and an additional course in health. The ADE requires that all candidates licensed to teach in the State of Arkansas complete a health course, and the ASU course that meets that requirement is HLTH 2513, Principles of Personal Health. Historically, the ADE also required a course in Oral Communication, but in 2000, that requirement was dropped and programs were permitted to determine whether or not an oral communication requirement should exist for its candidates and how such a requirement could be met.

The ADE requires candidates pursuing licensure in secondary Mathematics to take and pass three separate PRAXIS II exams: Mathematics: Content Knowledge, Mathematics: Proofs, Models and Problems, and Mathematics: Pedagogy. Minimum passing scores on these exams are likewise determined by the ADE.

2. Description of the field and clinical experiences required for the program, including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships. (Response limited to 8,000 characters)

Field I: BSE Mathematics students complete two early field experiences, each of which is completed in conjunction with a required course in the program. The Field I (initial) field experience is completed as a part of SCED 2514, Introduction to Secondary School Teaching, and is supervised by the instructor of that course. This class is taken during the sophomore year, prior to the candidate's admission to the Teacher Education Program. Each candidate is assigned to an area secondary school for the equivalent of 30 clock-hours of observation and instruction-related experiences. For this initial field experience, students in the BSE program in Mathematics are assigned to mathematics classrooms. A number of assignments from this class and field experience, including several field reflections, are required components of the first phase of each candidate's electronic portfolio, which is reviewed by the Mathematics BSE Program Coordinator at the time of application for admission to the Program.

Field II: The second early field experience of the program usually takes place during the junior year as a major component of the course SCED 3515, Performance-Based Instructional Design. Each candidate is placed with a secondary-level Mathematics teacher in his or her classroom for at least 45 clock-hours, during which the candidate serves as an aide, tutor and assistant. Candidates also teach several classes throughout the semester, under the supervision of the classroom teacher and the university instructor of the course. Since almost all candidates take SCED 3515 concurrently with EDMA 4563, Methods and Materials for Teaching Mathematics in the Secondary School, they discuss their lessons with the Coordinator of the Mathematics BSE Program (who teaches the methods class) prior to teaching the lessons. In this way, the Program Coordinator can ensure that lessons are standards-based and reflect sound mathematics learning principles. Lesson plans, field reflections and several other assignments from this experience must be included in each candidate's Pre-Internship Portfolio, which is submitted for review to the Mathematics BSE Program Coordinator.

Site Assignments for Field Experiences: In order to ensure that candidates benefit from variety and diversity in educational settings, sites selected for the three field experiences (Field I, Field II and the teaching internship) in each candidate's program must include schools that vary by size and diversity of student population. All of the available sites have been classified into three categories, according to the diversity of the student population, and schools in each category are further categorized according to size. Candidates are placed in one school site from each diversity category and must have one experience at a large school, one experience at an average-to-small school, and one experience can be at either size school.

Teaching Internship in Mathematics: All candidates complete a full-semester, 16-week teaching internship during their last semester at ASU, after all course work has been completed. The teaching internship requires each candidate to function in the total teaching role by maintaining and performing all functions and activities normally performed by the clinical supervisor. The intern gradually assumes responsibility for the classroom and takes on full responsibility for all classes for no less than 3 weeks for an 8-week placement and no less than 4 weeks for a 16-week placement. In addition to all duties and responsibilities associated with teaching classes and working with students at the internship site, candidates must complete several other assignments and include them in their electronic Internship Portfolio. These assignments include the variety of tasks included in the NCTM Portfolio(See Assessment 7), a research-based project to assess teacher effectiveness (See Assessment 5), field reflections, and the creation of the Internship Portfolio.

The university supervisor of the internship is the Coordinator of the Mathematics BSE program. He is currently the only faculty member in the Department specializing in Mathematics Education; he has a Pd.D. in Educational Leadership with emphasis in Mathematics Education, 3 years of experience

teaching Mathematics at the secondary level, and a record of ongoing participation and leadership in the field at the state, regional and national level.

The university supervisor makes a minimum of four observation visits to each intern's site, two announced and two unannounced. An observation visit includes a brief pre-conference with the intern (when possible), followed by the observation of the intern's teaching, a post-conference with the intern, and a post-conference with the clinical supervisor. Whenever possible, a three-way post-conference takes place, with both the intern and the clinical supervisor meeting with the university supervisor at the same time. For each visit, a formative assessment form structured according to the Conceptual Framework of the ASU Teacher Education Program is completed by the university supervisor and discussed with the intern. The clinical supervisor is responsible for completing and discussing four separate observations using the same forms at other times when the university supervisor is not necessarily present. These forms must be turned in to the university supervisor, who reviews them and may choose to consult with the clinical supervisor about them. The final, summative evaluation is used along with the intern's electronic Internship Portfolio to determine the intern's final grade for the teaching internship.

Selection of Internship Sites and Clinical Supervisors: Sites are selected from Higher Learning Commission / North Central Association (NCA) schools (must have accreditation) that agree to participate in the preparation of teachers and that provide appropriate instructional and physical resources for the teaching internship. Sites must be located within a 60-mile radius of the ASU-Jonesboro campus. Interns are not placed in a school in the school district from which they graduated nor in any school in which they completed a previous field experience. The decision to place a teacher intern in a given school setting is a cooperative agreement in which the school principal, the clinical supervisor, the university supervisor and the Coordinator of Teaching Internship and Field Experiences must all give consent. Clinical supervisors must hold a degree, preferably a master's degree, be licensed to teach Spanish, and must have a minimum of three years of teaching experience teaching mathematics. The Office of Professional Education Programs, headed by the Coordinator of Teaching Internships and Field Experiences, works collaboratively with the university supervisor/Coordinator of Mathematics BSE program to use the above-mentioned diversity classification of field experience sites to plan each candidate's series of field experiences. The university supervisor is very familiar with the teaching styles and abilities of the clinical supervisors with whom each intern could be placed and is able to request placement with the clinical supervisor whose background and work best meet the needs of the intern.
Levels of Field Experiences

3. Description of the criteria for admission, retention, and exit from the program, including required GPAs and minimum grade requirements for the content courses accepted by the program. (Response limited to 4,000 characters)

Admission into the Teacher Education program requires students to score a minimum score of 172 on the mathematics, 173 on the writing and 171 on the mathematics batteries of the Pre-professional Skills Test (PPST). Candidates are also required to have a minimum GPA in all coursework of 2.5 and have at least a grade of "C" in ENG 1003 Freshman English I, ENG 1013 Freshman English II, MATH 1023 College Algebra, ECH/MLED 2002 Intro to Educational Technology, ECH/MLED 2022 Introduction to Teaching or SCED2514 Introduction to Secondary Teaching, and SCOM 1203 Oral Communications or their equivalents from another university/college. Candidates are only eligible after completing a minimum of 30 semester hours. Furthermore, they must complete an evaluation of Career Decision Awareness and they must also submit their philosophy of education. Finally, candidates are interviewed by a committee of faculty to insure that they meet admission criteria.

In order to remain in good standing in the Teacher Education Program, candidates must maintain a grade

point average of 2.5 (minimum 3.0 grade point average in all course work required for Program of Study candidates) and earn a minimum of “C” on all professional education courses.

Candidates must meet the following performance requirements in order to be validated for teaching internship:
1. Be admitted into the teacher education program
2. Senior standing with a minimum of 90 semester hours
3. Completion of all professional education/major courses with the exception of the teaching internship courses.
4. Attain a minimum grade point average of 2.5 in all course work and a minimum grade point average of 2.5 in the major area (minimum 3.0 grade point average in all course work required for Program of Study candidates and a minimum of a 3.0 grade point average in the major area)
5. A medical examination report must be presented at the time of application
6. Attend the orientation sessions for the teaching internship
7. Verification of no conviction of a felony or other crimes specified in Arkansas Code Act 1310 of 1995 and Act 1313 of 1997.

In order to complete the program, candidates must successfully complete their teaching internship. The teaching internship requires the candidate to function in the total teaching role by maintaining and performing all functions and activities normally performed by the clinical supervisor. The intern assumes these activities for no less than 3 weeks for an 8-week placement and no less than 4 weeks for a 16-week placement. During the teaching internship the candidate is also required to keep an electronic portfolio. Finally, the teaching internship requires candidates to complete the Praxis II exams for Mathematics: Content Knowledge, Mathematics: Proofs, Models and Problems, Pt.1, and Mathematics: Pedagogy.

4. Description of the relationship [(2)] of the program to the unit's conceptual framework. (Response limited to 4,000 characters)

Current thinking reflects a focus upon individuality and contextuality to a degree not found in earlier views of education. Greater awareness of diversity and the growing need to respond to diversity issues in a manner that allows greater incorporation of disparate groups into society’s mainstream has become a major focus of society. Juxtaposed with these cultural concerns, psychological and biological research efforts are unlocking the structures and processes of the brain. Growing understanding of the links between learning, the environment, and human growth will demand greater educational responsiveness to the individual and individual needs.

In response, the BSE Mathematics Program at Arkansas State University is building upon the solid research base of the emerging professional educator, these outcomes reaffirm the need for understanding the foundations of society while also affirming the need to respond to society’s growing complexity. Viewed as transitional, these outcomes reflect an intermediate stage in program development by providing greater clarity to the intentions of the program in relation to its students. However, further exploration and reflection will lead to a greater refinement of program outcomes which will produce a better integration of students into society and a greater alignment with developing professional standards. With the understanding that the initial level of preparation is the beginning of the personal and professional formation of an educator, the theme for our conceptual framework is Learning to teach, Teaching to learn. Our strong relationship with clinical supervisors and public schools enables us to cooperatively work toward assisting candidates develop the skills, knowledge and dispositions identified in our conceptual framework.

(2): The response should describe the program's conceptual framework and indicate how it reflects the unit's conceptual framework.

5. Indication of whether the program has a unique set of program assessments and their relationship of the program's assessments to the unit's assessment system[(3)]. (Response limited to 4,000 characters)

All key assessments in the BSE-Mathematics program are unique to the mathematics program and are implemented in courses required of all candidates. The assessments and rubrics are consistent with and supplement the College of Education's system of assessment which focuses on planning and preparation, classroom dispositions, instruction, and professional responsibility.

Four of the seven assessments for the BSE-Mathematics program are designed to assess the mathematical content knowledge and processes of candidates. The assessments titled "Licensure", "Assessment of Content Knowledge" and "Geometry Technology Project" are specifically designed to assess candidates' abilities to do and explain mathematics. NCTM performance standards indicate that candidates should be effective in planning and executing effective instruction by having a thorough knowledge of mathematics content and must be able to use mathematical processes that have been identified in the Mathematical Standards for Secondary Teachers. These assessments are well-aligned with and supplement the College of Education's assessment system, thus ensuring that all candidates have had ample exposure to NCTM-aligned curriculum.

The other three program assessments are linked to candidate performance either through the Secondary Mathematics Methods course or the candidates on-line portfolio. The portfolio is developed as an ongoing project beginning in the first field experience and continuing through the internship semester. Each semester the candidates participate in a professional education course, they enter artifacts into the portfolio that are used to assess their ability to plan instruction, their dispositions toward teaching, and their overall readiness for the profession. The portfolio is assessed throughout the program with the final product being evaluated as Assessment #7. Assessment #3 is evaluated through the portfolio in Secondary Mathematics Methods semester, while Assessment #5 and Assessment #7 are evaluated at the end of the student internship semester. The rubric used for assessment 3 and 5 are consistent with the College of Education suggested levels with 1-unacceptable, 2-acceptable and 3-target. Each of these assessments allow the program to evaluate candidates' abilities at the beginning of the program to effectively plan and implement instruction and to assess student learning.

(3) This response should clarify how the key accessments used in the program are derived from or informed by the assessment system that the unit will address under NCATE Standard 2.

6. This system will not permit you to include tables or graphics in text fields. Therefore any tables or charts must be attached as files here. The title of the file should clearly indicate the content of the file. Word documents, pdf files, and other commonly used file formats are acceptable.

7. Please attach files to describe a program of study that outlines the courses and experiences required for candidates to complete the program. The program of study must include course titles. (This information may be provided as an attachment from the college catalog or as a student advisement sheet.)

ASU Secondary Mathematics Program of Study

See **Attachments** panel below.

8. Candidate Information

Directions: Provide three years of data on candidates enrolled in the program and completing the program, beginning with the most recent academic year for which numbers have been tabulated.

Report the data separately for the levels/tracks (e.g., baccalaureate, post-baccalaureate, alternate routes, master's, doctorate) being addressed in this report. Data must also be reported separately for programs offered at multiple sites. Update academic years (column 1) as appropriate for your data span. Create additional tables as necessary.

Program: BSE Mathematics (Secondary Mathematics Program)		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers(4)
2005-2006	37	11
2006-2007	48	10
2007-2008	55	4

(4) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

9. Faculty Information

Directions: Complete the following information for each faculty member responsible for professional coursework, clinical supervision, or administration in this program.

Faculty Member Name	Mike Hall
Highest Degree, Field, & University(5)	PhD, Educational Leadership-Mathematics Education Emphasis, University of Mississippi
Assignment: Indicate the role of the faculty member(6)	Faculty(Department of Mathematics), Director of Mathematics Education, Supervisor of Teacher Interns, Academic Advisor
Faculty Rank(7)	Associate Professor
Tenure Track	þ YES
Scholarship(8), Leadership in Professional Associations, and Service(9):List up to 3 major contributions in the past 3 years(10)	Hall, J. M. 2008. Rethinking surface area and volume. Journal of the Arkansas Council of Teachers of Mathematics(5)3. Hall, J. M. & Johnson-Leslie, N. A. January 2008. An analysis of revitalizing algebra and geometry: A professional development institute for secondary mathematics teachers. Proceedings of the Hawaii International Conference on Education, Honolulu, HI. Hall, J. M. (2005). Cooperative learning activities manual with manipulatives and technology, 3rd ed. Boston. Addison-Wesley.
Teaching or other professional experience in P-12 schools(11)	High School mathematics teacher for 3 years; still hold licensure in 7-12 Mathematics in the state of Arkansas; serve as supervisor of teacher interns each semester; conduct workshops each summer for in-service teachers

Faculty Member Name	Suzanne Melescue
Highest Degree, Field, & University(5)	PhD, Mathematics, University of Tennessee
Assignment: Indicate the role of the faculty member(6)	Faculty member and student advisor
Faculty Rank(7)	Associate Professor of Mathematics
Tenure Track	þ YES
Scholarship(8), Leadership in Professional Associations, and Service(9):List up to 3 major	Dean of the College of Sciences and Mathematics Search Committee Undergraduate Enrollment and Academic Policy Committee Masters thesis committee Reader for Andrew Hostetler, "Möbius Transformations of Circles and

contributions in the past 3 years[10]	Ellipses"
Teaching or other professional experience in P-12 schools[11]	Hold a BSE in Secondary Mathematics Education

Faculty Member Name	Jie Miao
Highest Degree, Field, & University[5]	PhD, Mathematics, Michigan State University
Assignment: Indicate the role of the faculty member[6]	Faculty member and student advisor
Faculty Rank[7]	Associate Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	J. Miao, Schatten Class Hankel Operators on the Harmonic Bergman Space of the Unit Ball, Integral Equations and Operator Theory (Verlag Basel(, 59 (2007), 53-65. J. Miao, Bounded Toeplitz Products on the weighted Bergman Space of the Unit Ball, Journal of Mathematical Analysis and Applications (Elsevier), 346 (2008), 305-313
Teaching or other professional experience in P-12 schools[11]	None

Faculty Member Name	William Paulson
Highest Degree, Field, & University[5]	PhD, Mathematics, Washington University
Assignment: Indicate the role of the faculty member[6]	Teach 12 hours of undergraduate and/or graduate classes; Participate in service activities, such as serving on committees; Do research projects, sometimes with graduate students
Faculty Rank[7]	Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	Paulsen, W. and Slayton, G., ``Eigenfrequency Analysis of Cable Structures with Inclined Cables,'' Applied Mathematics and Mechanics, (2006) Vol. 27, No. 1, pp. 37-49. Paulsen, W., ``Best Odds for Finding a Perfect Matching in a Bipartite Graph,'' Combinatorics, Probability, & Computing, (2006) Vol. 15, pp. 753-763. Paulsen, W., ``The Exterior Matrix Method for sequentially coupled fourth order equations,'' Journal of Sound and Vibration (2007) Vol. 308, No. 1-2, pp. 1-32.
Teaching or other professional experience in P-12 schools[11]	None

Faculty Member Name	Debra Ingram
Highest Degree, Field, & University[5]	PhD, Applied Statistics, University of Memphis
Assignment: Indicate the role of the faculty member[6]	Department Chair, Faculty member, student advisor
Faculty Rank[7]	Associate Professor
Tenure Track	þ YES

Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	1) College of Sciences and Mathematics Dean's Distinguished Leadership Award, 2008 2) University and college committee work includes: General Education Committee, Faculty Handbook Committee, and Preprofessional Committee 3) Directed honors thesis research (2006-2007) and masters thesis research (2007-2008) leading to research presentations at the Joint Statistical Meetings and submission of journal articles
Teaching or other professional experience in P-12 schools[11]	College of Arts and Sciences University Partner and Instructor for "MISSION Mathematics: Middle Level Mathematics Content and Instructional Enhancement for the Northeast Arkansas Delta," 2006 (funded by Arkansas Department of Education)

Faculty Member Name	Hong Zhou
Highest Degree, Field, & University[5]	PhD, Statistics, University of Memphis
Assignment: Indicate the role of the faculty member[6]	Faculty member
Faculty Rank[7]	Assistant Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	1) H. Zhou, D. K. Ingram and S. P. Wong (2008), "Confidence intervals and f tests for intraclass correlation coefficients based on three-way mixed models". (Submitted). 2) W.Y. Tan and H. Zhou (2008), "Stochastic and state space models of human eye cancer: some new insights", 2008 Eastern North American Region Meeting (ENAR), Arlington, Virginia, March 16-19. (Oral presentation) 3) H. Zhou, L.Y. Deng, M.L. Aggarwal and D.K.J. Lin (2007), "Discrimination of the first order D-optimal saturated designs", Design and Analysis of Experiments 2007 Conference, Memphis, TN, October 31-Nov. 3. (Poster presentation)
Teaching or other professional experience in P-12 schools[11]	None

Faculty Member Name	Suzanne Mitchell
Highest Degree, Field, & University[5]	EdD, Mathematics Education, University of Missouri-Kansas City
Assignment: Indicate the role of the faculty member[6]	Faculty member
Faculty Rank[7]	Associate Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	1. Presently serve on the Board of Directors for the National Council of Supervisors of Mathematics as the Regional Director for the Southern 2 region. (2007-2010) 2. Served on the National Council of Teachers of Mathematics Houston Regional program committee for November 2007. 3. Served as the facilitator for the Delegate Assembly for the National Council of Teachers of Mathematics and presented at the annual meeting -April 2008
Teaching or other professional experience in P-12 schools[11]	1. Taught secondary mathematics (grades 7-12)in Pulaski County Special School District for 10 years. Taught Calculus I, Trigonometry and Advanced Algebra, Algebra II, Geometry, Algebra I, and basic, regular and honors 7th and 8th grade math. 2. Taught 3rd-6th grade and Algebra I and II in a special gifted math program at UALR 3. Mathematics curriculum coordinator (7-12) for Pulaski County Special School District

(5) e.g., PhD in Curriculum & Instruction, University of Nebraska.

(6) e.g., faculty, clinical supervisor, department chair, administrator
(7) e.g., professor, associate professor, assistant professor, adjunct professor, instructor
(8) Scholarship is defined by NCATE as systematic inquiry into the areas related to teaching, learning, and the education of teachers and other school personnel.
Scholarship includes traditional research and publication as well as the rigorous and systematic study of pedagogy, and the application of current research findings in new settings. Scholarship further presupposes submission of one's work for professional review and evaluation.
(9) Service includes faculty contributions to college or university activities, schools, communities, and professional associations in ways that are consistent with the institution and unit's mission.
(10) e.g., officer of a state or national association, article published in a specific journal, and an evaluation of a local school program.
(11) Briefly describe the nature of recent experience in P-12 schools (e.g. clinical supervision, inservice training, teaching in a PDS) indicating the discipline and grade level of the assignment(s). List current P-12 licensure or certification(s) held, if any.

SECTION II - LIST OF ASSESSMENTS

In this section, list the 6-8 assessments that are being submitted as evidence for meeting the NAEYC standards. All programs must provide a minimum of six assessments. If your state does not require a state licensure test in the content area, you must substitute an assessment that documents candidate attainment of content knowledge in #1 below. For each assessment, indicate the type or form of the assessment and when it is administered in the program.

1. Please provide following assessment information (Response limited to 250 characters each field)

Type and Number of Assessment	Name of Assessment (12)	Type or Form of Assessment (13)	When the Assessment Is Administered (14)
Assessment #1: Licensure assessment, or other content-based assessment (required)	Praxis II-Content Knowledge	State licensure exam of mathematics content	Most students take the exam during Field Experience III Semester
Assessment #2: Content knowledge in secondary mathematics education (required)	Assessment of Content Knowledge-Mathematics Course Sequence	Grades in required mathematics courses in within the program of study	Ongoing throughout program
Assessment #3: Candidate ability to plan instruction (required)	Unit of Instruction	Project to determine ability of candidate to plan instruction-assessed through on-line portfolio	Assessed during the Methods and Materials for Teaching Secondary Mathematics Course(Prior to Field Experience III)
Assessment #4: Student teaching (required)	Faculty Supervisor Assessment of Student Teaching	Performance-Based	Conclusion of Field Experience III Semester
Assessment #5: Candidate effect on student leaning (required)	Proof of Teacher Effectiveness Assessment	Research-based assessment completed by intern	Field Experience III Semester
Assessment #6: Additional assessment that addresses NCTM	Geometry Technology Project	Class presentation of a geometry problem solved using instructional	Assessed during enrollment in Math 3343-College

standards (required)		technology such as Geometer's Sketchpad	Geometry
Assessment #7: Additional assessment that addresses NCTM standards (optional)	NCTM Portfolio	Learning to Teach, Teaching to Learn Portfolio Assessment	Assessed at the conclusion of Methods and Materials for Teaching Secondary Mathematics Course(Prior to Field Experience III)
Assessment #8: Additional assessment that addresses NCTM standards (optional)	Proofs, Models and Problems	Praxis II Exam required for completion of Program	Taken during Field Experience III Semester

(12) Identify assessment by title used in the program; refer to Section IV for further information on appropriate assessment to include.
(13) Identify the type of assessment (e.g., essay, case study, project, comprehensive exam, reflection, state licensure test, portfolio).
(14) Indicate the point in the program when the assessment is administered (e.g., admission to the program, admission to student teaching/internship, required courses [specify course title and numbers], or completion of the program).

SECTION III - RELATIONSHIP OF ASSESSMENT TO STANDARDS

1. For each NCTM standard on the chart below, identify the assessment(s) in Section II that address the standard. One assessment may apply to multiple NCTM standards.

	#1	#2	#3	#4	#5	#6	#7	#8
Mathematics Preparation for All Mathematics Teacher Candidates.	b	b	b	b	b	b	b	b
1. Knowledge of Problem Solving. Candidates know, understand and apply the process of mathematical problem solving. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	b	b	e	e	e	b	b	b
2. Knowledge of Reasoning and Proof, Candidates reason, construct, and evaluate mathematical arguments and develop as appreciation for mathematical rigor and inquiry. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	d	b	d	d	d	d	d	b
3. Knowledge of Mathematical Communication. Candidates communicate their mathematical thinking orally and in writing to peers, faculty and others. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	e	b	b	e	e	b	b	b
4. Knowledge of Mathematical Connections. Candidates recoginze, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	b	b	b	d	d	b	b	b
5. Knowledge of Mathematical Representation. Candidates use varied representations of mathematical ideas to support and deepend students' mathematical undertstanding. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	b	b	b	e	e	e	b	b
6.Knowledge of Technology. Candidates embrace technolgy as an								

essential tool for teaching and learning mathematics. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	☐	☐	☐	☐	☐
7. Dispositions. Candidates support a postive disposition toward mathematical processes and mathematical learning. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	○	○	☐	☐	☐	○	☐	○
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 are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	☐	☐	☐	☐	☐
9. Knowledge of Number and Operations. Candidates demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships amoung number and number systems, and the meaning of operations.[Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	○	○	○	☐	○
10.Knowledge of Different Perspectives on Algebra.Candidates emphasize relationships among quantites including functions, ways of representing mathematical relationships, and the analysis of change. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	☐	☐	☐	☐	☐
11. Knowledge of Geometries. Candidates use spatial visualization and geometric modeling to explor and analyze geometric shapes, structures, and their properties. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	○	○	☐	☐	○
12. Knowledge of Calculus, Candidates demonstrate a conceptual understanding of limit, continuity, differentiation, and integration and a thorough bakground in techniques and application of the calculus. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	☐	☐	☐	☐	☐
13. Knowledge of Discrete Mathematics. Candidates apply the fundamental ideas of discrete mathematics in the formulation and solution of problems. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	○	○	○	☐	○
14. Knowledge of Data Analysis, Statistics and Proability. Candidates demonstrate an understanding of concpets and practices related to data analysis, statistics, and probablity. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	☐	☐	☐	☐	☐
15. Knowledge of Measurement. Candidates apply and use measurement concepts and tools. [Indicators are listed at http://www.nctm.org/about/ncate/secondary_indic.htm]	☐	☐	☐	○	○	○	☐	○

2. 16. 1 Field-based Experience. Engage in a sequence of planned opportunities prior to student teaching that inculdes observing and participating in secondary mathematics classrooms under the supervision of experienced and highly qualified teachers

Information should be provided in Section I (Context) to address this standard.

3. 16.2 Field-based Expericence. Experienced full-time student teaching secondary-level mathematics that is supervised by experienced and highly qualified teacher and a university or college supervisor with mathematics teaching experience.

Information should be provided in Section I (Context) to address this standard.

4. 1. For the NCTM standard on the chart below, identify the assessment(s) in Section II that address the standard. One assessment may apply to multiple NCTM standards.

	#1	#2	#3	#4	#5	#6	#7	#8
16.3 Field-Based Experience. Demonstrate the ability to increase students' knowledge of mathematics.								

SECTION IV - EVIDENCE FOR MEETING STANDARDS

DIRECTIONS: The 6-8 key assessments listed in Section II must be documented and discussed in Section IV. The assessments must be those that all candidates in the program are required to complete and should be used by the program to determine candidate proficiencies as expected in the program standards. Assessments and scoring guides should be aligned with the SPA standards. This means that the concepts in the SPA standards should be apparent in the assessments and in the scoring guides to the same depth, breadth, and specificity as in the SPA standards.

In the description of each assessment below, the SPA has identified potential assessments that would be appropriate. Assessments have been organized into the following three areas that are addressed in NCATE's unit standard 1:

- Content knowledge (Assessments 1 and 2)
- Pedagogical and professional knowledge, skills and dispositions (Assessments 3 and 4)
- Focus on student learning (Assessment 5)

Note that in some disciplines, content knowledge may include or be inextricable from professional knowledge. If this is the case, assessments that combine content and professional knowledge may be considered "content knowledge" assessments for the purpose of this report.

For each assessment, the compiler should prepare a document that includes the following items: a two page narrative that responds to questions 1, 2, 3, and 4 (below) and the three items listed in question 5 (below). This document should be attached as directed.

1. A brief description of the assessment and its use in the program (one sentence may be sufficient);
2. A description of how this assessment specifically aligns with the standards it is cited for in Section III. Cite SPA standards by number, title, and/or standard wording.
3. A brief analysis of the data findings;
4. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording; and
5. Attachment of assessment documentation, including:
(a) the assessment tool or description of the assignment;
(b) the scoring guide for the assessment; and
(c) candidate data derived from the assessment.

It is preferred that the response for each of 5a, 5b, and 5c (above) be limited to the equivalent of five text pages, however in some cases assessment instruments or scoring guides may go beyond five pages.

All three components of the assessment (as identified in 5a-c) must be attached, with the following

exceptions: (a) the assessment tool and scoring guide are not required for reporting state licensure data, and (b) for some assessments, data may not yet be available.

1. State licensure tests or professional examinations of content knowledge. NCTM standards addressed in this entry could include all of the standards 1-7 and 9-15. If your state does not require licensure tests or professional examinations in the content area, data from another assessment must be presented to document candidate attainment of content knowledge. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Praxis II: Mathematics Content Knowledge

See **Attachments** panel below.

2. Assessment of content knowledge[15] in mathematics. NCTM standards addressed in this entry could include but are not limited toStandards 1-7 and 9-15. Examples of assessments include comprehensive examinations, GPAs or grades[16], and portfolio tasks[17]. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Assessment of Content Knowlegde-Mathematics Course Sequence

See **Attachments** panel below.

(15) Content knowledge in early childhood professional preparation includes knowledge of child development and learning (characteristics and influences); family relationships and processes; subject matter knowledge in literacy, mathematics, science, social studies, the visual and performing arts, and movement/physical education; as well as knowledge about children's learning and development in these areas.

(16) If grades are used as the assessment or included in the assessment, provide information on the criteria for those grades and describe how they align with the specialty standards.

(17) For program review purposes, there are two ways to list a portfolio as an assessment. In some programs a portfolio is considered a single assessment and scoring criteria (usually rubrics) have been developed for the contents of the portfolio as a whole. In this instance, the portfolio would be considered a single assessment. However, in many programs a portfolio is a collection of candidate work—and the artifacts included

3. Assessment that demonstrates candidates can effectively plan classroom-based instruction. NCTM standards that could be addressed in this assessment include but are not limited to Standard 8. Examples of assessments inculde the evaluation of candidates' abilities to develop leasson or unit plans, individualized educational plans, needs assessments, or intervention plans. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Unit of Instruction

See **Attachments** panel below.

4. Assessment that demonstrates candidates' knowledge, skills, and dispositions are applied effectively in practice. NCTM standards that could be addressed in this assessment include but are

not limited to standard 8. An assessment instrument used in student teaching or an internship should be submitted. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Assessment of Student Teaching

See **Attachments** panel below.

5. Assessment that demonstrates candidate effects on student learning. NCTM standards that could be addressed in this assessment include but are not limited to Standard 8. Examples of assessments include those based on student work samples, portfolio tasks, case studies, follow-up studies, and employer surveys. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Proof of Teacher Effectiveness

See **Attachments** panel below.

6. Additional assessment that addresses NCTM standards. Examples of assessments include evaluations of field experiences, case studies, portfolio tasks,licensure tests not reported in #1, and follow-up studies. (Assessment Required)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Geometry Technology Project

See **Attachments** panel below.

7. Additional assessment that addresses NCTM standards. Examples of assessments include evaluations of field experiences, case studies, portfolio tasks,licensure tests not reported in #1, and follow-up studies. (Optional)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

NCTM Portfolio Assessment

See **Attachments** panel below.

8. Additional assessment that addresses NCTM standards. Examples of assessments include evaluations of field experiences, case studies, portfolio tasks,licensure tests not reported in #1, and follow-up studies. (Optional)

Provide assessment information (items 1-5) as outlined in the directions for Section IV

SECTION V - USE OF ASSESSMENT RESULTS TO IMPROVE PROGRAM

1. Evidence must be presented in this section that assessment results have been analyzed and have been or will be used to improve candidate performance and strengthen the program. This description should not link improvements to individual assessments but, rather, it should summarize principal findings from the evidence, the faculty's interpretation of those findings, and changes made in (or planned for) the program as a result. Describe the steps program faculty has taken to use information from assessments for improvement of both candidate performance and the program. This information should be organized around (1) content knowledge, (2) professional and pedagogical knowledge, skill, and dispositions, and (3) student learning.

(Response limited to 12,000 characters)

Candidates completing the secondary mathematics education program are well prepared and have a strong foundation in their content area. The supervisors and mentors have consistently given very favorable reviews of the student teachers in secondary mathematics.

The scores on the Praxis II: Mathematics Content Knowledge have been satisfactory with a 96% pass rate for completers of the program. The candidate who failed to pass on their first attempt did so because of their failure in the areas of Algebra and Number Theory, Functions and Calculus, and Matrix Algebra and Discrete Mathematics. Although this candidate chose not to enter the teaching profession, the score urged the Mathematics Education committee to take closer inspection of the patterns of data surrounding the exam if any existed. The faculty determined that candidates needed to be given guidance on how to handle the exam. Any noticeable patterns, were easily dismissed based on a particular candidate's history. With that being said, all BSE-Mathematics faculty are aware of the types of problems where our program completers struggle and therefore are making a conscious effort to improve candidate understanding of content material. The program coordinator has attempted to advise all candidates as they prepare for the exam with regard to test taking strategies. Faculty members also offered to attempt to occasionally include this type of question on the tests used in the mathematics courses.

Initially when the grade/course sequence assessment was created, it merely reviewed the GPAs of the candidates who were ready to do their student teaching. Since the grades of the completers of the program must reflect the achievement of a GPA of 2.5 in the content area of mathematics, the GPAs did not provide any insight into how the candidates were performing in any specific classes. The Department of Mathematics and Statistics made the decision in fall 2005 to use as the assessment the grades earned in the specific required mathematics courses which gave a much better picture of which classes were the most challenging. The data indicates that for 2006-2006 the average GPA was 3.396, in 2006-2007 the average GPA was 3.136, and in 2007-2008 the average GPA was 3.409 for all required courses. Simply looking at the overall GPS would be short-sighted. Overall candidates are performing very well in the program. However, upon further inspection, the BSE-Mathematics faculty noticed that program completers seem to have difficulty in the Discrete Structures course. What was most apparent was that candidates that performed poorly in Discrete Structures had taken the course prior to Calculus II. This seems to imply that candidates do not have the mathematical maturity to be successful. Through discussion of the assessment, it was concluded that through candidate advising, faculty members could steer candidates to other classes that could better prepare them to be successful in Discrete Structures.

The unit of instruction assignment has been refined over the years to insure that candidates include the use of technology, varied instructional strategies, motivational activities, and can state clear and assessable performance objectives. Overall the candidates have done an outstanding job with this task and every effort will be made to continue to expect the candidates to meet the outstanding criteria.

This instrument is seen as instrumental in assisting candidates prepare for the teacher intern semester. The areas noted for need for improvement are connected to candidate communication of mathematical content. For this reason, each candidate is required to communicate more often in the required courses for the BSE-Mathematics

The assessment of student teaching serves as an overview of candidates' ability enact models of instruction they have studied in conjunction with the content knowledge they have acquired. Secondary mathematics candidates have proven themselves to be outstanding in the classroom when communicating mathematically, showing professionalism, understanding of curriculum, use of teaching models, classroom management, student assessment, reflective teaching, and command of subject matter. At this time there has not been any data to indicate any change in the candidates' preparation for this task need be made.

The effect on student learning assessment is another of the fundamental assessments that assist in producing usable data as to whether the BSE-Mathematics program effectively educates candidates and prepares them for the secondary mathematics classroom. Data indicate that 24 or 96% of the program completers are effective teachers. The Mathematics Education Committee set the standard for the threshold of effectiveness. In particular, candidates considered Acceptable at improving student content knowledge if the students in the classroom have an improvement of 25% or larger with the candidate teaching the material as measured by a Pre/Post-Test design. Candidates run a t-test to determine if there is a difference in two and draws conclusions based on the results. This assignment is viewed by the BSE-Mathematics faculty to be central to candidate preparation since it incorporates multiple tasks that are developed throughout the program each of which represents tools of effective teaching. At this time there is no data suggesting a change in the assessment or the preparation of the candidates.

The Geometry Technology Project is designed to encourage candidate exploration of available technology in both instruction and dynamic geometry. The assignment, which is completed near the end of the semester, requires candidates to use interactive geometry software such as the Geometer's Sketchpad© or GeoGebra to present a topic from the course requiring proof. Historical perspective of the presentation is also required of each candidate. Candidates use instructional technology to present the topic as well as completing a written report as a component of the online portfolio. Other than a few particular instances of inadequate writing and improper use of technology, candidates have been quite successful completing this assessment. As noted in Assessment 6, the candidate data was examined soon after implementation of the instrument where it was determined that many candidates were not prepared to use instructional technology and dynamic software. These issues have been addressed and seem be working effectively. At this time there is no data to suggest changing the assessment except to update the items affected by changing technology.

The work produced by candidates throughout the professional education program serves as artifacts for the candidates' portfolios. The assignment of the portfolio has been refined to include the criteria that are deemed most important to assessing the candidates' abilities to convey content knowledge, understand mathematics content, represent dispositions, communicate mathematically, participate in field experiences, and to represent understanding of pedagogy. The assessment of these artifacts have generated data which indicate that the candidates are performing at a proficient or outstanding level.

In comparing the NCTM indicators with the assessments that the program at the Arkansas State University uses, only Standard 12: Knowledge of Calculus, indicator 12.4, is not directly addressed. Although candidates obviously use technology in the calculus sequence and in the methods course, there is not direct assessment of student knowledge and understanding of technological tools in calculus. Although candidates are not forced to join national organizations or use the print material from such organization, candidates are strongly encouraged to join NCTM and use Mathematics Teacher as a

primary resource in cutting edge instructional materials.

Overall Arkansas State University is proud of its secondary mathematics education program. Realizing that no program is perfect, efforts are made to continually monitor and improve the curriculum that is offered. One source of input into the need for improvements is made up of principals and secondary school teachers who have hosted our student teachers and hired and mentored our graduates. This group completes a yearly survey of teacher preparedness and does a good job of reminding us of the need to keep our candidates up to date on the use of technology and providing real world connections for the mathematics that will be taught. In addition, teacher interns continually evaluate the program at the end of the teacher internship at 1-year after completion and again 2-years after completion. These assessments are used to continually adapt content and pedagogy to better serve candidates.

The main concern of the Department of Mathematics and Statistics is the need for more candidates who will complete the program and take their place as the math educators of the future. Recruitment and retention are the two areas where the program needs to most improve. While the number of candidates enrolled in the program has remained relatively stable over the past several years, the number of candidates completing the program tends to go up and down in cycles. Efforts are being made to address this by contacting candidates who have declared secondary mathematics education as their major during their first calculus course. Candidates are encouraged to consult the program coordinator for early advising, to seek help if they are struggling in any of their math courses, and to network with one another to form study groups and help sessions. These efforts were initiated in fall 2004 by the Department of Mathematics and Statistics. The initial findings indicate that candidates becoming a part of the process tend to fulfill their degree requirements and complete the program

In conclusion, reflection about the secondary mathematics education program at Arkansas State University reveals a strong program that is based in rigorous mathematical content and multifaceted educational experiences.

SECTION VI - FOR REVISED REPORTS OR RESPONSE TO CONDITIONS REPORTS ONLY

1. Describe what changes or additions have been made in response to issues cited in previous recognition report. List the sections of the report you are resubmitting and the changes that have been made. Specific instructions for preparing a revised report or a response to condition report are available on the NCATE web site at http://www.ncate.org/institutions/process.asp?ch=4 (Response limited to 24,000 characters.)

Please click "Next"

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